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Managing financial risks: protecting the organisation

Anne van Der Graaf

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Institut d'études politiques de Paris
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Max Planck Sciences Po Center on Coping with Instability in Market Societies

Doctorat en Sociologie

-

Managing Financial Risks

Protecting the Organisation

Anne Elisabeth Atlee van der Graaf

-

Thesis supervised by Pierre François, directeur de recherche CNRS, Sciences Po (directeur de thèse)

defended 14 September 2018

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Managing Financial Risks

Protecting The Organisation

Anne Elisabeth Atlee van der Graaf

PhD Thesis

14 September 2018

IEP de Paris

France

Χορός:

γ. 1350 [...] μεγάλοι δὲ λόγοι
μεγάλας πληγὰς τῶν ὑπεραύχων
ἀποτίσαντες
γῆρα τὸ φρονεῖν ἐδίδαξαν.

Koor:

Grote woorden met grote slagen
door hoogmoedigen geboet,
geven laat een les in denken.

Sophocles, *Antigone*, translation: Gerard Koolschijn

Vladimir - Ou sont tes chaussures?

Estragon - J'ai dû les jeter.

Vladimir - Quand?

Estragon - Je ne sais pas.

Vladimir - Pourquoi?

Estragon - Je ne me rappelle pas.

Vladimir - Non, je veux dire, pourquoi tu les as jetées?

Estragon - Elles me faisaient mal.

Vladimir (*montrant les chaussures*) - Les voilà. (*Estragon regarde les chaussures.*) A l'endroit même où tu les as posées hier soir.

Estragon va vers les chaussures, se penche, les inspecte de près.

Estragon - Ce ne sont pas les miennes.

Vladimir - Pas les tiennes!

Estragon - Les miennes étaient noires.

Vladimir - Tu es sûr que les tiennes étaient noires?

Estragon - C'est à dire qu'elles étaient grises.

Vladimir - Et celles-ci sont jaunes? Fais voir.

Estragon (*soulevant une chaussure*) - Enfin, elles sont verdâtres.

Vladimir (*avancant*) - Fais voir. (*Estragon lui donne la chaussure.*

Vladimir la regarde, la jette avec colère) Ça alors!

Estragon - Tu vois ça c'est des ...

Vladimir - Je vois ce que c'est. Oui je vois ce qui c'est passé.

Estragon - Tout ça c'est des ...

Samuel Beckett, *En Attendant Godot*

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Contents

1	Introduction	13
2	Methodology	37
2.1	Research Design	38
2.2	The research	47
2.2.1	Access and Location	48
2.2.2	Being a Participant	51
2.2.3	Masculine Dominance and Observations	55
2.3	Conclusion	64
I	Risk Management?	67
3	Framing Financial Market Risks: The question of reception	69
3.1	European Regulation	72
3.2	Market Environment	76
3.3	Risk management Departments	81
3.3.1	Bank F	81
3.3.2	Insurance Company V	83
3.4	Numbers and hierarchy	87
3.5	Conclusion	102
4	Opening up the black box of financial risk	105
4.1	Risk in Banking	109
4.2	Risk in Insurance	119
4.3	Who says what?	127

4.3.1	Risk Questionnaire Bank	130
4.3.2	Risk Definition Questionnaire Insurance	135
4.4	Interest Rate Risk	140
4.5	Conclusion	153
II	Working in Risk Management	157
5	Controlling the Risk Ascription	161
5.1	Disciplining limits?	167
5.2	Ascribing risk measures to products	169
5.3	What Control?	179
5.3.1	Creating Knowledge: Information Needs	181
5.3.2	The Reception of Risk Ascriptions	191
5.3.3	So what happened with the limits?	197
5.4	Conclusion: Lacking resources to control through knowledge . . .	199
6	Managing Financial Consequences	201
6.1	Risk managers' contacts	204
6.2	Risk For The Shareholder	217
6.3	Risk and the Regulator	227
6.4	Conclusion	239
III	Making the Risks With Internal and External Con-	241
	straints	
7	Creating the Body of Health	251
7.1	Reclassifying Assets and Liabilities for Gains in Capital	252
7.2	The Profit and Loss Attribution	256
7.3	Answering The Regulator	276
7.4	Conclusion	283
8	Body of Health or Body of Disease?	285
8.1	The Default	287

8.2	Managing Liquidity	295
8.3	Making the Asset Values	302
8.4	Conclusion	312
9	The Fairest Value	315
9.1	Fair Value in Banking and Insurance	319
9.2	The Bloomberg Person: Bond Valuations in Bank F	323
9.3	Meeting on Models of Swaps - Do we have the right value towards our counterparty?	329
9.4	Answering the Right Asset Risks	338
9.5	Conclusion: Usages of Fair Value in Risk Management	343
10	Conclusion	345
10.1	Financial Market Risk Management in Large Financial Organisa- tions	346
10.2	Markets, Models or Organisations?	349
10.3	Reflection	353
	Résumé Français	357
	Addendum I - Names and Organisations	369
	Addendum II - Questionnaire	375
	Addendum III - MCA Data	377
	Addendum IV - List of Abbreviations	383
	References	385

List of Figures

4.1	Variables of Bank F's MCA	131
4.2	Dimension 1 and 2 MCA Bank F Financial Risk Management . .	133
4.3	Variables of Insurance Company V's MCA	136
4.4	Dimension 1 and 2 of the Insurance MCA	139
4.5	Expected Income of a bond at point t , disregarding payments related to bond value	146
4.6	Expected Income of bond at point t with swap	146
4.7	Discounted Value of Asset	147
6.1	Bank F Work Network	207
6.2	Bank F Help Network	208
6.3	Insurance Company V - Work Network	209
6.4	Insurance Company V - Help Network	210
6.5	Bank F Risk Managers' Contacts Per Department	212
6.6	Insurance Company V's Risk Managers' Contacts Per Department	212
6.7	LBS' help ego networks at Bank F	224
6.8	MPR's help ego networks at Bank F	225

Chapter 1

Introduction

Lehman Brothers fell in September 2008 taking the world economy with it. The subordinate debt crisis came first, the Great Recession followed. An accumulation of US mortgages turned into bad debt. Many financial organisations had picked and mixed these loans, creating what seemed like safe securities. All over the world, investors had bought these alleged low risk bonds. When a significant amount of the underlying debt failed, the investments' indication quickly went from low to high risk. Best case scenario, financial firms had to write-off debt. Worst case, they declared bankruptcy.

The investments and related financial risk assessments did not only lay the grounds for the Great Recession. When the markets and banks went under, national economies and sovereign financing collapsed as well. The Greek crisis, starting in 2010, demonstrates finance's hold on society in an exemplary manner. The Greek state depended on foreign debt, partially from European financial organisations. The exposure, as it is called in financial terms, of these firms prevented European governments from letting Greece default. Financial markets and organisations held Greek society hostage.

Before the crisis, the financial organisations' risk assessments indicated that Greek sovereign bonds were a good investment. The moment the country was about to go bankrupt, the investment lost its soundness. The risk assessments changed and as a consequence, financial actors put a halt to their asset purchases. With that, the Greek state lost its future financing. As a consequence, Greece

did not have enough money to pay back its loans.

The other EU states did not allow Greece to bankrupt. They feared the financial markets would react negatively to their own cost of debt and especially for the health of European financial organisations that owned Greek debt (Pénet & Mallard, 2014).

Financial organisations had willingly taken on the risks of the Greek state. Nevertheless, the European states shielded the firms and protected them from losses. After a couple of years of bail-outs and crises, the different European financial firms did write-off some debt. However, they did so slowly, without too much direct stress on the financial system (ECB, 2012).

People in Greece did feel the immediate negative effects. The International Monetary Fund, the European Central Bank and European Commission, had demanded austerity policies in lieu of default. One of the noticeable effects of austerity was the decreased funding of healthcare. The limited funding to healthcare, leading to a direct decrease in health standards for people in Greece (Karanikolos et al., 2013). Finance's consequence avoidance from its own risk taking had affected the physical well being of the Greek population.

Financial organisations had invested in Greek sovereign debt based on their internal, positive, risk assessments. But risks can also yield negative consequences, an investment can always turn into a loss. This happened with Greece, where the country could not pay off its debt. However, the firms themselves were of such importance to the other states and supra-national actors of the European Union. The EUs immediate preference lay on the protection of financial firms rather than the immediate well-being of people in Greece.

The importance of financial firms for the state relates directly to the topic of risk. The risks financial firms take can turn into a loss, destabilising an economy and consequently a society. Financial market actors measure, take and account for risks when they invest. With that, they accept the possibility of losses and even default. Risk assessments would allow for control over possible losses. They are a form of knowledge about negative events that might happen to their investments. Nevertheless, the Greek crisis shows that risk assessments do not necessarily predict financial losses.

In financial organisations, a specific division takes care of risks in financial

organisations: the risk management division. The people in this division are the risk managers. They calculate, assess and report on the risks taken with different financial market investments. They therefore try to control the risks taken by the financial organisation.

Investment strategies of large financial firms contain an inherent paradox. On the one hand, market theory states that returns and risks are related. On the other hand, the firm's formal organisation has separated the two. So how can we understand the risk side of financial return equation? This puzzle, an opposition between market ideals and formal organisation, is the basis of this research. When thinking of the financial market risks, we might focus on the possibility of losses of one investment or one portfolio. Or, we might think of the financial system and the risks it contains for other economic actors.

Managing risks is more than an assessment of future losses. It is also about encountering those negative events. One question should be asked specifically: Who loses money in the end? Within the limitations of this thesis, that answer is the financial organisation itself. The latter is not just a set of people who horizontally interact with one another. It is itself a financial actor, with a balance sheet, and with an internal hierarchy with official and unofficial rules, a social entity. This thesis thus opens up a world beyond the financial markets: the creation of the organisations' risks.

In this thesis, I try to understand¹ the creation of risks by risk managers in large financial organisations. This leads to the following main research question: *Why do risk managers in large financial organisations manage risks as they do?* In order to answer that question, there are two sub-questions. First of all, we need to understand what these financial risks are. Thus, sub-question one is: *What are financial market risks in large financial organisations?* Secondly, it is necessary to know what risk managers do. Consequently, sub-question two is: *What do financial risk managers do in large financial organisations?*

With the help of an ethnography, I have been able to answer these research questions. I collected data on risk management practices through interviews, participant observations and assistance to semi-public meetings. This all hap-

¹*Verstehen* in the Weberian sociological tradition, in understanding the social meaning behind of an action or an object (Tucker, 1965; Weber, 1978; Giordano & Depoorter, 1997).

pened between 2013 and 2016. The participant observations are the main data source and took place in Bank F and Insurance Company V.

The organisations I have studied, banks and insurance companies, all operate within global financial interdependencies. Global does not mean equal access all over the world. It indicates the dominance of a (relatively) small set of actors (Clark, 2005). Banks, asset managers, brokers, hedge funds, insurance companies all partake in the worldwide financial flows. They all depend on one another, to a more or a lesser extent (Milesi-Ferretti & Tille, 2011).

In this thesis, I have made the choice to look at insurance companies and banks. I have done so for empirical reasons. Namely, banks and insurance companies together redistribute a large part of investments in the EU. Other financial intermediaries (brokers, asset managers) might still touch their investments but insurance companies and banks keep these investments on their balance sheet. They take money from smaller investors and transfer this to financial products. Amongst others, investors, savers, states and insurance clients have to pass through these large organisations to access financial markets. Besides their financial redistribution, banks and insurance companies encounter similar regulatory scrutiny regarding their financial risk taking.

Banks and Insurance Companies in the euro area

Due to their central role in the economy, banks have been studied relatively extensively in the social sciences (Stearns & Mizruchi, 2005). Insurance companies, on the other hand, have been left aside by those interested in financial markets. Sociological interest has lied in the insurance products their re-selling rather than their financial resources of these organisations (Zelizer, 1978; Levy, 2012; Jarzabkowski, Bednarek, & Spee, 2015). However, just as bank in the euro area, insurance companies have a role in financial markets. What is called the asset side of these organisation, the financial investments, have not encountered any sociological scrutiny.

Just as banks, insurance companies have a key role in financial markets. The following statistics give an illustration of their weight. According to the ECB (2017), banks in the euro area had 3.2 (320%) times the amount of assets than the GDP in 2016. Insurance companies in the Euro area had 69% of the total

GDP in assets. If we add pension funds, the two have assets worth a 100% of Euro area GDP. Insurance companies and pension funds together owned 40% of the euro area's debt securities to non-financial corporations, banks 20%. Banks delivered 71% of the loans to non-financial corporations, insurance companies only 1%. The two types of organisations thus finance a large share of other economic activity in the euro area with different investment preferences.

Insurance companies are part of the group of institutional investors. Together with pension funds they have large amounts of funds they have large amounts of cash that need to be invested over longer period of time. Depending on the country, insurance companies or pension funds are more important. In The Netherlands for example, in 2016 14% of the financial sector's total assets came from pension funds and only 5% from insurances. France is the complete opposite case, where insurance companies have incorporated pension funds. Insurance companies there held 20% of the total financial sector's assets in 2016 (ECB, 2017). Since these institutional investors have an abundance of cash, they have the ability to influence the financing and governance of the corporations they (want to) invest in (McCahery, Sautner, & Starks, 2016).

While the two types of financial organisations have a large sway over financial flows, they can also impact state financing and national GDPs. The events of the financial crisis are the clear example that banks can diminish economic wealth is evident. Lehmann Brothers was one example. The failures of Northern Rock, Bankia, Dexia and Fortis should not be seen as less important examples of banks that caused grave economic consequences. They did or could have brought the related economies with them.

Not only banks went down in the financial crisis. One of the most consequential bankruptcies during the 2007/2008 crisis was the fall of AIG, a large US insurance companies. They received a government bailout in the autumn of 2008 (Sjostrom Jr, 2009). One of the products they had sold en masse were credit default swaps (CDS) on collateralized debt obligations of mortgage-backed securities. These CDS resembled an insurance on the default of the obligation. AIG's financial services division had sold so many of them that when the markets went down, AIG went down with it. Where Lehmann Brothers did not receive bail-out funds, AIG did (US Senate, 2010).

Where social scientists have shown a lack of interest in insurance companies, regulators have understood the financial weight of these organisations. Insurance companies fall within the SIFI framework. SIFIs are Systematically Important Financial Institutions that can bring the world economy down with them in case of bankruptcy (G20, 2009). The US regulator the Financial Stability Board (FSB) has categorised multiple European insurance groups as SIFI (FSB, 2013, 2016). The European insurance regulator is the European insurance and occupational pensions authority (EIOPA). It has not adopted the SIFI framework. They do not make a distinction between the insurance companies. However, EIOPA does acknowledge the systemic importance of insurance companies (EIOPA, 2015). Just like the ECB, EIOPA produces a bi-annually financial stability report on the banking sector. Insurance companies find themselves under intense scrutiny because of their strategic importance in financial markets.

In order to affect financing, the different financial organisations need to have money. But where does this come from? The two types of organisations have different forms of financing. Banks have the ability to create money by attracting short- and long-term savings, lending out more money than they initially obtained. Insurance companies do not have this leverage function. They assemble funds by selling insurance products and creating provisions for the pay-outs promised in the insurance contracts.

In the EU, banks combine retail and investment banking (ECB, 2016). In the largest banks of the Euro area, such as BNP Paribas, Deutsche Bank, Société Générale and ING, you can both open a savings account and pay for advice about your company's merger. This thesis focuses on the financial market side of these organisations. There, bankers buy and sell stocks or fixed income products for their clients, such as bonds and derivatives. They directly create and redistribute financial market products. Insurance companies generally do not do so. They have asset managers that carry out the transactions.

Insurance companies concentrate savings yet they do not have the same intermediary role banks have in financial markets. They do not redistribute short-term savings or invest directly for their clients. Their relative importance in the financial flows comes from the investments they make. Insurance companies obtain the funding for these investments in two ways.

First of all, they have to keep provisions to pay back their client. When a client namely buys an insurance product, they expect to receive a pay-out in the future. For all insurance products it sells, the insurance company promises the restitution of a monetary value. That can be in case of adversity, for example after a flood or a car accident. The insurance company can also promise to pay money at a specific date, for example when someone wants to retire. The insurance company needs to make sure it can pay back their clients. So they invest client payments to uphold their promises in a later moment.

Long-term savings products are insurance companies' second form of financing. Life insurances and pension products are long term savings. Only, the rules to return the money are different between the different products. The pay-out of a pension depends on the date and of an old-fashioned life insurance product on the death of a person. Pay-out at death limits itself to a very specific type of life insurances. These are the old-fashioned death insurances Zelizer (ibid.) describes. Life insurances have evolved. Under certain EU jurisdictions, most notably in France and Italy, insurance companies can sell savings accounts. These products are also called life insurance. For each of these products, the company invests in financial products. With these investments, the insurers make sure they can pay-out the money promised to their clients in the life insurance contracts.

While they resemble one another, banks and insurance companies thus also have some different economic characteristics. Most importantly, they fall under separate regulation. Banks have access to central bank funds. Insurance companies are not allowed to touch this money. Consequently, they do not have same capacity as banks to obtain liquidity since they cannot expect the same short-term access.

European directives CRD IV and Solveny II indicate banks and insurance companies have to calculate their risks. The regulations state that the two financial organisations have to determine a risk appetite and follow it in their financial market activities. The regulation states the organisations have to keep a specific amount of capital to guard them from financial losses. Large organisations can determine the calculations behind the capital requirements on their own, with an internal model. Only banks and insurance companies have to do

follow the capital requirements rules in the EU. Pension funds, asset managers or hedge funds do not know such regulatory constraint.

CRD IV and Solvency II are two different sets of regulations. Fully comparing the two would be writing a different thesis. However, their main difference does matter for this research. Namely, Solvency II takes into account insurance risks, CRD IV credit risks. Both want their respective organisations to calculate financial market risks. With the credit or insurance aspects, the two directives regulate the risks of the organisations in a different way. Solvency II requires insurance companies to calculate risks for both liabilities and assets. CRD IV only wants banks to calculate risks for the assets. Solvency II thus has a whole balance sheet view, where CRD IV looks at the separate investments.

The access to central bank funding and the balance sheet focus in the capital requirements make banks and insurance's risk management different. At the same time, both organisations have to deal with similar financial products and capital requirement models. Both could threaten the stability of the EU economies and had previously done so.

This research focuses on two of these organisations. Even though the empirical material gathered encompasses multiple firms, the main results come from the participant observations carried out in Bank F and Insurance Company V. Bank F is a bank in the Euro-area that existed solely with the grace of the sovereign. A set of nation states kept the bank alive. Roughly 20 risk managers wrote reports, looked at methodologies and controlled data of financial market objects. A special calculation department did the risk calculations. The risk managers used the outcomes of the calculations for their reports.

Insurance Company V is a local branch of one of the largest European insurance companies. I worked in the life and financial risk department, part of the risk division, in the team that dealt with the risk model. Solvency II regulation requires Insurance Companies to have comprehensive risk calculations. Insurance Company V had opted for the possibility to create its internal model. The team I was part of worked on the model calculations. Roughly nine risk managers made up the small team on the model. Four to five consultants and the equivalent number of interns helped them in their daily tasks.

Before going into the analysis of these organisation, it is important to know

where to look. Luckily, sociological literature can help there. So how can we understand the financial market risks they take? The literature has brought forward multiple useful theories in how to understand organisations, financial markets and risks.

Theoretical Background

To understand the risk management in these firms, this research relies on aspects from multiple literatures due to the complexity of financial markets and their organisations. I situate it within the social studies of finance, where the local interactions between object and people are seen to create financial markets. However, this literature does not suffice to understand the organisational dimension of this research. To fully explain the risk managers' work, I use aspects of three different literatures in organisational studies, neo-institutional theory, resource dependency theory and studies of local rationalities in organisations. With that, this research brings together theories of resources and theories of control through knowledge. However, the background of this research comes from an economical paradox, namely the relationship between risk and profit.

It all starts with a paradox. In economic theory risk and profit directly relate to one another. The amount of profit one could make would depend on the amount of risks one is willing to take. The two are thus part of the same economic equation. However, in financial organisations, two different divisions take care of risk and profit. There is risk management and there is the front office or business division. Risk and profit are divided rather than a mathematical entity. So how do economic theory and division of labour come together in social life?

Within hegemonic economics, risk directly relates to profit. The classical distinction comes from Knight's definition (1921) of risk as the calculable future negative consequences and uncertainty as the unknown. Even though Knight links uncertainty and profit, the concept has taken a turn in financial theory. Since risks are known and calculable, they can help us predict our future profits. Markowitz's portfolio theory (1952) directly relates the willingness to take risks to expected profit. He thereby directly links the two to one outcome: the final return. Expectations and actual profit are thereby directly related to risks. With that, the investment decision is one that combines the two rather than looking

at them as separate objects.

The question of risk appetite and investments is still posed in modern economic research. For example, it is even used to explain different crises, such as the 2007/2008 financial crisis along with the Asian and Russian crisis of 1997/1998. The crisis situation gave investors less of a risk appetite, which made them less willing to invest, exacerbating the situation (Kumar & Persaud, 2002; Chudik & Fratzscher, 2011). In a similar vein, the risk appetite of investors is seen as a factor that changes sovereign bond rates. Even when a country's economic situation remains similar, its bond values can change because investors have more or less risk appetite (Baek, Bandopadhyaya, & Du, 2005; Remolona, Scatigna, & Wu, 2008). Indexes on the risk appetite on sovereign bonds are even used to predict contagion in a financial market (González-Hermosillo, 2008). Investors would step out of a market if their risk appetite decreased, requiring higher returns for less of the risk and thereby changing the market conditions.

An analysis of a risk index can give statistical support to the question of risk, returns and crises. Fundamental questions, however, remain unanswered. Namely, why do investors see risks one way or the other? And if we were to know about the risks, how is it possible that investors shift their risk appetites from one day to the other? They did so with their investments in the Greek state. The events of the different financial and economic crises since 2007 put question marks around the empirical soundness of the theory of risk appetite.

Risk appetites and related risk assessments imply that investors have a direct knowledge of the risks. However, within financial organisations, there is another actor behind the trader who invests on these financial markets. That is the risk manager, creating and implementing risk assessments. Other than investors in the same organisation, they carry the responsibility to control the risk appetite. There is therefore a division of labour within the organisation between those who take care of risks, the risk managers, and those who invest directly on financial markets, the investors or traders.

Economic theory implies a direct relationship between risk and returns. The two are split in the organisational division of labour. The concepts of risks and returns belong to different departments, which have different resources and objectives. By splitting the equation of profit into two different organisational

centres, an organisational opposition is created. The literature on traders and investors tells us that the maximisation of expected returns has the moreal high ground in financial firms. Profits become individualised achievements, directly related to their remuneration (Godechot, 2001; Ho, 2009; Ortiz, 2014a). The maximisation of expected returns, as an organisation and individual investor, contradicts the control of risk appetite more often than not. If the risk appetite is not controlled, the search for expected returns could theoretically go to the infinite. The boundary of the optimisation, the risk appetite, does not exist any more. At the same time, that would mean limitless losses.²

A paradox thus exists between economic theory and risks taken within large financial organisations. On the one hand, there is the union of risk and profit; on the other a separation. So what happens, empirically? How do profit and risk come together in financial organisations?

Applying Organisational Studies to Financial Organisations

Financial organisations have not received enough attention from sociology, especially when compared to their impact on society. We do not know adequate knowledge about banks and insurance companies' internal workings. Luckily, two adjacent academic bodies of literature exist. First of all, there is extensive research on organisations within organisation studies. The literature gives a frame to understand organisations' internal and external environment. Secondly, there are the social studies of finance. Scholars in this field have looked at the workings of financial markets, furthering understanding of these spaces of interactions.

The division of labour between risk and profit have made it necessary for

²This relates to the following question: can one lose more than one invests? If I were to invest a 100€ in French government bonds and France became bankrupt, I would indeed not be able to lose more than 100€. However, financial products do exist where one can lose more than the initial input. An example of such a product is the short-selling of an asset. In the case of a French government bond, I would expect the French sovereign bonds to drop in value. So, I borrow a bond value of 100€ for a week from someone. I sell the bond for a 100€ and need to buy it back after a week. If the value drops to 90€, as I expected, I buy the 90€ bond and give it back to the person I borrowed it from. That would give me a return of 10€. However, the bond values could also increase in an instant, without a limit. For example, the value goes up from 100€ to 500€ in a week. I would still need to return the bond back so I would need to buy the bond again, even at 500€. So I would have lost 400€.

me to go into the firm. On the one hand, an organisation brings together a set of actors. The people working inside make up the production and value of the organisation. Organisations are a clear example of forms of collective action. At the same time, organisations themselves are actors. Their legal status directly makes this so. Organisations can own, owe and act. While they do not resemble a human being, they do have the features of an actor.

Organisations do not just stand by themselves. They exist by the grace of internal and external resources and standards. States, for example, give the judicial environment in which firms can thrive or not. Other firms, in the same or a different sector, finance and produce the goods an organisation needs for its continuation (Pfeffer & Salancik, 1978; Davis & Cobb, 2010). Even though competition might exist, firms also cooperate with one another since they need each other to survive (Fligstein, 1993).

Financial organisations operate in a network of resource dependencies. For example, banks and insurance companies need licences from the regulators to operate. A bank, most of the times, also needs its ‘colleague’ banks to fund them through the interbanking market. Insurance companies need asset managers, brokers and investment banks to carry out a transaction in the financial markets. Banks, at the same time, need insurance companies’ funds to earn money with their trading facilities.

Not only do firms rely on other organisations’ resources, they also act within a certain set of knowledge standards. Neo-institutionalism calls the long lasting standards institutions. Organisations have to adhere to sets of rules to make sure that they can continue their actions. The neo-institutional perspective looks at the sets of norms that organisations act in accordance with, by applying, changing or denying them in one form or the other (Scott, 2008). Generally, organisations apply these knowledge standards to survive (DiMaggio & Powell, 1983). The standard might not always be right, organisations continue to apply them because other organisations do so as well.

Institutions have many definitions but can generally be seen as a standard that actors have adhered to for a very long time (Friedberg, 1998; Greenwood, Oliver, Suddaby, & Sahlin-Andersson, 2008). They are a knowledge standard

setting the tone for organisational actions (Hasselbladh & Kallinikos, 2000).³ The norm itself is sustained because actors continuously enact and perpetuate it. Actors can punish others when they do not follow the standard. Organisations thus adhere to the knowledge standard they maintain.

For financial organisations, the standard is shareholder value where they focus in their communications and reproduction of value on their owners. The organisation would exist to maximise the value to the shareholders (Fligstein *ibid.*). Shareholder value relates to an accounting standard, where the quarterly and annual reports show the owners' gains (Carruthers, 1995). Failing to optimise these measures, or at least not keeping the shareholders happy, would breach the financial sector's norms.

The standard of shareholder value especially exists for US organisations. In the EU, different forms of political economies exist. The change in economic make-up means that other standards apply for organisations (Rhodes & Apeldoorn, 1998; Williams, 2000). However, in this thesis I talk about financial organisations in the EU that do adhere shareholder value standards. The financial sector is namely the main propagator of shareholder value norm (Ho, 2009; Ouroussoff, 2010). The financial sector is a global sector, dominated within by US legal standards (Riles, 2011). Consequently, even with the EUs political economies, the EUs financial firms perpetuate shareholder value standards.

I thus identify shareholder value as a knowledge standard in which financial organisations operate. As Bergeron and Castel (2016) argue, adherence to a standard is not enough to explain all organisational forms. The classics in organisational studies also highlight the importance of resources, in the direct interactions between actors. Resource dependency theory is a key example where organisations are interdependent (Pfeffer and Salancik *ibid.*, Davis and Cobb *ibid.*).

With the dependency on resources comes the question of the locus of action. Who decides on what? Even though an organisation acts themselves, the actors on the inside construct the organisation (Friedberg, 1997). A trader decides

³In this thesis I do not make a distinction between long-term, the institution, and a short-term standard. Research in finance on the difference between institution and normal standard is worthwhile (François & Frezal, 2018) but beyond the scope of this research.

upon the final transaction, the risk manager makes the risk data. Together, the internal actors also make the representation of the organisation. Certain scholars have tried to bring neo-institutionalism to this local environment, for example when explaining teaching activities in Chicago schools (Hallett & Ventresca, 2006; Hallett, 2010). However, they still focus on the mechanisms that make people adhere to a knowledge standard. They do not look into the local creation of meanings.

Local rationalities make the organisation (Crozier & Friedberg, 1977). Take the work of Roy (1952) and Burawoy (1979) on manufacturing processes. They demonstrate how the workers create their own knowledge standards on the production line. Burawoy, especially, (*ibid.*) shows the game the workers play with the official rules. To optimise production, the car manufacturer rewarded more pay for the creation of more products. The workers, however, had their own norms. Their own standards made working at the factory bearable, adapting their work such that they were not bored or lose too much income. The workers enforced their own norms between themselves. Similarly, Sauder and Espeland (2009) see a game with the official rules. They show how law school rankings affect actions of law schools. Thus, local interactions within the organisation determine production and adherence to an external knowledge standard.

Actors in and outside organisations do not only have their own knowledge standards, they also have their own resources. All actors have varying levels of resources to negotiate their position. First of all, an organisation has an official resource distribution. The Chief Executive Officer has the official decision making power. He has more of this than the cleaner in the evening shift. The hierarchy distributes formal resources but informal ones also exist. They are not exclusive to employees in the hierarchy's upper-level positions, such as supervisors and managers; people lacking hierarchical power can also have resources. People with informal resources can change production processes or require everybody to follow the formal rules, hindering actions. Everybody in the organisational setting possesses resources of reciprocal benefit (Crozier 1963, Bergeron and Castel *ibid.*).

Organisations thus consist of multiple layers with knowledge standards and resources distributions on the in and outside. Therefore, understanding financial

market risks in large financial organisations means taking into account these four dimensions. Yet organisation studies do not provide the tools to understand the specifics of financial markets. This is where the social studies of finance comes in.

Financial Risk and the Social Studies of Finance

The main theme in the social studies of finance is the creation of knowledge of financial markets. Scholars in this field find a background in the social studies of science and technology as well as more standard sociology. They have focused on the people who invest, the models they use and the markets in which the models are used.

Within the social studies of finance, scholars have left aside the organisation as a separate entity of resources and dependencies. However, some researchers have taken into account the knowledge within organisations. Either they take the organisation as a place of non-hierarchical knowledge exchanges, as Beunza and Stark (2004) do, or with the view of institutions (Zuckerman, 2000; Wansleben, 2012). The strength of the research in the social studies of finance lies in their explanation of models, interactions and profits.

One of the main aspects of the social studies of finance is the calculative agent, embedded in economic sciences. Callon (1998) posed the thesis that economic actions, such as those in financial markets, are calculative. These calculative agents use the knowledge and standards produced in economic sciences. A strict form of performativity comes out, where the economic actor (including material ones) performs as the theory and knowledge standards would say they would. The theory thus makes the social world and not the other way around.

The calculative agent matters here, the object that creates a marketable entity. The former comes out of a framing process, where different characteristics are brought together, made comparable and have a transitive outcome (Callon, 1998; Callon & Muniesa, 2005). Framing is not just creating a frame; multiple techniques are involved. I therefore call the Callonian form technical framing. This process takes into account certain aspects of the object and its environment into account whilst others are left out. A mathematical formula, for example, can calculate the value of a strawberry based on its colour and weight. The equation leaves out the truck on which the strawberry came to the market or

the exact composition of the soil they grew on. Performativity is based on the idea of framing with the economic theory and standards in the background as the legitimate knowledge practice.

One of the key-examples of this strict economic embeddedness and performativity is Paris Bourse's creation of the end-of-day algorithm. Real-time prices came to this stock market and with that an end-of-day price that could be the last transaction and therefore easily changeable. In the end, the last price was programmed in such a way that it represented a series of transactions and with that the full-information of the market (Muniesa, 2000). The specific economic knowledge of full-information prices thus made a part of the market infrastructure.

I could apply Callon's performativity to financial market risks. Risk managers would then implement economic theory on risks. They would create a framing process: a rational technique, that assembles a product's characteristics with a final risk number.

Financial market risks could fit a rational economic theory. De Goede (2005) shows the historic genesis of financial risk assessments. According to her, rationality of risk taking helped finance become an acceptable activity. Before risks became related to investments, they had the label of speculation. In 19th century England and the US, speculation was immoral and feminine. Speculation related to gambling, the wrong way to earn money. Risks gave the possibility to handle the future in a rational way. Calculating and taking risks thus became an accepted form of investing one's money. De Goede (ibid.) does not demonstrate Callonian performativity. However, she does explain the acceptance of a rational technique of investments. She shows how risks become a knowledge standard in financial markets, they are a way to control the future.

Not only did risks belong to the genesis of the modern day financial markets. They are still an essential part of it. Zaloom (2004) shows how traders at the Chicago Board of Exchange's futures market embody risk taking. Their social status relates to the amount of possible risk they are willing to take in their trades, in order to make financial profits. They have total bodily focus on the market and the risks they take in it. Risks are thus a key part of financial market investments and trades.

Where De Goede (*ibid.*) shows that risks became the knowledge standard in financial markets, Zaloom (*ibid.*) provides evidence that risks go beyond rationality. The traders embody and act on the thrill of risk seeking. But what about the object of financial market risks?

Scholars in science and technology studies and sociology have looked at economic risks, not financial market risks. They have especially investigated credit risks; the possible monetary losses related to lending money. Even though credits and financial market investments are not the same, both are economic risks. Lenders, on the one hand, can calculate credit risks of their counterparties on their own. At the same time, another type of organisation exists that specialises in the subject, namely credit rating agencies.

In the US, different firms started to calculate the credit ratings of businesses in the middle of the 19th century. At the time, corporate transactions depended heavily on credit amongst business partners. Credit ratings eliminated some unknowns about the business partners' ability to pay back the money (Poon, 2012; Carruthers, 2013). A rating is a simple assessment that can be compared to other ratings. For example, if your business has an A rating, it has more credit worthiness than one assessed as B but less than a business with an AA rating. The comparative aspect of ratings unified the credit quality of the different businesses around the US.

In the 1950s, consumers also received credit ratings in the US with the appearance of Fair & Isaac company (Poon, 2007). The credit score, a simple form of categorising and quantifying, helped the development of the US mortgage markets by standardising mortgages and making them into re-sellable objects. These risk assessments have become a knowledge practice that makes products comparable and saleable. The commensurable characteristic of the ratings makes them close to what Callon calls a calculative agency and are the outcome of the framing process.

Similarly, scholars in social studies of finance have started to include the social construction of financial objects. MacKenzie and Millo's research (2003) into the Black-Scholes-Merton model (BSM) brings the social situation of the option market together with the developments in financial theory. The option market did exist before the BSM model but the traders encountered difficulties

pricing the products. The BSM model got rid of that problem and was relatively easy to use. MacKenzie (2008) defined multiple types of performativity, from a Barnesian performativity where the social uses of economic concepts make the market act like economic theory to a generic performativity where economic concepts are used by market participants (MacKenzie 2008, p.17).

Muniesa (2014) moves away from Callon's strict economic embeddedness. He defines a performativity that resembles Austin's speech acts⁴, not purely restricted to economic theory. He relates performativity to two aspects: 'that to signify is to act [...and...] to effect is to bring reality about' (Muniesa 2014, p. 16). He uses performativity as a general term for the creation of a reality through economic assessments. Knowledge practices have moved beyond the sole question of economic theory. Economic action has become a continuous form of knowledge practices and material actions that create the social world.

Empirical investigations into markets have shown a multitude of knowledge practices. Take the different types of models used in the derivative markets. Even though financial markets actors' interest rate swaps have a base in financial theory, they developed their valuation techniques with the usages of the different market participants (Spears, 2014). MacKenzie and Spears (2014) call this an evaluation culture that spans over multiple organisations.

Different types of these legitimacies can also be seen amongst asset managers (Arjaliès, Grant, Hardie, MacKenzie, & Svetlova, 2017). Multiple knowledge practices thus exist across financial markets and even within similar firms. Thus, different actors use more or less accepted knowledge practices to adhere to the norm. They re-enforce or modify the knowledge standard by acting towards it.

Risk and Control

The knowledge standards and rules that people are expected to adhere to in financial markets can be related to Foucauldian control through risks. Risk assessments would allow for a control of the population (Ewald, 1986; Borraz, 2008). The knowledge diffused through the assessments would set the norm

⁴Austin (1975) defined performative utterances, where the act of a communication creates a new reality. For example, the naming of a new born baby, or the creation of accounting numbers

for behaviour. If someone does not adhere to this known standard, all can see the deviation. With that, punishment to breaking the norm can come from everywhere and everyone. Even though these ideas do not explain the multitude of knowledge practices, it does explain the importance of adherence.

In the case of natural and technological risks, one prevents risks rather than willingly takes them. Take the example of insurance policies, here to help us avoid and manage the risks of life insurance (Ewald, 1991). Complex sets of policies and governmental agencies have created arrangements that both measure and closely observe all types of dangerous activities such as industrial processes and possible health threats (Borraz *ibid.*). Risks are measured and observed so that they cannot turn into hazardous events, or accidents.

A similar view exists towards the risks of the financial organisation such as banks and insurance companies, focused on the control of risk through numbers. With the introduction of enterprise risk management, financial organisations would manage their activities based on quantified risk assessments (Power, 2007a). Mikes (2009, 2011) shows that banks did use quantified risk assessments but depending on the organisation, qualitative and holistic visions of risk management could also be put in place. Therefore, depending on the organisation, control would happen through measurements or more qualitative assessments.

The organisation thus matters when investigating risks. The local standards, materials and activities of the organisation create risks, control them and allow for accidents to happen. Take the classic example of the three-mile accident in 1979, where the nuclear reactor leaked radioactive material and polluted the environment. Within the organisational systems of the nuclear facility, multiple things went wrong in the production and security process at the same time. Even though these mistakes by themselves could not cause the accident, their interaction created the disaster (Perrow, 1981).

The production system itself in the organisation thus created and managed the risks. Another example of the importance of the local organisational standards is the Challenger accident, the NASA space shuttle that broke in mid-air just a minute after its launch. Vaughan (1997) went into the entire construction process before the launch. Multiple engineers on multiple levels identified technical problems. NASA and its subsidiaries had working processes that held people

back from pursuing their doubts on the shuttle's level of safety. It was seen as better to obtain deadlines than to comment on the dangers the production could create.

The organisation itself can create risks but also control them, depending on the internal environment. Where Power (ibid.) and Mikes (ibid.) investigate the financial firm, they forget one crucial aspect. Namely, organisations have to adhere themselves to a shareholder value standard. For these firms, profit matters. The financial organisations fall in an institutional situation of shareholder value. Risk control contradicts an unlimited search for short-term profit.

One organisation that gives risks are the rating agencies. They make up one part of an economy determined by financial values and financial flows, a financialized one (Van der Zwan, 2014; Besedovsky, 2017). Ratings themselves look like simple rational assessment, almost innocent. Yet, corporate organisations change their internal policies to adapt to rating agencies demands (Ouroussoff, 2010). If they do not have the right rating, they lose investments. Credit rating agencies create knowledge that others use to distribute resources. At the same time, rating agencies do not monopolize these resources. The agencies themselves namely depend heavily on large banks for their income (Besedovsky, ibid.).

Credit risk and financial risk are both economic risks. Credit ratings are part of a knowledge practice and a resource distribution. One in-depth study exists on financial market risks that partially shows the two mechanisms. Millo and MacKenzie (2009) write about the risk measures of the 1987 crash. They show how the measures did not predict the crash. At the same time, the market actors did not throw them away, they kept using them. The measures, even though they were false, were of use. Thus, a calculation of risk was better than no risk calculation. Usefulness, however, incites the question, useful to whom? Millo and MacKenzie (ibid.) do not go into the specific actors. Nevertheless, they do indicate both the importance of a specific knowledge practice falling within a specific resource distribution.

Organisations and Financial Markets

The organisation would take the possible losses on its balance sheet and is thus a key actor in the case of financial market risks. However, not everyone

is convinced the organisation matters in financial market interactions, especially for the people who carry out the transactions.

Knorr-Cetina (2012) argues that traders have their own social group, outside of the organisation. Multiple authors sustain the idea that those who carry out transactions on financial markets have a privileged position (Godechot, 2001; Ho, 2009). Traders have a higher income, move relatively easily between firms and believe their winnings belong to themselves, not the firm (Godechot, 2007). To argue that they are outside of the organisation goes too far.

Namely, the traders depend on others within the organisation. Most obvious examples are the chairs that traders sit on and the screens that they have in front of them. These belong to and are provided by the firm they work for. Then, there is a whole system that carries out the legal and the operational aspects of a trade (Lépinay, 2011; Muniesa, Chabert, Ducrocq-Grondin, & Scott, 2011; Riles, 2011). Thus, even though it is not obvious, even the financial actions depend on the organisational situation.

The two dimensions found in organisation studies, knowledge standards and resources, also exist in the literature on financial markets and risks. The studies of firms looks at the organisation as an actor as well as the resource distribution within the firm. The creation of financial firms' knowledge has been given little academic attention. At the same time, the social studies of finance goes into the creation of the knowledge of the different financial market participants. Both, on their own topic, indicate the importance of a knowledge standard as well as the resources involved.

This is where the study of financial risk becomes worthwhile, to understand financial markets and the output of organisations. As said at the start, risks are part of the equation of monetary return. At the same time, they remain in the background. Risk management does not have a high status. It is in that sense the other side of the coin of profits, the part that we need to understand to understand the whole coin, the full picture. Just as sociology can study boundaries and the extremes to understand the normal, so can risk help us understand the financial markets. These risks happen in an organisational setting within an unequal resource distributions.

At the same time, the study of financial risks shows the importance of knowl-

edge practices to organisations. Financial market organisations, more or less, adhere to the shareholder value standard, at least in its external accounting. Therefore the way they create this output matters in their ability to adhere to this norm. The internal creation of risk measures and their control in large financial organisations explains how the knowledge practices and the resource distribution come together.

Resources of organisations but also of the people in organisations make actions and communications just as the knowledge standards do. The two interact. However, one does not see the interaction of the two simply by looking at general tendencies or quantitative data. The local matters in order to understand the actual mechanisms that lead to an action and a communication (Vaughan, 1998). Thus, to understand what happens on the risk side of the profit equation, ethnographic data is required. That way, the local knowledge practices and resource distributions can be seen.

So with ethnographic research on financial market risks in large financial organisations, we can understand the junction of knowledge practices and organisational resource distributions. But how do we bring it all together? The literature has given us the materiality of the market, knowledge as a form of control but also the firm itself with its resources and local rationalities/legitimacies. In order to do so, we need a specific vocabulary. Each chapter will bring forward a term that brings together the different aspect of the different theories.

Thesis Outline

The thesis has three parts. The first goes into the usages of knowledge of financial risks, chapter three and four. The following part deals with the risk managers' work in their respective organisations. These are chapters five and six. Last of all, chapter seven, eight and nine bring together the knowledge practices with the organisational resource constraints.

To understand financial market risks in large financial organisations with the local point of view, we need to start at the basics. First of all, the environment and the usage of the material of risks are investigated. Here, the callonian framing is put in contrast to the political framing of communications. The former is what I call technical framing, a creation of the risk assessment based on the knowledge

practices. The latter is political framing, where the assessment is targeted at a specific audience. Both types of framing happen simultaneously but the one that constraints most creates the number.

Knowing more about the environment in which risks are calculated does not yet give clarity about the object itself. Therefore, the next chapter discusses the definition of risks. Even though risk managers work with a multitude of risk definitions, two distinct types can be defined. On the one hand, there is the risk ascription which is the longer term assessments of relatively abstract possible losses. On the other hand, there is the consequence attribution which is the identification and possible avoidance of expected upcoming problems.

The organisational set-up follows in chapter five and six. As already derived from the literature, risk managers have little resources in financial organisations. That means that they do not control the risks taking and the long-term prevention of danger. Their work on the risk ascription has relatively little effect on the people that take the risks in financial markets. For the consequence attribution however, the risk managers do matter. There, the consequences are not necessarily about the financial market actions but about the possible negative effects for shareholders and regulators. The consequences relate directly to a few powerful outsiders. Risk managers handle the consequences that the latter can bring to the company.

This brings us to part three of the thesis where I join the results of the risk managers' work with the knowledge practices. The organisational study shows the importance of the vision of the organisation's outsiders. The risk managers thus work on a specific type of knowledge for the outsiders. Just as a patient and a doctor have different types of knowledges, so do those on the inside of the organisation and those on the outside. The risk managers mainly see a body of illness, an organisation that has continuous difficulties that could turn into possible negative events. The outsider had the resources to either declare a body of health or disease. They could say the organisation was in a good state but also that it was in bad shape. The risk managers are there to help obtain that body of health. They try to give the impression of a good company worth investing in or one that does not need to be punished by the regulator. By doing so, they hope that the resourceful outsider declares a body of health. These different

usages of the different bodies are discussed in chapter seven and eight. Chapter nine will use these ideas to go back to the relationship between market and risk. There we see that risk managers use different types of market ideals in order to obtain what they see as a body of health.

But first, before discussing the data, the methods themselves of how to answer the questions of this research require a discussion. In the next chapter, I describe the research design, data collection and general background of the study.

Chapter 2

Methodology

Before I can discuss risk management, I need a methodology adapted to this object of study. Financial markets and their organisations exist in their own realm. Their participants are generally part of the elite. Additionally, financial organisations are notoriously difficult to access. A study to financial market risks needs an approach adapted to the specificities of the field. The characteristics of financial markets and firms have guided my methodological choices.

Financial markets allow for financial transactions, inherently creating interdependencies. The emitters of a financial product, be it a bond, share or derivative, transfer financial risks to the actor who buys it. So in a discussion of financial risks, a multitude of actors matters. For example, a bond that is bought holds the risk of the company it is based on. Thus the risk is held by one entity but (partially) created by the other. It is a network of financial risk interdependencies. This relates to what Arjalies et al. (2017) call the chains of finance, where multiple actors invest on the same markets through one another. If banks do not handle the trades themselves, they use brokers to carry out the transaction. Insurance companies use asset managers and banks who then carry out the market transactions, possibly with the help of a broker.

Financial organisations are also notoriously closed to outsiders (Ho, 2009; MacKenzie, 2011). One cannot just walk onto a trading floor or into a risk managers' office. Financial organisations have physical barriers such as entry gates and doors that only open when you have the right badge. Even employees

within the organisation have restricted access to offices and work spaces.

The exclusiveness of the sector is exacerbated in financial risk management. The organisation's risks lie at the core of its existence, they namely show if the organisation can stay alive or not. Besides, regulators heavily control the practices of risk management. An outsider's study into financial market risks could thus put the relationship between regulator and organisation into jeopardy. Information about risk management practices could thus threaten both the organisation's regulatory relationship and existence, making it highly sensitive.

In this chapter, I spell out the methodology of the research in this interdependent yet closed world of finance. I argue why participant observation is the optimal tool to understand financial market risk management practices. Before I describe the methods, I go into the research strategies. Afterwards I discuss the way I have used the research tools. I include a reflexivity of the empirical material, showing limits and strengths of the results. But first, I will set out the research design.

2.1 Research Design

In order to understand risk management practices of financial markets in large financial institutions, we need to understand the social. Even though the social seems evident, I want to make sure to avoid ambiguities. The choices in the study of the social influence how I will investigate the object of study.

Research Strategy

In order to study what financial markets entail one should start with the basics, the interactions between the different actors. Other than animals or physical objects, the social world speaks an understandable language. To investigate the social, I do not need to launch a complex model. I can start the research by listening. This relates to the constructivist approach as Berger and Luckmann defined in 1966. People interact and it is their interactions that make the social world. The first scientific step should thus be a study of the social rather than an invisible underlying structure. We can know what people say and how they

interact.

Key in these social interactions is the communication. These can be verbal, non-verbal, textual but all in an environment where there is a sender and a recipient. But the it is always contingent and dependent on the situation the communication takes place in. The elementary particle, or the smallest object of interest the research can be broken down to, is the communication in the interactions.

Interactions can be between humans, humans and objects or between objects themselves. The latter however only if they are interpreted by human communications. In this research, objects are taken into account but they are not the main research object. It is relatively easy to accept the fact that objects communicate. In this research, I accept the premise however, I only take it into account when human communications give meaning to it.

Take the example of financial algorithms that trade on stockmarkets, mainly known as high-frequency trading. The algorithm acts and influences the price one obtains for the derivatives or stocks that one sells. Yet if two algorithms trade amongst one another, thereby in the end not changing the overall price nor the cost or portfolio of the owners of the algorithms, the interaction between the two themselves is not of interest. If the interactions between objects do not impact human communications, they are beyond the scope of this research. The lack of impact of the two algorithms is of course hypothetical. Namely the moment I wrote down that the algorithms interact, I communicated about it, making their actions part of the social world.

With social constructivism, I want to make a note about the generalisability of the research, reproducibility of the methods and repeatability of the results. The basic element of the research is the human interaction. These are local, time specific and depend on the implicated persons. Thus the concepts as generalisability, reproducibility and repeatability of the natural sciences are not always adequate. Time namely changes continuously, as do the people and locations. How can one thus repeat the same results or reproduce the experiment exactly like it was set up? One cannot. Reproducibility and repeatability are limited to the time and social situation the data was found in. That makes the generalisability of the results not evident.

Therefore, the question can be asked, why does the singular knowledge production in this case matter? If it only says something about the specific sphere that it is found in, what does it matter? This is where the concept of contingency comes in. We have to accept that the social constructivist nature of the epistemology make strict repeatability and replicability difficult. However, not everything changes continuously. The way people communicate or accept knowledge and morality can remain relatively similar. It is the continuation of standards and ideas that makes the research worthwhile and relatively generalisable (Flyvbjerg, 2006).

With the elementary particle of the social interaction, I take an abductive approach to research. I start out with a theory, giving guidelines for the data selection. While gathering and analysing the data adjustments can be made to the theory. The data allows for a diversion from the theoretical direction. The analysis of the data gives the final theory (Blaikie, 2007; Ong, 2012).

In the constructivist epistemology, the inductive strategy could also have been a reasonable choice. However, in this strategy it is relatively easy to forget about previously established ideas and their influence. It leaves few opportunities to discuss existing literature. Besides, a serious pitfall is that the object of study does not require clear identification (Timmermans & Tavory, 2012). Since an object of study and related literature exist, it would be unwise to leave out their results aside. This is the reason I have chosen for the abductive strategy.

Concepts and Theories

The research starts with a theoretical paradox, with two theories opposing one another. On the one hand risk management is supposedly a form of control of taking risk through calculations, on the other we can see risk management as being an illegitimate part of finance and therefore lacking control. As the abductive strategy requires, I need to operationalise the theories from previous research.

Within the social studies of finance, the emphasis lies on the knowledge practices of markets as well as the material. Market interactions and markets themselves come from models, different material aspects and standards how to do

things. Models calculate risks as well as the market product values. Standards do not necessarily have to come from theories, they can also come from markets or regulation.

Besides, the question of control exists. Actions either follow a specific set of values set by the risk managers or they do not. People would follow knowledge standards, independent of the position someone has in the organisation. Control also has a second aspect, namely the prevention of negative consequences with the help of technology. That means looking into negative consequences of the financial organisation's actions, such as financial losses or defaults.

The literature also hints at the resources within the organisation, both formal and informal. Under the first category fall the formal decision making power of designated people. For example, do risk managers have the final say over investments? Then, there are informal resources. Within organisations, norms and standards can lead to one person having more legitimacy than someone else. For example, someone working with clients might have more legitimacy to talk about sales than someone who does not.

Then, there are the resources of the organisation itself. As an entity, it depends on other actors. There are the shareholders and different regulatory bodies. The interdependencies between these different actors can pressure the organisation to do one thing or the other. All of these concepts have guided both data gathering and analysis.

Data Collection

The outset is in large financial organisations and is theoretically limited in location to insurance companies and banks in the EU that have their own internal risk capital model. Thus people that work there, or with these companies as well as the firms themselves are of interest. I have chosen to carry out a multi-sited ethnographic study. The interdependencies and closed aspect of financial markets inspired the choice for the research method.

Let me add a comment on the choice for ethnographic data collection rather than quantitative research. Since I take the social interaction as the basis of the research, it is also the elementary particle that I want to study. Quantitative

data, such as statistics on transactions and accounting data, do not show the meaning of the social interaction when created. They are aggregates where the details of construction are lost most of the times. This research focuses on the local interactions, excluding these aggregated figures. Ethnographic data does allow the details of the social interaction to come forward. Non-inferential quantitative data analysis can also be used if combined with the in-depth descriptions of the social.

First of all, to tackle the interdependencies of financial markets I had to make sure I investigated multiple locations. Semi-structured interviews allow for the theoretically inspired, open research in multiple locations. Interviews give an ego-centered story. Participants give information about how they work, what they know and where they come from (Leech, 2002). With interviews, I can access multiple locations and multiple spheres.

I found interviewees and fieldwork locations with the help of the snowballing method (Biernacki & Waldorf, 1981; Beaud & Weber, 2010). An easy way to enter a relatively closed field, one tries to obtain access by finding gatekeepers who open a field and then consecutively asking interviewees for new participants to the research. This technique gives a selection of the field that depends on the gatekeeper and personal preferences of everybody involved.

The interviews also have their downside. They give the participants the possibility to tell a story which works best for them. Past events but also difficult political situations can be narrated from a position that is good for the interviewee. Especially since risk management is a sensitive topic within financial organisations, interviewees can be expected to tell things more rosy than they experience them.

I did 32 interviews with people from all over the financial sector in the EU, in banking, brokerage and insurance, throughout the research, between 2013 and 2016. I talked to risk managers, traders, people who made models and people in upper management. Most interviews took place in the offices of the interviewees. In some cases, they would come to my office or we would meet in a public location such as a café. A handful of interviews took place over the phone. 24 of these interviews were recorded.

Not only did I interview people in different locations. I also carried out a

participant observation in two financial organisations. I interviewed 52 of the participants in those locations. The reason behind the participant observation lies in the second aspect of financial markets and its risks. The world of finance is extremely closed. Risk management is even more difficult to see due to the sensitivity around it. It namely directly deals with topics that could cause quick reputational damage, such as financial losses and regulatory scrutiny. The sensitivity of the subject makes the semi-structured interviews a problematic form of data collection. One needs to wonder if interviewees represent the complete situation. They could easily represent their work in risk management without showing the depth of their problems. For example, risk managers might want to save face by saying they are more influential than they experience, see the paradox at the start of this research. Risk management has a controversial smell attached to it.

Thus, is the outside representation of risks what happens in the financial organisation? To know, I, the researcher, have to become an insider. Ethnography is the only method that allows for this, especially the participant observation. I would become a risk manager, experience the work and write notes. With the observation data, I can establish a detailed rapport on the social interactions around financial market risks.

To take into account the interdependencies in finance multiple locations were required. I chose two organisations for their relative importance in the financial sector. Both, in case of bankruptcy, would have brought down their respective economies. Besides that, I chose the organisations for their usage of the internal capital model. The regulators gave them leeway to decide upon their own risk calculations rather the prescribed ones.

The first participant observation took place in Bank F, a large European bank that had defaulted during the crisis. I did an internship of four months, from September 2014 to January 2015. The second participant observation was in Insurance Company V, the regional office of a large European Insurance Company. It lasted for five months, from March 2015 to July 2015. The two organisations both had a large part of their assets invested in financial markets. They were thus highly susceptible to changes from financial markets. Both also had internal models that would calculate the risks for regulatory purposes.

Participant observations have their shortcomings. First of all, they allow for a limited view. Only myself, the researcher, sees and writes down the interactions. To counter the personal viewpoint, I have included other research tools in the study of the fieldwork locations. I interviewed participants and send out a questionnaire.

With regard to the interviews during the observations, I interviewed 52 people in the risk departments as well as people working in other related departments. The interviews gave the professional and educational experience of the different participants and their daily activities. It gave a complementary vision of the fieldwork itself and the previous work situations of the interviewees. Where possible, I asked the interviewees to explain their work behind their computers. I especially did this with those who calculated the risk numbers.

Besides the interviews, I handed questionnaires at the end of each of the two observations. They gave their ego networks of both the people who they worked with and whom they asked for advice. The questionnaires had two aspects. There was a name generator and a set of general questions on the departments, the individual's background and the risk definitions the participants had. The exact questions can be found in Addendum II.

The questionnaires data has itself multiple shortcomings. First of all, the name generators show the relationships of people on a given point in time. Even the participants were wary of this. They said that in their own personal experience they continuously worked with other people. For example, one month they would work on a specific project with specific people, while the rest of the year they would not see them. The second shortcoming is the lack of anonymity of the different questionnaires. Since the name generator made respondents per definition identifiable, so did the responses to the open questions. Multiple participants put forward that they responded less straightforward than they could have.

Even though the questionnaires have these shortcomings, they still gives a second perspective to the field. It thereby mitigates one of the key shortcomings to the participant observation. How reflexive and critical the researcher might be, it remains one point of view. The questionnaire partially eliminates this.

A second limitation to the participations is a personal closeness to the field.

Other than a normal observation, a participant observation makes the insider-outsider establishment more difficult. One automatically is an insider. One thus has to accept the value-structures during the fieldwork. The research thus has a subjective aspect that can skew in favour of those studied.

To counter the possibility of capture as much as possible, I have added a lengthy reflexivity on the fieldwork in the second part of this chapter. Besides that, the data analysis was carried out critically, looking specifically at the different legitimacies established on the inside. Yet this limit can never be countered completely.

Data Analysis

The research tools gave enormous amounts of data. This leads to the question of the analysis. How did I use the data? Since this research has an abductive and social constructivist basis, the communications of the different participants are the main point of analysis. Consequently, I focused more on some of the sources than others.

The notes, interviews transcriptions, fieldwork documents and questionnaire data have all been taken into account. However, in the participant observations, those communications could be seen up close. Consequently, the notes of the participant observations have been leading. At the same time, the other data sources have been put next to the notes to get the full picture of the different themes.

All qualitative data was coded with thematic coding (Aronson, 1995; Boyatzis, 1998). The participants' emphasis on topics was followed and deconstructed throughout the different data sources. The process involved multiple levels of coding. It started with a basic understanding of happenings of the fieldwork and the themes put forward by the interviewees. Following this, a step was made to generalise the different themes and compare them to one another. The last step of analysis was to take a step back from the data. I tried to understand the different themes as an outsider. Afterwards, I created the narrative of the thesis.

The questionnaire had two aspects, the network data and the open questions.

The name generators were standardised and put into one database. The open questions were coded and standardised into cardinal and ordinal variables. In both cases, the data analysis remained very descriptive. Since the research background is constructivist and abductive, inferential methods are inappropriate. Therefore, the ego-networks of the different organisations were brought together and visualised. I also added some frequency of contacts. For the open questions, I used a multiple correspondence analysis to reduce the data dimensions. The network analysis can be found in chapter six, the open questions in chapter four.

Ethics

Before I go into the reflection on the research itself, I shortly want to address the ethics of this research. First and foremost, this research is elite research. The social status of my participants changes the ethical questions from research on non-elites. I want to address two aspects, the possible negative effects for the participants and the question of consent.

Most of my participants were higher on the ladder of the social status than I am myself. They have more financial resources and professional stability. They all had Masters' degrees and can be seen as people who can defend themselves relatively well. In this case, I studied 'up' (Nader, 1972; Gusterson, 1997), implying that the harm I could do to my participants remains limited.

At the same time, my participants might lose their job by talking to me. Even though it is highly unlikely, it is still possible. Consequently, I have kept strict anonymity throughout the research. I use fictional first names and do not name nor locate the different fieldwork locations. I do this to protect the participants.

At the same time, there is the question of informed consent. Did the participants agree to participate? Especially in organisations, this can be tricky. The work environment can namely engender a hierarchy where subordinates have to do what the people higher up tell them to (Wax, 1980; Plankey-Videla, 2012). I received access because people at the top of the organisation had allowed it. Consequently, people lower in the organisation might see me as a threat rather than a neutral observer.

To counter problems around consent, I told everybody I was an ethnographer.

I did not have the status to tell people they had to participate, I was the intern and did not have a position of force. If people in the organisation wanted to, they could be interviewed. However, if they did not want to, I would not interview them. Sometimes, even with verbal consent, participants told me I could not use specific knowledge. I have followed their instructions and do not use this data. At the same time, I noted down group processes. Consent becomes murkier there. However, given my lack of status, participants could always tell me they did not want me there. At times they did exclude me from meetings. I could, for example, not participate in meetings on the liquidity situation of Bank F.

2.2 The research

The first of October 2014, I wrote the following:

The first couple of weeks each morning I put on extra make-up on. I took steps in feminine beauty routine that I would normally not take, using mascara, eye-liner and compact powder. I would get a formal yet not too extravagant outfit from my closet. I dressed up as a banker. By changing my face, adding foundation, colour corrector and powder, I changed my outside identity. Entering the bus every morning, I smiled to the people in suits around me. I wanted to see if they accepted my change of skin. Luckily, they smiled back. Between the bus to the high tower where I would spend my day as a disguised banker, I would walk through a labyrinth of passages and very high skyscrapers. At one point the hidden glass giant would doom between and I would have my last moments on my own for the day.

However, a week ago, three weeks after I started, I found out that it was not a disguise any more. I still perform the same routine in the morning but I have made the life of the tower my own. I have started to care about the people I work with. I am not in control of the disguise any more, it has become me, the second skin of make-up has become part of my face. I am in the organization and I make social mistakes, joke around, do not like people and also take people

against me. For example, the other day I showed my annoyance for unreadable policies and guidelines. Also, I have started to resent a colleague. He continuously complains about his salary which is in the top 5% of the national income distribution. Another colleague and I have the most passionate discussions, mainly about taxes, politics and the housing market. So here I am, liking and not liking these people at the same time. They probably have similar feelings towards me. The disguise has gone, the banking make-up has become part of me and my life has changed. The Bank dimension has been added.

The passage above looks like a direct contradiction to what should happen during research. It is about the researcher becoming part of the world she studies. It seems to oppose everything that scientific objectivity and rationality stand for. However, as feminist scholars since the '70s have shown, everything is personal (Jamieson, 1999). So is research, especially social research. It is the human interaction that makes the social, which includes the personal.

The intimate aspect of social science research is the reason why I have added an elaborate reflection on the fieldwork to this thesis. First of all I discuss the access and the two research locations followed by a reflection on my roles as a participant. I end with a discussion on the gender dimension of the fieldwork.

2.2.1 Access and Location

The field of finance has one big problem for social scientists. Access to researchers, especially sociologists, is limited. I can give three reasons. First of all, sociology is not seen as a valuable science for the financial sector (thereby including insurance). Possible participants can express they would lose time and energy by giving access. Secondly, the people in this field are extremely busy. They hardly have time for a family life, let alone the time to talk or open up to a researcher who is not necessarily in their immediate interest. Third of all, bankers can be quite focused on secrecy. Information leakages can mean the bankruptcy of a bank and therefore a researcher looking further into their activity might cause problems.

How to overcome these problems of access to the work of financial market risk managers? I quickly found the best way to get observant access was through an internship. This way I could trade my ability to work for observations. Since I have a degree in econometrics and had previous banking experience, I could be of use.

For roughly half a year I ‘courted’ bankers. Through every way possible I tried to obtain access. I talked to people in finance or connected to finance and explained them my research. When I did an interview, I would always explain the research. Where possible, I asked people about the possibility of observations. I attended network drinks and breakfasts with bankers. During six months, I tried to immerse myself in the world of finance.

I used the different networks I was part of to find participants. In my direct network, I contacted old study friends and former colleagues. If they would work in the financial sector I would try to obtain an interview or ask them if they knew people. Besides that, I went through a second tier in my network. I created contacts through the institutions I was part of. For example, I met people in the economics department and from the alumni society of Sciences Po. In all interactions, I asked for interviews and the possibility of internships. My third way in was to tell everybody I met I needed a fieldwork location, including people in administrative positions and my landlady.

The first interviews came relatively quickly and were mainly with middle managers who either worked in financial risk management or related departments. They took the time to explain their work to me, with interviewees lasting an hour to an hour and a half. These people sometimes put my name forward to colleagues of theirs. I would also ask them, especially the risk managers, for internship possibilities for my thesis. I would be open about the ethnographic aspect as well as the complete anonymity of the project. Some middle managers were very open to the project, showing their own frustrations about the job they were doing. However, in the end, the middle managers were all relatively hesitant about the possibility for an internship. They would answer vaguely or clearly say that internal policies might make this difficult. They did not seem to have the political power inside their organisations to let an outsider see what happens.

After multiple dead-ends in the search for an fieldwork location through mid-

dle layer of management, I decided to go higher up in the organisations. Through others, for example economists in the economics department of Sciences Po, I got in touch with people in top management. This is how I almost entered one fieldwork location, a large French bank. My contact person there was close to top management and had promised to open up the field. However, he got fired in a fraud scandal and I lost my point of entry. Luckily, I had two other ways to enter the financial organisations. Both came to me by surprise.

The one in banking was through the network of the proprietor of a flat I rented. She was part of an elusive network of people identifying as old-European nobility. After half a year of staying at her flat, she put me in contact with the husband of a friend of hers who worked on technological risks. Even though his expertise did not fit my research quest, he put me in touch with a person working for Bank F. He had previously worked as an advisor to the CFO. After having explained my research, he put me in contact with the CRO (head of the risk division), a friend of his. The CRO put me in contact with the head of the financial market risk team. The latter, Valery, interviewed me while I interviewed her at the same time. I was able to convince her that my research into the workings of risk management in the organisation had value. At the same time, the person who coordinated her department's international meetings was with pregnancy leave and I could take over her tasks. This way, I obtained a four month internship in the risk management department of Bank F. To access it, I had convinced five gatekeepers my research was worth their time.

The second fieldwork location came to me in a similar serendipitous manner. For Insurance Company V, I had three gatekeepers. In a meeting about some of my teaching responsibilities, I told the coordinator of one of Sciences Po's Masters' programs about my research. She told me about a friend of hers who worked at Insurance Company V on risk models. I met and interviewed him. This man was about to leave the organisation to start his own research group on the implementation of Solvency II. His research interests fell in line with mine. He had already convinced upper management of Insurance Company V about the worth of his new venture. He introduced me to the head of the life and financial risk modelling, Alice. She interviewed me and offered me an internship of five months. She was aware of my objective for that stay, to observe for my

sociological research.

In both cases I thanked the gatekeepers and participants. I always asked them if they wanted to be kept in touch with the results of the research. If they would, I added them to a list to archive their interest and contact them in case of presentable results.

2.2.2 Being a Participant

What did being a participant and an observer entail? I started as an intern but was, in both situations, still seen as the sociologist. In the first research I played quite a neutral role, did not voice my own opinions all the time and avoided conflict, even when it was sought with me. In the second fieldwork situation I noticed that it was relatively difficult to me to be a bland person and I had to take more part in organisational life. Therefore, in the second fieldwork I was less a neutral observer than in the first one and more an actor. It led to more access on the hands-on part of carrying out the work of a risk manager. However, it also meant that I had more the role of a colleague with being liked or not and becoming part of work related conflicts. In both locations I received a compensation for the work I carried out. My own personal background and the work I did affect the final results of this thesis.

Fieldwork is murky business. Being value free, remaining ethical and not doing any substantial bad things to the people you research are principles that work well on paper. When one is in the field, your personality, your being is the tool of the sociological research while around you there are other people with whom you can have a good time or not, but to which the relationship you have is also personal. Besides that, since you yourself are the microscope a biologist might use, or the STATA software a statistician uses, your personal boundaries can be crossed and you can be put in danger yourself.

The participants were not necessarily interested in creating the research itself. They focused on their own work and allowed me to hang around. The people at the bank and insurance company knew I was doing research and helped me figure things out about their work. Some were very open and proactive, others showed that they were uncomfortable with my presence. Most participants showed am-

bivalence. I tried to respect all of these stances in the way I approached people. However, even though people sometimes seemed uncomfortable, I would still talk to them about the research. If they showed an unwillingness to participate, I respected that, disengaged and would leave them alone regarding the research.

I wrote the notes both in a booklet and on the computer, in Microsoft word. I could do the latter during the fieldwork because everyone else was also behind their screens. It was therefore an unsuspecting activity. However, I did type much more than the participants, who were mainly using excel files, email, presentations or code in computer languages (mainly specific software which was developed for the business, in VBA or in R). I could write my notes in the open in general because of the importance of computers in the work of the risk managers. Besides that, I could make notes in meetings. People in meetings were aware that I was a sociologist. I could write everything, where possible, down. This was more or less suspicious. I resembled someone who made the minutes of the meeting, which I also did in certain occasions.

Doing participatory research is also very much about ‘you, the person’. There were multiple sides of my identity and history that influenced the fieldwork. First of all, there was my education. Secondly, I had banking experience. Third of all, there is the question of gender. The latter will be discussed more broadly later on.

Before starting my sociology education, I embarked on a econometric Bachelors’ degree. In The Netherlands, econometrics and operational research are a separate academic study. In many countries it is either an engineering study (operational research) or a specialisation after in a general economics education. At the Erasmus University in Rotterdam, I obtained a Bachelors’ degree in econometrics and operational research. I also did my sociology degree there, in which I chose to pursue a MSc. My interest in financial risk and the research that came out of this could not have been done without this mathematical background. There are two reasons for this.

First of all, the education gave me an understanding of the world of finance. Having manipulated large datasets myself and coded the basic code behind statistics, I am very much aware of the fickleness of the business, of the difficulty to get the number one wants. There is an artisanal aspect to coding and calculating.

Therefore, I could easily relate to the risk managers' explanations of their tools and mathematics. I had dealt with the fickleness myself.

Secondly, the econometrics degree gave me access to the field. Without it, it would have been extremely difficult to convince someone that it was worthwhile to hire me. It gave the accepted cultural capital needed to work in finance. My educational background (a Bachelors' degree in econometrics and operational research) meant I was able to convince people I was able to work in the environment of finance.

Besides, I already had working experience in a bank. During my Bachelors' degrees in Rotterdam, I worked at Triodos Bank Netherlands. This is a small bank, especially at the time. However, there, I learned the language and tacit knowledge of banking. I had worked there on interest rate models as well as on some project financing and loans. I had internalised some of the lingo and also work practices.

During the fieldwork, my ability to handle databases, code and understand financial relationships also established trust. For example, in one of the first weeks I was asked if I could automatise a process that cost a week of manual labour. Not only that, but the process had created stress in the team that the manager wanted to avoid. The latter was the main reason why he came to me. The manpower was not really an issue, it was that the team could break up into turmoil. So even though I did not know the different tools (VBA and Bloomberg), after some reading and trying, I was able to diminish the time of work to one day. This gave me a reputation of someone who knew what they were doing around the teams working on risk. My technical help created a further establishment of trust with the participants.

Role in the different Locations

Ethnographic work is, preferably, the least obtrusive possible, to be able to note as precise as possible what happens around you (Fine, 1993; Beaud & Weber, 2010). At the same time, by being there one already disrupts the process. Participation itself is even more intrusive, since one brings their own experience and personality to the field. Even if you want to blend in and act like anyone else,

that means that sometimes you actually need to stir things up. People who work go into conflicts or try to obtain resources, making this part of the normal working attitude.

At Bank F, I was able to be in between the participant and the observer. I did not have a lot of work which left me enough time to do interviews and read documents. My main task was the organisation and the note keeping of meetings with risk management teams of the subsidiaries. These happened once a month. Besides that, I worked on policy documents. I also coded some programs to speed up some data gathering processes. All of this gave me time to conduct interviews and sit-in on meetings as an observer.

I took the stance here more of an observer than a participant. The different people working on financial market risks had a lot of personal and work related conflicts. I did not participate in this and tried to keep a neutral stance. After a couple of weeks, I became a person people felt they could talk to in the teams. Some even compared me to the psychoanalyst of the bank. This gave me a access across the different conflicts, to a lot of different people. I could thus observe the work of other people.

In the insurance company, I had a more active role. I participated more than I observed. People knew I was a sociologist. I worked more on risk techniques than in Bank F. In Insurance Company V there were less conflicts between the teams which meant I could cross the lines relatively easily. I could interview people from all over the insurance company. At the same time, I received less information about the general goings-on. I was not the person to confide in as I had been at Bank F yet I was more involved in the risk management process. For example, I was involved in multiple steps of the regulatory capital calculations. I was thus relatively active in the daily work of the risk management teams.

At Bank F I was relatively distant to the daily goings-on of the risk managers. Therefore, people confided in me about their work and the difficulties they had with this. I received a more general vision of what went on in the team. In Insurance Company V, I participated more in the process of risk management. Therefore, I saw more of the technical details. At the same time, the difference in the data are relatively small. In both place, I interviewed participants, read and worked on the documentation and was able to be part of meetings. All of

this gave me a very detailed vision of the risk management practices. That leaves me with a reflection on the gender situation of the fieldwork.

2.2.3 Masculine Dominance and Observations

Gender matters. Even though the objective of this research was never a gendered one, nor did I start out explicitly asking questions about gender, the topic was hard to get around. It is the elephant in the room in research on finance. Most ethnographic research on finance has been carried out by men who did not discuss their personal situation to the field (Godechot, 2001; Lépinay, 2011; Ortiz, 2014b). Out of the three French ethnographies on financial markets, Ortiz (ibid.) is the only one who touches upon gender. He shortly describes how an asset managers likes to take his clients to strip clubs. Yet gender is also present beyond the sales person/client relationship. A form of the white male coloniser is very much alive and well in the world of finance¹ (Connell, 1998). Ideas of masculinity influence the legitimacy of people and ideas in finance (McDowell, 2011). At the same time, it can also be imposed quite violently on those who are not part of this group (Roth, 2006).

One can therefore even ask if it is not extremely irresponsible that the other ethnographers did not discuss this in detail. There is a violence and an aggression related to this form of masculinity that can bring a researcher in danger. While men can encounter quite aggressive violent behaviour, women can be seriously sexually threatened. In ethnographic research, sexual violence and intimidation against female researchers is part of the experience (Moreno, 2003; Sharp & Kremer, 2006). Gender is integral to life, research and also to finance and should therefore be discussed.

During the fieldwork, I was a young woman of 25/26. My femininity was always present. On the one hand, it made my position as an ethnographer less threatening for those who I worked with. As a young woman, I was not a direct

¹The question of skin color is important. However, I am a white woman. I did not encounter skin color legitimacy establishment or violence directly. Part of the teams were non-white, both men and women. The research took place in the EU, with different skin color hierarchies than the US. Take for example the work of Ndiaye (2008) on the situation of black-ness in France. In the fieldwork, independent of skin colour, masculinity was always performed in an aggressive and dominant way.

threat to a masculine order. I played along with this gendered role, blending in to the field (Orrico, 2015). On the other hand, being a woman also meant that certain behaviour related to sexuality was (unofficially) accepted. I did my best to continuously prioritise my safety and the safety of others but could not guarantee it.

To understand the masculine aspect of the bank and the insurance company we can look at some of the basic interactions of the participants. In the first it was very visible in the way men discussed women and interacted with women, in the latter it was already visible in the greeting rituals that took place.

In the risk management department of Insurance Company V, everybody worked in an open space. When people would walk around, they would sometimes shake everybody's hand to say hello. This was a daily ritual, repeated by most of the members of the team. However, everybody was not everybody. Everybody meant the men. I had seen the hand-shaking and decided to participate. So after a couple of weeks on the floor, when I walked over to my colleagues on the other side of the floor, I started to shake hands. Some of them laughed. I continued, playing along the game seeing where it would lead me. The second time however, one of the colleagues did not want to shake my hand. I asked explicitly 'why do you not shake my hand?'. He told me he only shook male hands. I started to doubt my actions and when I looked closer, female hands were hardly shaken. If one of the female managers would walk over to her employees, she would not shake hands and the greeting would even feel uncomfortable. However, the male manager of another team would shake hands. A similar uncomfortable situation existed when there was male handshaking and a female colleague next to it. The presence of a female colleague would be acknowledged (hello, how are you) but their hands would not be shaken. The men had their own manner of greeting (which the women did not have) and women could not be part of it.

In the bank, hands were not shaken. People would acknowledge one another by saying hello. However, the way men would discuss women (also when other women were present) or sexuality, resembling a virility contest. Once during lunch for example, a male colleague's upcoming holiday to South-East Asia came up. He was relatively young and thin. He did not show the same type of virility as the other men around the table. They had deeper voices, broader shoulders and

talked relatively fast and aggressively. Where the discussion started with how nice these countries were, it quickly went into the women of these countries. His colleagues made fun of the traveller, questioning his masculinity. They discussed how you could find many paid sexual opportunities there as a heterosexual man. I was one of the sole women at the table and relatively new at the time. Those who partook in the discussion looked at me as if they were partially ashamed and were partially showing-off. As if they had to prove their masculinity towards me by making fun of their colleague.

Similarly, when men would discuss female colleagues, their looks and femininity were very much part of their description. A woman would do her work well and have nice bottoms. The men around me in the bank had to show their male sexuality. Even though women's capacities would generally be discussed as well, their sexuality was very much a conversation topic, more so than male sexuality was between women.

As a woman in both situations, my sexuality was thus also part of the identity my interlocutors had established of me. A masculinity dominated that subordinated women into their sexuality. Even though one might work together, get jobs done or have professional success, this gendered reference was continuously present.

This performance of masculinity was not trivial. In the section underneath, I describe two episodes where the sexualisation of the female body became a threat to me personally.

These episodes do not stand on their own. Female participants in the bank and the insurance company have discussed similar stories. There was the starting analyst in a trading room who had been hit on by her boss which she did not feel comfortable with. She discussed how she had to handle this as diplomatic as possible without losing her job. Then there was the job-interview where HR asked if the possible candidate for a risk management job in asset management would accept sexist comments and request. The interviewer also explicitly mentioned that this would be part of the job, she would just have to be able to deal with it. Female participants had similar stories to tell as I will underneath. Yet here, I will discuss mine in detail to show the exact workings of the threat this masculine dominance can pose.

There are two stories that show the difficulties of doing fieldwork and the question in both cases is also, how far should one accept this sexual threat. As a participant observer, one should go with the world that is observed. At the same time, there is a personal boundary we all have. In both episodes I explain my personal limits but also the normality of a masculine domination over female sexuality. The first event is about the informal expectations that the gatekeeper seemed to have about putting me in contact with the highest risk manager at the bank. The second event is about the question of acting up in the organisation after being treated improperly.

Bank F's Gatekeeper

In order to get the type of access I needed, I had to convince people of the value I could have for them. Access is a trade, where you as a sociologist give something in return. It might be an academic cachet, a possibility to voice the needs of a community or improving the social position of the person who grants you access. But getting granted access, or one step further into the access process, also has forms of informal or formal trades (Abélès, 2004). Before entering the bank, during conversations on me entering the bank, the proposition was I would give a different point of view on Bank F and its risk department. As a student from a well established institution, I was an acceptable person to be introduced to the head of risks. The head of risk would later introduce me to the head of market risk, the final person to give me the possibility to do my fieldwork. However, the gatekeeper had also proposed to go out for dinner and lunch. I of course could not directly decline this. I still needed this man to get in contact with the head of the risk department. However, I had not accepted either. It was not standard that people invited me to lunch or dinner like this and it smelled funny.

Once I started the internship, he visited my office and proposed lunch again and this time I accepted. The informal relationship between people giving access and people taking up that access is a delicate one, between disinterest, interest and gratefulness from both parties. In this case I felt grateful and was quite interested in the knowledge the gatekeeper could give me about the organisation (he had been an advisor to the previous board), the reason I was happy to

respond. Before going to this lunch, my direct colleague had informed me that the gatekeeper had send inappropriate emails to young girls in the company.² This sentence explained the weird look when I mentioned the gatekeeper's name in the HR interview I had before entering. The remarks that had been on the border of being appropriate (about me being a lovely young lady for example) also started to make sense. The funny smell became a presumption of a clearly sexual nature, the gatekeeper wanted more of me.

Neither the direct colleague, nor the HR manager spoke out. The man in their eyes had apparently behaved inappropriately but not enough to be ousted. The gatekeeper still worked for Bank F even though he, as he had acknowledged earlier to me, had lost his influence. His behaviour towards me was not accepted but not deviant either. His search for a sexual encounter with me only reflected an abject normal state of affairs.

Lunch took place outside of the company (which was abnormal, all lunches took place in the company) in a North-African restaurant. The gatekeeper deliberately chose to sit in a dark corner on cushions rather than on the chairs in a bright hall as proposed by myself. The low cushions also required less physical distance than normal. There, during lunch, he alternately discussed geopolitics, the internal workings of the bank and my physical appearance. The latter became more and more important. I expressed my political opinion and tried to get more knowledge about the workings of Bank F. When the innuendos on my femininity became more and more pertinent, I asked about his family life. I tried to get the conversation away from his sexual innuendos. This did not help. Even after having discussed his children and his wife, the gatekeeper continued to talk about my appearance and my marital status. 'Did I not have a fiancé? Not even in The Netherlands? But I was such a beautiful young woman, a real blonde "Batave"³. On these low pillows, in a relatively dark setting that otherwise might have been romantic, his words inquired about my availability to him.

In the end lunch lasted shorter than usual. I refused the coffee, and while we returned to the bank, he invited me for dinner another time. I did not follow up

²The colleague said girls, not women

³word for Dutch person, after one of the peoples who, during Roman times, lived in what is currently The Netherlands

on this. I had felt extremely threatened during lunch. Afterwards I had been hardly in touch with this person, saying hello and goodbye in the elevator where other people were present as well. I only met once again at an office party. In order to avoid a conversation about whether or not I would be sexually available to this man who had helped me out in the beginning of the research, I asked a male colleague to stand next to me while the gatekeeper approached to talk to me. He asked about the research. When I involved the male colleague to the conversation, he moved away.

While sociological access is a trade, it can also be a misunderstanding of a trade. The gatekeeper clearly thought that being a young female researcher implied something completely different than I thought. While this might seem incredible from an outside point of view, the gatekeeper seemed to think his behaviour was acceptable. The informal arrangements of access, however the formal work out, can be very different from what you expect them to be and since they are informal they can be misunderstood. In this case, the gendered expectations that were made known were not outside of organisational codes. It was a breach of the personal boundaries of myself as a researcher and the informal trade that was made know to me indirectly felt threatening. It did not help that he was physically stronger than me.

An interaction like this, where a sexual trade was implied by one of the parties involved, had never before happened to me. Where one might think of bankers as educated and civilised who therefore would not demand sexual favours, I had stumbled upon one who did. Even though people had known about this man's behaviour towards young women, he was still part of the organisation. And as said before, I was not the only one who had encountered this type of behaviour. Women seemed to have to not just be technical adept, they also had to handle men who thought female sexuality was up for grabs.

The story of the gatekeeper might still have been an singular one. It was also a unique situation of a sociologist and multiple informal contacts that led to access of a relatively closed space. It might have been an outlier, something only to do with this gatekeeper and the situation I was in. Yet the female participants shared similar stories. And then there was the second fieldwork. In Insurance Company V, a fellow intern asked me out in the open if I wanted to be an

escort. He thereby made the direct connection between me as a woman and the possibility to buy my sexuality. Compared to the gatekeeper, this intern was more open about his expression of dominant masculinity. It was thereby also easier to handle and denounce. At the same time I was punished for doing so. The episode shows that these events were not a singularity. The domination of female sexuality was a constant in this world of finance.

The Normality of the Sexualised Female Body

At Insurance Company V, a similar event happened to me. This time, it was a younger man who did not have more (informal) status or resources than I had. Both of us stood at the bottom of the hierarchy, we were both interns. He tried to dominantly express his masculinity by making me into a sexual object.

In a large open space I sat opposite two other interns. Both were three to four years younger than I was and they had banter together. Yet there was clearly one dominant and one underling between the two. After a couple of weeks, the more dominant intern, three other colleagues (two male, one female) and I had lunch together. After having made a general set of sexist remarks, the dominant intern discussed how women could sell their bodies for sex and men could not. While myself and the other female colleague objected to this, he continued. He even went so far to ask if I would not want to be an escort, a more upscale prostitute. With that, he asked if I did not want to sell my body where he would never do so.

I did not let just let this happen and I put him back into his place shortly afterwards. However, the unease between the two of us continued during the internship. Since this man was sitting in front of me in the open space, I had to handle this unease between the two of us on a daily basis. The girl present at the lunch had also encountered bad behaviour from this guy and afterwards, she had asked me to tell what had happened to the boss. Since I had already told him I did not appreciate the remarks and no other incident had happened in my case, I gave the intern the benefit of the doubt.

At the last meeting with the manager of the team, she asked me if something weird had happened. I told her yes but did not feel comfortable to expand.

However, she insisted. I told her what had happened. She was shocked and showed a strong disapproval. She added that she herself had encountered men who had crept up on her in previous jobs. She expressed her concerns about the female colleagues in the team and their safety. Also, she asked if I knew if something had happened with the other female colleagues. I said yes, I think something happened but I do not know exactly what.

The following days, the last days of my internship, I hardly talked to the other female colleague. I was asked by the head of the whole division, also a woman, to put what I knew on paper. Both managers did not want to work anymore with this guy and needed proof to show that he had behaved inappropriately.

Even though I knew that a testimony of mine could lead to the intern losing his job, I decided to do it. I had discussed it in my inner circle, with family and friends, as well as with my supervisor in how I needed to be in this as a sociologist. In the end I made the decision that I could make this situation public knowledge in the organisation, aware of possible consequences for this person. I am personally convinced I did the right thing given my own moral boundaries. The remarks had namely not only hurt me, the intern had behaved similarly with other women and men. Similar behaviour could happen again and someone else might have serious consequences from this. I testified so that the event became semi-public knowledge. This implicated that responsibility had to be taken by all sides for this behaviour, including the norm establishment of the organisation.

So I testified, putting my colleague's job in danger. My personal motivation to do so was partially out of a feeling of protection, to protect other women, especially the other female colleague. Yet this is where things went south. She had been in contact with the head of the division who had asked her to testify as well. She had probably felt partially pressured by management and in the end her testimony was finally not used in the final proceedings. However, my last hours at the insurance company, she asked to talk to me. In a separate meeting room, she got angry with me, furious. According to her I had put her in the position of testifying. She shouted at me, in an anger of despair I had never encountered before. I apologised in this meeting for things I had said, wanting

to dampen her anger.⁴ I did not want her to feel bad and I could understand she did not want to be in the position of testifying. At the same time, she showed her anger to me, not to the management nor the intern that had put the both of us in this difficult position. I had disrupted the informal rules in which women could be treated as sexual bodies. Since the team portrayed itself as very masculine, I therefore also partially jeopardised her situation within it. The other colleagues had never sanctioned similar behaviour towards women. Where I thought I might help someone, my female colleague only felt more threatened.

My last day also became the intern's last day. Members of the team told me people had been shocked about the intern's firing. His behaviour had seemed out of line to them but not to the extent it would be a cause for letting someone go. And during an informal meeting with one of my former (male) colleagues of Insurance Company V, I got to know how pervasive some of the sexualisation of the female body had been. Between men, one of the risk managers (who worked closely with the female colleague) had boasted to him about how they had had sexual intercourse. The risk manager in question had just become father for the first time and had deemed it necessary to describe in quite violent terms how this had happened. The colleague, who had only been at the insurance company for six months, had been shocked. However, in the world of finance, it seems to be the normal pattern. The feminine was not just a person or a colleague, it had to be dominated by a quite aggressive form of masculinity.

This sexualisation of the female was extremely pervasive. It was found in the many locations the fieldwork took place and seemed more aggressive inside finance than in society itself. Never did any of the above happen outside of finance. The dominance of the masculine of the female body were part of the professional culture of those working with financial markets.

A Participant and Sociologist

What does the above mean for the final outcome of this research?

The gender frame influenced the research locations and its outcomes. My gender opened and closed doors, it created trust in certain situations. At the

⁴I am not sure I would do so a second time given my own moral point of view

same time, it led to negative consequences for me personally as a researcher personally (and for others). Besides that, and more important for the research at hand, the gender also mattered in the work in the organisations itself. Relations both formal and informal, interactions during meetings and the exchange of information were all based in this world of a hegemonic masculinity with a sexualisation of the female. As one of my interviewees in Bank F put forward, ‘you always have the big mouthed man in the trading room’.⁵ A calm man, he implied that you just deal with it. In the world of finance, a relative aggressive performance of masculinity is accepted.

So what does this mean? First of all, practically, I will use the male form for traders. This represents the social reality of the masculine environment of the fieldwork. Besides that, the whole research needs to be seen in a place of a specific gender relationship. That thus means the market interactions and the internal hierarchy in these organisations cannot be seen independent of a masculine dominance. Who was legitimate and who was not as well as what was legitimate depended on this hierarchy. Even though this thesis does not have a specific chapter related to gender, it should be seen in the background of all interactions in this field.

Besides the gender aspect, there is my personal situation. My background in mathematical economics and banking meant that I could understand the models in front of me and talk like an insider. As less of an outsider, I could see less of the symbolic aspects. At the same time, it meant that I could go into the work and demystify its meanings.

2.3 Conclusion

The social construction of knowledge and objects is the starting point of this research. In order to do that, the research has been designed such that it can understand the way financial risks are managed in large institutions. There, the personal matters for the outcome of the research, as it generally does. The above described personal situation needs to be taken into account when looking at the

⁵The line reminded me of the first book of Michael Lewis (1989), *Liar’s Poker*, and his description of the ‘big swinging dick’.

analysis.

The participant observation is the main form of data collection. However, this research tool has its drawbacks, most notably the single view of one location. That has been countered by adding semi-structured interviews with participants in multiple locations. Besides that, to avoid the singular and personal view of the two fieldwork locations, questionnaires were handed out there. These tools do not completely mitigate the set-backs of the participant observation but help give a fuller picture.

The collected data comes from the micro level of social interactions. It shows the making of decisions, the making of tools and knowledge as well as the social interactions within the organisation. With that, it gives a vision of the exact workings of risk management in finance in the specific instances that were studied.

The data itself falls in a gendered space. The female gender of the researcher on certain occasions allowed for more access but also for certain limitations. Even though there were setbacks, the data was collected and analysed in the most value neutral way possible.

Now that we know the background of the study into financial risk, it is time to go into the field of risk management.⁶ The first step in the understanding of risk management of financial markets in large financial institutions is a description of its surroundings. What was the environment in which financial market risks were managed? By looking at the situation of risks' management, we can study multiple things. First of all, there is the basic step of understanding the empirical background in which risk assessments are created. Secondly, it leads us to question one of the basic ideas of the social studies of finance, the concept of framing.

⁶Field is used here in its ethnographic context, namely the locations of study with its proper meanings and people (Gupta & Ferguson, 1997; Beaud & Weber, 2010). The field is thus not a set of actors in a structured struggle, as a Bourdieusian inspired scholar would use it (Bourdieu, 1984). The hierarchical structure is optional and depends on the meanings of the people studied.

Part I

Risk Management?

Chapter 3

Framing Financial Market Risks: The question of reception

To understand the financial market risks in large financial institutions from a constructivist perspective, let's start with the basics. Financial risks come from a market, regulation and the internal situation of the respective financial organisations. I describe this environment.

With the help of the risk environment, I discuss the concept of framing. In the social studies of finance, framing has a technical aspect. The material or knowledge standards create a specific output. Therefore, I call this type technical framing. At the same time, the output has an audience. The maker of the frame can change the output to service their specific audience. I call this political framing. Both types of framing seem to matter in the creation of financial market risks.

One of the main strands of the social studies of finance started with the *Laws Of the Markets* by Callon (1998). Economic life, he argues, is embedded in economics. The actions in the market are guided by economic theory. Economic embeddedness lies at the base on performativity of finance and heavily inspired those looking at materiality and different knowledge practices (MacKenzie & Millo, 2003; Lépinay, 2011). The starting point of the theory is the calculative agent, who compares objects in a market place. Callon, however, does not go into what should be calculated. He wants to see what the calculation takes

into account and leaves outside. The market action depends on the calculative demarcation so ‘why not take the dependence on their environment as a starting point?’ (Callon, 1998. p.7)

Framing is the key process that demarcates what the calculation takes and does not take into account. The calculations transform a specific set of characteristics of a marketable object (or service) and makes them comparable, creating one numerical outcome. The output compares the product easily with others that are part of the market. The figure is transitive, in its mathematical definition. Framing creates the boundary of what from an infinite set of possible characteristics; a boundary between what is and what is not the part of the economic good (Callon *ibid.*, Callon and Muniesa 2005).

The mechanism of framing helps understand investment strategies and pricing models. Investment analysts, for example, can be seen to create a frame in which they value new types of companies (Beunza & Garud, 2007). Callon’s (*ibid.*) definition focuses on the mechanism of characteristics and outcome. Others within the social studies of finance have broadened the concept of framing, adding the viewpoints of a multitude of actors and qualitative assessments as outcome (Hardie & Mackenzie, 2007; Svetlova, 2008).

Financial market risks could follow a similar framing process. Knight (1921) makes the distinction between risks and uncertainty. Known aspects of a financial product would create a probability representing the related risk. The uncertain, the unknowns, would not be taken into account. The outcome of the calculation, a risk, makes the financial product comparable to others. Take for example a Dutch sovereign bond and a share of an Algerian corporation, two completely different investments. Both probably have a rating, which makes comparing between the two relatively easy. If both have an AA rating, that would mean they are both relatively safe investments.

The technical frame could be one of ways to explain the outcome of financial market risks. The calculations make the risk. However, a second theory of framing exists that can also explain financial market risks. Based on Goffman (1974), it focuses on the creation of a message based on its reception. In the political frame, the material does not make the frame. The message one want the audience to hear determines the frame. The conception of an assessment

depends on how the maker of the frame wants the audience to understand it (Matthes, 2012).

When Callon (1998) writes about the environment that should be incorporated in the understanding of markets, he looks at the boundaries of the frame. He does not go into the reception of the outcome. By negating the social world in economic life as he does in the first sentences of his essay, he negates the sociological concept of power. Power is multiple and partially undefinable. Callon's theory implies that power comes from knowledge formations, given the importance of performativity of economic thought and practices, and resembles Foucauldian form of control through knowledge. Knowledge standards would indirectly determine actions.

Other power relations exist, one of them the distribution of resources. Makers of the frame and the audience have their own resources. One can, for example, frame one's message in such a way to satisfy the audience. Both maker and receiver can directly depend on one another. For example, a political electorate can vote their representatives in and out of office. If a politician frames their message in a way their audience does not like, they could lose their seat. The votes are a resource for the voters, the message is the politician's resource. The resources of the audience and creators matter for the final message (Carragee & Roefs, 2004).

Not only do the surroundings of the market give the boundary of the frame, the frame also exists in a resource distribution. On the one hand, a technical frame distinguishes between what is inside and outside of the assessment. Material such as computers and written calculations help the frame take a specific form. On the other hand, a political frame exists where audience and makers' interests meet.

In order to understand finance, we need to look into financial risks, starting with the basics. What is the environment of risk assessments? That means looking into both their creation and their reception, the actors that create the figures and those who receive them. The risk numbers exist in a specific environment and amongst a specific group of actors. They are created in financial organisations and matter to their respective markets. Besides that, these organisations exist within a specific regulatory system, that also determines the framing of the

risk numbers.

Lets start with the outside. What kind of standards from outside the organisation did the risk calculations adhere to? In order to answer this question, I firstly focus on the market and the EUs regulatory environment. Afterwards, I describe the fieldwork locations. Which models did the risk managers in Bank F and Insurance Company V use? Here, I include a short description of the different risk management departments. Finally, I deal with how the numbers were used by participants. I show that the target audience influences how the risk managers create risk numbers.

3.1 European Regulation

Both banks and insurance companies are heavily regulated in the European Union. The two fall under separate regulations whose principals are relatively similar. Banking regulation (especially Basel II), and the different capital requirements directives (CRD) equivalents on EU level, heavily inspired the insurance regulation, Solvency II (SII). The two regulations give a general technical frame the organisations need to adhere to in their risk calculations.

At the time of the fieldwork, banks started implementing CRD IV, the capital requirements directive set by the EU. They still had to apply parts of CRD I to III, CRD IVs predecessors. The directives require banks calculate their regulatory required capital. Banks have to make sure their capital amounts reflect the risks they have on their balance sheet. Other than its predecessors, CRD IV also requires the implementation of regulatory liquidity ratios. European Central Bank (ECB), European Banking Authority (EBA) and respective national central banks control implementation of these rules. Additionally, the European central bank determines monetary policy and with that the cost and access to funding.

Insurance companies do not depend on central bank funding. They are still regulated by people working for the national central banks. In 2009, the European Commission adopted the Solvency II (SII) directive. Major amendments were made in 2015 and finally implemented in 2016. Solvency II is Solvency Is (SI) successor in name only, having completely changed the EUs insurance

industry.

Under SI, insurance companies had to follow the standard of prudence in their reporting. They had to maintain general buffers in calculations and balance sheet for safety. Under SII, insurance companies had to apply a risk-based approach, similar to the EUs banking regulation. That is to say that the balance sheet of an insurance company should represent the risks the organisation is exposed to (François, 2015; Marano & Siri, 2017).

The different credit directives and Solvency II have three pillars. The first pillar maps out the capital calculations based on the risk exposure. The second pillar sets the governance structure of the risk management. Pillar III deals with the transparency about those risk assessments. Even though the last two pillars change the organisations' make-up, the first receives most attention. This is the case because pillar I requires the implementation of a calculation system of risks that directly impacts the amount of capital a company needs. The capital requirement calculations themselves differ immensely between the two sectors. Capital requirement calculations in insurance require a risk calculation for both liabilities and assets on the balance sheet. Banks only need to calculate the risks on the asset side.

Capital requirements are the minimum amount of capital a financial firm needs to have on its balance sheet. Capital is generally seen as expensive. It either comes from shareholders or through an accumulation of profit. That means that obtaining it is relatively difficult. Besides that, the capital a financial firm has cannot be invested freely. Since it cannot be used for high profit investments, it is seen as costly. Without a restriction on capital, one would theoretically be able to earn much more money with it.

The capital requirement calculations can follow two forms of calculations. One is a standard formula predefined in the directives and related documents. The second possibility is the internal capital model. Firms can create their own calculations of risks which the respective regulator has to be approve. The organisations themselves would have the best vision on their products. An internal model would therefore allow for a more accurate calculation. Organisations can decide for themselves if they want the internally created model. In the insurance sector, if a company decides to opt for an internal model, it still has to report

the standard model.

Each organisation has their own capital requirement calculations. There are, however, certain industry-wide standards. The outcome of the model in both sectors is a Value-at-Risk (VaR). This is a number calculated over a specific portfolio and gives the amount of value that could reasonably be lost for a pre-determined confidence level and specific time period. The VaR is generally the risk number reported to the highest echelons of the organisation.

Imagine a CEO receives a weekly briefing of the risk exposure of their bank. That is, for example, a one-week VaR of 99%. So, if they see that there is a 10 €billion VaR, that means a 1% chance that the bank will lose 10€billion or more in the next week. The explanation can also be turned around, namely that within the 99% confidence level, the losses will not exceed 10€billion. The next week, the markets have stabilized, and the CEO receives a VaR of 7€billion for the same time and confidence level. That means that in the second week, the bank has a 1% chance to lose 7 million or more. The bank has less risks calculated than in the first. The higher the VaR, the higher the risks (Jorion, 2007).

Different types of VaR models exist. Therefore, financial organisations have multiple methods to calculate capital requirements. In insurance, an overall VaR is calculated over the whole balance sheet. Insurance companies with an internal model have to calculate their VaR with a stochastic calculation of the risks on both assets and liabilities. They project the possible trajectories of both the insurance products as well as the investments, take the correlations of the different products and give a final capital requirement.

An insurance balance sheet has a complicating factor, the life insurance products. Even though assets and liabilities are separated on the balance sheet, they interact with one another in life insurance. Consequently, insurers take the changes of the assets into account when determining liability amounts and risks.

In insurance, the risks relate to groups of products. A set of products with similar characteristics has its own projection. For example, the set of European corporate bonds rated A⁻ with a maturity of ten years has one set of forecasts. Not every bond itself needs to have its own risk simulation. They all follow the larger group.

Banks have a different approach to the risk calculations. Each asset has its own risk calculation. So other than in insurance, they are not grouped by their general characteristics. Besides that, the capital requirements are calculated differently. A sum is taken of the different risk exposures, including a specific section for the market risks (EC, 2013).

During the fieldwork, I encountered three types of VaR models in banking. There were the stochastic models, similar to the insurance companies. The other VaR came from historical and parametric models. The stochastic and parametric model use one basic assumption of market data, namely that it contains all information known at that specific moment. What happened before that moment is incorporated in the market value.

Stochastic VaR models project values following the known market value. The projections give the distribution of the possible market values, giving the estimate. Parametric VaR models use a given distribution, such as the normal distribution, to determine the possible losses estimate. The historical VaR differs from these two approaches in that it uses previous data of the portfolio to calculate the distribution.

The regulatory risk management practices do not limit themselves to the implementation of these models. CRD IV's related technical document is the Capital Requirements Regulation(CRR) that states that banks also need to calculate a Value-At-Risk that represents a period in which the portfolio underwent major stresses. Besides that, the regulator can ask for a specific mark-up of the capital amounts that come out of the model. They might do this when they think that the respective bank does not adequately govern its model. In insurance, the regulator requires a detailed document that include both qualitative and quantitative risk assessments that fall outside of the capital requirements, the ORSA document (EC, 2009). The internal model for capital requirements is thus not the only part the different financial firms have to use for their risk management. However, they are the major part due to the implications on the balance sheet.

All organisations within the EU in the same sector have to keep to their respective regulation. Banks apply CRD IV, insurance companies Solvency II. And banks issue loans, insurance companies insurance products. At the same

time, they all operate on the same financial market. So how can we understand that environment?

3.2 Market Environment

Both insurance companies and banks invest and trade on financial markets. At the same time, they have a client-side where they sell banking and insurance specific products. Their respective sector seems to set the standards in which they operate. Even though both insurance companies and banks have branched out to the others activities, the organisations are still compared to others in their own sector, not between them.

Banking and Insurance

Banks are actors on these financial market. They can have traders who trade either directly or through a broker with financial markets. But the trading on financial markets is generally not their only activity. Especially in the EU, where banks up to now have not been split up between investment banks and retail banking, larger banks normally also have other types of activities. They service clients from the public, private sector as well as households and individual clients. They can give different types of loans, from mortgages to commercial credits or pay-day loans. At the same time, they accept savings of the different clients.

Insurance companies sell insurance products. They sell non-life products that would cover for material damage. Another product is the life insurance, which in several EU countries does not differ much from a long term savings product. In both cases, a client of an insurance company pays for an insurance and thus saves money for a very specific goal or negative event. In order to pay-out what they contractually owe the client in a later stage, the money is invested. The insurance company buys bonds, equity but also real estate or other types of financial products. They do this, in general, through their asset managers. These can also be investment banks. These actors handle the daily portfolio changes of the insurance companies.

To understand the resemblance of insurance companies and banks in the EU,

lets take the example assurance vie products in France and different types of additional pension insurances sold in The Netherlands. A client puts in money and depending on the interest rate, investments and contractual obligations, they are able to obtain that money at a later date. The insurance company invests this money into financial markets or other type of investments, such as real estate. These products do not differ that much from a banks' savings scheme. Especially if the money is invested in the housing market, it directly resembles a bank's usage of savings for mortgages or investments in real estate.

In this relative abstract sense, an insurance company does not differ much from a bank. Both collect money and obtain capital gains with the assembled money. However, insurance companies do not have the same access to funding as banks. Banks can go to a Central Bank for money and are themselves money creators. They also have access to the interbanking market for large short-term loans. Even though the two types of organisations have similar balance sheet foundations, they have other constraints.

The two organisations also had different ways to access financial markets. Investment banks trade directly or through a broker. They can carry out a transaction almost immediately. Insurance companies have to take an extra step to access the markets. They pass through a bank or investment manager, who then directly carries out the trade or passes an order through a brokerage firm. Banks are thus one step closer to financial markets than insurance companies.

Models and Financial Markets

But what is that financial market? More often than not, they are electronic interactions through which multiple people and/or machines transfer information and investment products. Information is transferred through the different pricing systems that are shown on screens. Transactions are done through screens yet they are interactions of relatively limited amount of people spread around the globe in very specific localities¹. Therefore, how can we define the location? Well multiple places exist, such as dark pools or trading pits (even though these are extremely rare). Yet there are representations of the idealtypical market that we

¹see the work here of Knorr-Cetina and Bruegger (2002) but also the work of Clark (2005) in critical geography and Sassen (2001) on global cities

can use.

To create an idealtype of the financial market as encountered in the fieldwork but which also resembles the literature, the focus needs to be on human/machine interactions and the easy attainment and visualisation of up-to-date market information. During the participant observations, this could be found on Bloomberg computers. At the time of the fieldwork, the Bloomberg computers could be identified by a specific keyboard that needed to be used in the system. These computers were scattered around the different departments of the bank but also the insurance company, and seen in high concentrations in the trading rooms of banks and brokerage firms. The Bloomberg operating system and the computer it relies on give a separate interface to the computer one deals with normally. Interactions between the Microsoft Windows operating systems and the Bloomberg computer are difficult to obtain. It is a world on its own with specific codes and abbreviations. Per financial product, different windows can be shown, from the historical pricing, to the specifics of the bond and the current prices that are bid and asked for by separate market parties.

Even though this dissemination of information through a screen seems transparent, obtaining access is difficult. It is costly and one needs access to multiple players to be able to do a deal. Take for example the access to a Bloomberg screen, which the risk managers of Bank F said cost more each month than one would receive in the same period on the national minimum wage. The subscription cost raise the barrier to access the financial market. Not only did barriers exist to obtain data on pricing, so did it on the knowledge practices.

Interviews with people who modelled financial products in banking, the quants, discussed how difficult it was to obtain the right knowledge of the market. Take for example the way in which one would price a derivative. The methodology depends on market standards (Spears, 2014). The norms change continuously so you need to know where the standards are going. Conferences and papers give an idea of what others are doing. However, this does not give enough detail about the exact specifications of the model.

To know if your model fits within the standards, you can send it to a specific company, Mark-X, which shows how your model relates to others'. To access Mark-X's service, one had to send in a model which should not be too far off

from the market standard. The basic modelling thus already had to resemble others' methodology. Besides that, there was also a question of costs. For the participants who were used to dealing with millions and billions of the different portfolios, the amount of money one paid to become part of the club was exorbitant. Only the largest players were able to be part of this pricing tool, thereby creating a clear boundary between those in the know and those who were not.

For insurance companies, knowledge on market valuations was even further away. They did not directly trade on markets and did not have their own financial asset modelling teams. However, they did have their own knowledge standards. Across Europe, actuaries have their own professional educations and associations. Being part of this group has its advantages in the insurance world, with salary but also status. Most participants were actuaries or tried to become one.

One could see this in how they handled regulatory capital models. To design and implement the SII regulatory capital model, Insurance Company V had hired a set of consultants that had previously implemented other regulatory capital models in insurance. The experience in insurance gave them the legitimacy to make this new model.

For those working in companies that had both a banking and an insurance part, the different knowledge standards in banking and insurance created tensions. Edward worked at the headquarters of Bank G. His team had to control the insurance subsidiary's regulatory capital model. They were not able to because the insurance people had said that they were bankers. Thus, they would not understand what happened. Even though Edward and his team were made-up of actuaries, they were shunned with the reason that only people within the insurance world knew about its risk modelling. The insurance sector thus mainly looked at itself for its knowledge practices.

Differences between the two existed in both time and the usage of data. First of all, time standards were different. Bankers would talk about a historical VaR calculated over a period of two years. Valery, head of the Market Risk Management Team at Bank F, jokingly said that a long term decision was for the next year. At the same time, that also meant that the bankers had data on daily changes, or at least yesterday's exposures. In banking, the time-horizon was a maximum of two years and different data was available on a daily basis.

In Insurance, contrarily, the time horizons went into the next sixty years. The simulations for Insurance Company V's regulatory requirements model calculated the exposures for this period. Daily changes, on the other hand, did not matter. Financial data were available on a monthly and quarterly basis. The time horizons in insurance were thus decades longer than in banking but did not reflect the daily changes.

Besides the time horizons, the insurance and banking calculations differed substantially. Even though Solvency II tried to implement a risk-accuracy form of calculations that supposedly resembled banking's, the two were not alike. The models in banking had to do with the changes in the market and the possibility to predict and outsmart them. For example, Freddy talked about the derivative models he had worked on Bank X. He had not made models to show the true values but they had to represent the true market. In that way, it was not about the input of the model but about the output. Historical data were hardly used and not necessarily seen as good.²

In Insurance, the models were supposed to reflect the market values with the help of stochastic calculations. However, many of the underlying models and calculations were based on historical movements in the data. For example, at Insurance Company C, part of the interest rate calibration came from a principal component analysis (PCA) on historical data. A PCA is a mathematical tool for dimension reductions in large datasets. Rather than predicting the future, the PCA was used to understand the past. The same insurance company had a discussion with the regulator in how they calibrated their equity values. Other large insurance companies had taken their entire equity portfolio and created a polynomial that reflected their historical value changes. Insurance Company C had chosen for a simpler approach where equity's risk parameters were theoretically estimated, independent of the historical portfolio. The regulator preferred the historic approach. Thus, the models seemed to have to resemble the data that existed. In banking the focus lay on prediction of future values rather than on the understanding of historical movements.

The knowledge practices thus differed between the two sectors. They had

²See chapter 7 for a discussion at Bank F on how the knowledge practice was an implied volatility, ie. a theoretically calculated volatility, rather than a historical one

their own technical frames for the risks. Yet organisations in both sectors handle financial risks. What was this financial risk in detail? In order to know that, lets go into the two risk management departments of the two fieldwork locations.

3.3 Risk management Departments

In order to understand the type of framing that happened within risk management, we need to know more about the departments themselves. The organisation they are part of matters, as does their own organisation and the people they worked with on the risk assessments. Besides that, they had their own specific tools to create those risk assessments. Bank F and Insurance Company V's different departments differed from one another. On the one hand at Bank F, there was a special department dedicated to the risks related to the investments in financial markets. In Insurance Company V, on the other hand, the financial risk management was joined with the life insurance risks. Lets first have a look at the risk managers at Bank F.

3.3.1 Bank F

Bank F's risk managers worked in a skyscraper, a couple of floors down from the roof. There were around 20, 25, people who handled the market risks, all located along a hall way on the east-side at the top of this building. They were in the department of Market Risk Management (MRM), part of the larger risk division that dealt with all risk related efforts. The work in the risk division went from operational risks to the relationships with the regulator. The MRM department however focused on the risks that came from financial markets. The amount of people fluctuated because not all positions were always occupied and consultants were hired to help out with either regular or specific tasks. For their assessments on the financial market risks, they depended on the calculation department. The latter delivered the risk measures that the MRM used in their assessments.

Bank F itself was in a relatively special position. It had defaulted more or less multiple times after Lehman Brothers' bankruptcy. However, it had been saved multiple times by multiple European states. The last bankruptcy in the

beginning of the 2010s, had been one save too much. The bank had been directly taken over by the different European states. As a state-owned operation, it was not allowed to do any new business. Multiple participants would recount how their bank had once been ‘a Great Bank’. They felt nostalgic. Before the bankruptcy, they might have worked hard but at the same time they travelled around the world. At the time of the fieldwork, Bank F had already fallen from grace and was not allowed to do any new business. They had to diminish the assets they already owned in a way that was economically sensible. The latter meant that they were not supposed to sell assets when the market prices were low, as they were during the crisis. The people at Bank F were supposed to wait until the market prices would be higher to minimise losses. Thus the whole organisation necessary to keep the assets had been kept in place.

In this situation of minimising losses for the states who held the shares, the MRM department focused on the risks related to the products of the financial markets. These products were mainly fixed income products, such as bonds and derivatives. Besides that, they also looked at the balance sheet as a whole. The market risk managers had the official objective to be the ‘second’-line of control. They would make reports, look at new methodologies for the risk measures and were supposed to control the risk measures that the calculation department delivered. There were five teams in the department. Two teams handled different financial product aspects and two who dealt with two aspects of the balance sheet. The fifth team was a small team of two people who worked on issues related to multiple teams.

MRM’s risk tools

So what kind of tools did all these risk managers in the MRM department use? The different products and approaches had different mathematical assessments related to them. The two teams that handled the risks related to the balance sheet mainly dealt with accounting data and projections of those accounting data. These projections were normally linear extrapolations of or based on known cash flows. The two teams who related to the financial products had specific statistical measures as well as valuation methodologies. The statistical measures were mainly used for the regulatory required risk measurements. The valuations

had a direct effect on the balance sheet. The latter were also used in interactions with other market actors.

The market risk measures at Bank F were VaR calculations and sensitivities. The latter were the standard risk calculations of the different financial market products, such as derivatives. Sensitivities are the one percent value change of the product at hand. Overnight, market data from the day before, such as interest rates and volatilities, would be used to calculate the values of the different derivatives. Then, the sensitivities would be calculated, namely what would happen to the value if one of these input factors changed. The risk managers of the market risk team would receive a daily email with the sensitivities of the different products in the different trading books, calculated with the data of the previous day. The risk calculations were thus purely based on the data that would go into the valuation.

The regulator demanded Bank F to calculate a different type of risks, the VaR.³ At Bank F, they had chosen for the parametric VaR. They assumed the returns of the different assets were normally distributed. With this normal distribution, the VaR calculations were relatively simple. By taking the different sensitivities and adding this to a simple multiplication based on the normal distribution, one had the VaR of the product. To then obtain the overall VaR, the outcome was multiplied with a correlation matrix. That related for the diversification and concentration of the portfolio.

Besides these risk measures, there were the different exposures on the markets. Where the sensitivities and the VaR calculated possible changes, the valuations could bring Bank F in direct danger. Depending on the product, a different model was used for the models.

3.3.2 Insurance Company V

Insurance Company V, opposite to Bank F, could take on new business. It was one of the largest local entities of a European based Insurance company, the Group. It sold all sorts of insurance products, focusing on life insurances. They

³For a detailed explanation of how this was calculated, see chapter 5 and Camille's description of her work

invested the money of the different insurance products mainly in bonds, both sovereign and corporate. It also had an equity and real estate portfolio.

The risk managers worked in an open space where different teams of the division sat together. The managers had separated rooms on the long side of this landscaped office. The risk management division had a total of 52 people, with seventeen permanent employees, at least four consultants and three to five interns working on the life and financial risk side. Eight people worked on the financial and life risk modelling, with the consultants helping them out where needed. All of the risk managers in the modelling department had a mathematical background, either in financial mathematics or in actuary sciences.

As an intern, I worked for the modelling team of the life and financial risks. The risk modellers were responsible for the implementation, its calibrations and some of the calculations of the Solvency II capital requirement model. They handled a part of the process, mainly working on manipulation of data. They collected and standardised data so it could fit in the model's next calculation step. For example, those who worked on the financial assets' main task was to collect the right data from the investment centre, then put them through one or two different computer programs to make sure the data was ready for the next step in the risk calculations. The life risk modelling team was only one cog in the machine that delivered a final risk number.

While the team tried to obtain and transform different data sets, they still had to understand and be able to explain the whole process that led to the final regulatory capital requirement. First of all, the data transformations were in all the steps of the model. To be able to produce the right type of data, the team members had to know what they were supposed to look like. Secondly, the numbers that were calculated (by the team or someone else) had to be explained by the team. They were the ones who clarified the results and calculations of the model in and outside of Insurance Company V. For example, they defended the model to the local regulator. Inside the organisation, they were the ones who had to show the impact of the capital requirements on the finances and the profitability of different insurance products. Even though they were not part of the whole calculation, the members of the life/finance risk model team had to be able to describe its calculations and interpret its outcomes.

Modelling Capital in Insurance Company V

The calculation of the final formula was continuously left in a lack of understanding. First of all, there was a lack of access to the final model. The group controlled the calculations and only sporadically let the local team use the model. Thus when changes were made to the methodology or the portfolio impact, the local team had few possibilities to see the impact on the final model. This also created a lack of tacit knowledge⁴ of the final calculations, thereby not helping the understanding of the model. Secondly, the way was long between the risks related to a financial asset or product and the final regulatory capital determination. There were almost an uncountable amount of steps, carried out by different people in different divisions and locations. The steps were not only numerous, they all had their own complexity. Understanding how different investments or insurance products impacted the final capital calculations was also understanding the difficulties related to each step in the calculation.

The general steps to the final regulatory requirement calculation were the following; risk factor determination, determination of polynomial equations that resemble different product groups, the simulation of risk factor points and an aggregated simulation of the whole set of polynomials with the risk factor points that determined in the end the regulatory capital allocation. The Group and Insurance Company V carried out parts of these steps. The Group brought all steps together, calculating the final risk numbers.

First of all, there is a determination of risk factors. A large amount of risks is calibrated, from the chances that someone dies at a specific age to the possible changes in portfolio values. There were different levels of risks, either on a small part of the products or a larger part. For example, one could calculate risk factors on the portfolio of Austrian stocks with a credit rating of B. At the same time, one could also calculate the risk factor of the Austrian stocks with a credit rating of B in the manufacturing sector. Then, less detailed, one could also calculate the risk factor of all European stocks with a B rating. The parameters and data related to the risk factors all had their own model behind it.

⁴See MacKenzie and Spinardi (1995) for the importance of tacit knowledge in the production of technology

The risks related to the life insurances, the technical risks, were determined on statistical basis, based on the characteristics of those who are insured. These generally come from historical datasets collected by the insurance company itself or the national statistics agency.

With all these risk factors, the value of the different product lines had to be recreated. The provisions of the liabilities side as well as the changes in the asset values required both a model that could be used for simulations. Determining this model was a simulation in itself. With the different risk factors, polynomials were created that predicted the values of the different balance sheet lines. These mathematical functions were determined with the help of regression analysis and simulations of the portfolio.

In life insurance, an important notion was the interaction between assets and liabilities. Even though it was one of those notions that everybody was supposed to know, its explanation only became clear in the interviews with the managers higher up who oversaw the whole process. The interaction comes from the pay-outs of the assets for the life insurances. Thus, in order to determine the polynomials for the liabilities side, a separate asset calculation had to be carried out. That asset calculation recreated the expected paths the assets related to the asset liabilities would have. These changes in the assets determined the height of the liabilities for the liability regressions.

These polynomials would then be used for a final simulation, the simulation of the balance sheet as a whole. The different data points from the stochastic calculations would be entered in the polynomial functions. Besides the polynomial functions, the simulation included a multitude of discrete rules that limited the possible paths. For example, rules on the tax amounts as well as the amount of specific products had been added to have more realistic outcomes.

The outcomes of the pathways would then be thrown through a correlation matrix, to adjust for the relations between the risk factors. The matrix itself had to fit a specific mathematical aspect, it had to be positive semi-definite. A matrix without this characteristic did not fit in the calculation. Thus the matrix itself was thrown through an algorithm to make it such. Even though the different correlations might have been determined with calculations and added to the matrix, the algorithm had the last say over the final correlations.

After the different stochastic simulations were correlated with one another, the distribution of the possible losses had been calculated. There, the left boundary of 99.5% to infinity of the simulated distribution would be taken as final capital requirement. The whole process required enormous calculation power and a specific computer had been coded for the final simulations.

Insurance Company V calculated the different polynomials. The rest of the calculations were on Group level. At the local level, only a handful of people had access to the outcome of the final simulations. The local risk managers only knew on paper what happened at Group level. To make the calculations of the local level fit those at Group level, the local outcome would be adapted by the Group. The final capital requirement was thus the product of many a discrete choice rather than an ideal algebraic function representing all risks.

3.4 Numbers and hierarchy

The calculations described above seem relatively straightforward and usable. If I would solely focus on the calculations, I might conclude that the technical frame of these calculations creates the risk assessments. However, in order for the theory of the technical framing of risks to hold, the process outside of the mathematics needs attention. Which social interactions led to the risk assessments?

First of all, I describe the general work activities of the risk managers, including the relationship to the numbers they produced. I emphasise the distinction in activities between the hierarchies and how this changes the outcome of the calculations. Afterwards, I explain the relationship between the creation of risk numbers and the internal audience. I do so with the help of a detailed description of two meetings. One took place at insurance company V and the second one at Bank F.

Calculating and Interpreting Impact

The risk managers worked on the creation and assessments of risks. They calculated figures, manipulated databases and checked the rightness of their data. Besides, they also looked at the overall impact of their numbers.

In Bank F, only a handful of people dealt with mathematics beyond basics

like sums, divisions and multiplying. They worked on the derivatives. Even they did not have big debates on how to calculate or focus on the mathematics behind the models themselves. The discussion points centred around positions, impacts and IT problems. The mathematics came second or was not discussed at all. Bank F had many IT problems, with a great impact of the data availability. Risk managers at other banks, interviewed before the fieldwork, said similar things about their IT systems. Not the market at such but the workings of the organisation mattered in risk managers' conversations.

At Insurance Company V, the risk managers did do the mathematical calculations. The participants in the team of life and financial risk modelling would at least once a month handle more complex calculations like simulations and probability distributions. However, the risk managers dealt with large and general databases. They used excel or other data processors to handle large datasets related to different steps of the capital calculations.

In both locations, managers and non-managers had very different activities. Those who did not have to take care of a team would spend their days behind a computer. They would work on Microsoft Excel, answer emails and maybe use specific software programs to calculate different types of data. The non-managers handled the technical frame of the risk assessments. Sometimes, the risk managers would also use a text processor to write a document.

The managers, on the other hand, hardly touched software to calculate or to write. One could see them running from meeting to meeting. The people in their teams would join them there once in a while, for example every week. The managers spend their days in meetings, with other teams, their superiors or the people that worked for them to discuss the goings on in the organisation. The managers did not handle the technical frame.

That brings me to money, amounts of money. Discussions centred around the monetary losses (or gains) for the organisation. The risk managers' work evolved around the monetary impacts of their assessments. Those in non-managerial positions would create the assessments. Managers would take the outcomes and discuss their effects on other economic variables. For example, what would the risk measure do the final capital amounts?

The managers and their subordinates worked in two separate realities. On the

one hand, there were those who handled the methodology and the calculations. On the other, there were the managers who reported on the outcome of these calculations. They discussed these with managers of other teams in the risk division but also in other divisions, such as the business side or finance. The exact methodology of the risk calculations did not have the priority for management. They cared about the impact of the risk assessments for their department and the organisation.

The risk managers lowest in the hierarchy created certain risk assessments, either in documents or through numbers. The numbers were given to the second level in the hierarchy, who would supposedly control the creation of the numbers. They would also be contact of people in higher hierarchical levels. The people who managed the lower managers would discuss the numbers and the relations between them. On that third level, there was a discussion on the impact of the numbers. I was only able to see this discussion in communications back to the lower levels. However, this vision on the impact of the numbers rather than the pure construction of numbers based on a search for truth was visible throughout the two layers visible to me.

Lacking Accuracy but Fulfilling Expectations

In Insurance Company V, I was able to interview two young men in the finance department. Even though finance and risk are not the same, their accounts give insight into the creation of the organisational numbers. Both worked on financial reports. Jef created the weekly executive briefings and Ariel worked on the consolidation of the financial assets for the group's accounting. They had business school degrees and were deceived with their work. They mentioned that it was a tedious task without much intellectual interest.

At the same time, Jef and Ariel explained the social making of their numbers. Ariel pointed out the complexities of valuing the financial assets. Even he found it impossible to understand the exact creation of the numbers. And he had worked almost two years in his job. He had needed a year to get a basic understanding, let alone fully understand them. So if an outsider or even one of his colleagues wanted to challenge and check his numbers, they could not do so.

Jef agreed with Ariel on the difficulty to produce the numbers. He recuperated

numbers from different parts of the finance department to present to the executive board. These numbers went through multiple steps of calculations, from the first person who made a bookkeeping entry to the final consolidation that fit in the international accounting rules. Not only were these steps human, the numbers would also go from one software program to another. In that process, mistakes were made on a daily basis. Jef: 'It is already a miracle if, at the end, all numbers fall in line'.

The lack of accuracy of the numbers helped Jef to accomplish his tasks. He had to report numbers each week to management in a powerpoint presentation. He would recuperate these from different parts in the finance department to show the performance of the activities. However, sometimes, business had not gone well and the numbers would be worse than expected. Thus, Jef would pick and choose amongst different ratios and present the one he thought to be the most advantageous. That way, the layer higher up had its vision reinforced.

The accounting numbers communicated the state of the organisation to the higher echelons. Their communications had to fall in their expected vision. The people who calculated these numbers created them with a political frame. The right-ness of the numbers also had to do with that what was accepted, just as Jef changed the ratios he presented. This is the political frame.

Take Alice, head of the life and financial risk model team. She was very conscientious about her work and would check the different results people handed to her thoroughly. However, she trusted her people to calculate things that also fit expectations.

If Alice's subordinated had calculations outside the expected communications, she could (softly) punish them. For example, she expressed her concerns about the calculation of the capital requirements. She had trusted Amir who was responsible for this outcome. When he surprised her with a restatement that raised the capital requirements substantially, she was disturbed and lost her confidence in Amir. She did not do so because he wrongly calculated the first numbers. No, she was angry because the second calculation turned out to give a much higher capital amount. She had to tell the bad news to the finance department and her supervisors. Amir had stuck to the technical framing to the detriment of the political frame in the organisation. He was punished for

this informally and not considered for promotions. Not-adhering to the political frame thus had consequences.

As long as the numbers fit expectations, the risk managers would accept them. If the numbers did not fit expectations, the calculation had most probably gone wrong. The higher hierarchical layers preferred numbers that showed good financial circumstances than the ones that showed bad ones. The knowledge standards of the technical frame was second in priority for the people higher in the hierarchy.

How could this focus on the political frame happen without breaching knowledge standards? Well, the risk and value calculations in the two organisations were extremely fluid, never exact. Those who calculated hardly ever seemed to reproduce the exact same outcomes figures. At Bank F, the IT systems were generally blamed in the lack of ability to calculate what was seen as the right numbers. At Insurance Company V, the risk managers saw the cause of the irreproducibility in the complexity of the chain of calculations. Risk managers could make their figures fit the political frame without breaching the knowledge standards.

An example of the irreproducibility of the risk numbers comes from Insurance Company V. One intern, Claude, had the task to recalculate the regulatory capital amounts. Even though he had the same input to the model and the right computer code, he did not get the same capital amounts as the Group's model. In each step, Claude and the different risk managers who worked with him, stumbled upon another specificity that they did not know about. The Group, the consultants or the local calculations had aspects that were not written down or clarified that changed the outcome of the final calculations. The outcome of the calculations thus depended on fickle processes that were not generally not transparent. The fickleness could come from the computer programs that were used but also existed in the different steps of the calculation in the organisation.

The general accounts of calculation, hierarchical expectations and lack of accuracy adds doubts to the theory of technical framing. The risk numbers were more than their techniques, the audience mattered as well. However, the above are general accounts. They do not describe the details of the calculations and figures. I go into two meetings to show the interactions between hierarchy and

subordinates on the risk numbers. They show the political and technical framing. The first example is from a meeting at Insurance Company. The head of the Group explained the outcome of a risk analysis the people on the technical side could not solve. The meeting shows how the hierarchy imposes their knowledge on the subordinates. Then, I discuss the foreign exchange rate exposures at Bank F. In this meeting, the risk managers find themselves in difficulty about the exposures and which action to accept.

The CRO is always right

There were multiple layers inside the organisation and those who created the numbers had to make sure the outcome fit the political reality of management. How did this go in practice? At Insurance Company V, I worked on a test of the capital requirement model as a whole, the Profit and Loss attribution (PLA).⁵ In the process of calculations, I joined a meeting with the Group CRO who decided how we risk managers should calculate what. His vision mattered more than our technical understanding.

Multiple risk managers and consultants worked on the PLA. Ewan and Diane both handled the local aspects of the calculations. I tagged along with them, mostly helping Ewan. Then, there were four consultants involved. They took care of the coordination of the whole project. They had also created the tool that tested the capital requirement model.

For the PLA we needed figures from multiple locations, both as raw data and outputs of separate risk calculations. The first overall calculations of the exercises showed a mess. We could not make heads or tails of the outcome. We presented the messy data to the Group CRO. He was the head of all risk managers, including the ones at Insurance Company V. In the meeting, the CRO took the lead and explained from his birds' eyes view what we should have calculated and how we should have done so. The techniques behind the outcome did not matter, what mattered was the outcome as the CRO saw it.

In preparation of the meeting, four consultants, Ewan, Diane and me had worked for a month and a half on getting data and calculations that showed the

⁵In the following chapters (especially chapter 7) I address the tool itself and its usage.

model was right. The finance department had to give us the right data and then we had to calculate the different risk factors. However, the finance department was still working on finalising the end of year data. They were very reluctant to give us information. When we finally received something we found out they had given us estimations rather than final numbers.

In this month and a half of data collection, the consultants took the lead. Each time Ewan, Diane and me met with them, they asked us when we could deliver the calculations. Only in one of a dozen meetings, we discussed the technicalities of the calculations. The rest of the time, we talked about who would deliver what when. Sometimes Ewan or Diane would ask a question or put forward a difficulty with one of the numbers. It stayed at this level. The technical frame was left to the people calculating the numbers in their own corners. Obtaining data and delivering an outcome had the priority.

In the process, none of the participants gave the right data. But we still had to give a result. So when the finance department finally delivered a first set of data, the consultants started calculating. We were supposed to present our results to the Group CRO a week later so we had a short deadline. Since the consultants had been hired to perform the task, they took the responsibility to obtain final results. They worked so hard on getting an outcome of the exercise, they forgot to share updates on techniques and calculations with us. The technical frame was thus not the consultants' priority, the result mattered.

The PLA had to test the model and the model could not be wrong. So preferably, the numbers showed that the model was right, ie. predicted the risks accurately. Many inside Insurance Company V, the local level, believed the model did not give an accurate representation of risks. However, the executive board did not see it the same way. The Group CRO believed the model was right. So the model had to be right and the PLA had to show it was right.

Just before the meeting with the Group CRO, the consultants send an email with their figures. They did so at one o'clock at night. These hours were unusual for the people in Insurance Company V, indicating the urgency to have an outcome for the Group CRO. Their mail, however, did not show the result we wanted. The consultants had calculated a PLA result that showed the model did not predict the risks.

The meeting took place early in the morning, the Group CRO's only available timeslot. The meeting was a video conference call. Insurance Company V's risk managers sat in a dark and nondescript room looking at a screen. On it, we saw the Group CRO, his technical advisor and a consultant. They had a very fancy office, with a lot of light and art. On our side, we had some breakfast foods. At the same time, we were not sure we could eat it in front of the Group CRO. The participants' attitude and the different environments already indicated the different resources between the two sets of people.

In the discussion, the people portrayed on the screen had the upper hand. The local CRO, Patricia, and a consultant on our side started with the meeting with a short presentation. Afterwards, the people on the screen took over. The Group CRO asked forward some questions about the PLA. Moreover, he soon said 'the data I have in front of me are not good. I cannot go into them like this'. He expressed his dislike for the results.

The technical advisor and the CRO discussed the state of the data from the finance department. Only Patricia could add a 'but' or a 'how'. The CRO's advisor said that the model was always right. If he said so, the CRO said it as well. The model was thus always right, showed the accurate risks. Independent of calculation difficulties or shortcuts made by the different risk managers in the local entities, to these two men, the model was always right. The PLA results they had in front of them did not confirm their believes.

Quickly, Group the CRO lay the problem with the accounting figures. Even though the CRO had indicated he could not understand the outcome, he could understand one thing. Namely, one of the accounting entities of Insurance Company V could easily be explained. Insurance Companies in the EU have multiple balance sheets and entities to account for the different activities. Here, one entity owned all the others without any insurance products on it. Ownership, participations, and reinsurance formed the balance sheet.

The CRO thus explained that we could easily start with this specific accounting entity. The accounting figures were easy and the PLA had to be right there. When we would have solved the overreaching accounting entity, we could go to the others. The Group CRO solved in five minutes something we had worked on for a month and a half. He found the solution with a management point of

view and a certainty of what he wanted to see. Nor the technical details of the calculations nor the accuracy of the data had the Group CRO's priority. He knew what the balance sheet and the model were supposed to look like. We, local risk managers, had to fill in the blanks.

The CRO clearly gave a political frame. He knew what the balance sheet had to look like and what the PLA was supposed to do. The Group CRO's ideas trumped the technical frame of the data aggregation, the computer programs and calculations. In the weeks following the meeting, we made sure that the final data resembled what the Group CRO wanted to see. We thus made the techniques fit the hierarchy's expected outcomes. We followed the political frame for the PLA.

Acting upon an Unknown Foreign Currency Exposure

At Bank F, I found myself in many meetings where the outcome mattered more than the technique. Below, I describe one of these meetings. Bank F had a significant amount of foreign currencies. The people at Bank F needed to know how much exposure they had in the different currencies. For example, how much Canadian dollars would they need to fulfil payments in the upcoming months?

Part of the risks at Bank F lay with the balance sheet on a whole. The upcoming payments, the different values and the interest rates that the bank as a whole was exposed to were part of the risk managers jobs. The foreign currencies related to the balance sheet as a whole. If Bank F had activities in other currencies than the Euro, it also owed and owned them.

The finance department made sure that the balance of these currencies was zero, no outstanding debt and not owning a specific currency. That way, they did not have to worry about changes in the foreign exchange rates. The finance department did try to time their transactions, selling or buying when market worked in Bank Fs favour.

The risk managers in the MRM department controlled the way that these transactions were carried out. They could oppose a transaction. But in order to understand a transactions, they first needed to know how much Bank F had in which currency. That might seem like a simple task if you count the non-

Euro bills in your wallet. Bank F however had so many IT and administrative problems, making the counting of the foreign exchange balances a mammoth task.

In MRM, Veronica had the task to take care of the foreign exchange rates. She was relatively new to the bank and had a background in mathematical finance. Niklas was the boss of her boss and had previously worked in accounting. Niklas allowed me to participate in a meeting on the foreign exchange rate exposures. The calculation, asset and liquidity management, and accounting departments were also present in this meeting.

Bank F knew two foreign currency exposures. First of all, the accounting department had their figures. These supposedly represented the different contractual obligations of Bank F in other currencies than the Euro. The internal accountants took into account the specific accounting rules on how to deal with foreign exchange rates and derivatives. The figures did not represent the amount of cash Bank F needed or had in the different currencies.

Secondly, the calculation department calculated an exchange rate exposure. Their figures did not take into account accounting rules and had to represent what Bank F owed and owned to its counterparties. Consequently, the accounting data and the economic exposures did not completely correspond. If the people in asset and liquidity management wanted to neutralise the exposure, they had use the economic exposures as a starting point. However, the two departments calculated extremely different exposures. They diverged so much that the people in the risk department heavily doubted the economic data.

Calculating the Foreign Exchange Rate Exposure

Calculating the foreign exchange exposure could look like the simple activity of tallying. One contract has promised this amount, the other contract that amount. Reality at Bank F was more complicated. First of all, the amounts were in another denomination than the ones normally used in the bank. The different exchange rates changed continuously, changing Bank F's value with it.

Secondly, Bank F had derivative contracts that exchanged one currency for the other. Depending on the contract, the currency amounts could change over time.

Third of all, Bank F had had subsidiaries in other countries they had closed down. The bankers had repatriated the contracts to the main office. The transition had not always been smooth, losing contracts in the move for example. Finally, problems also arrived in the most unexpected aspects. For example, contracts could have disappeared or databases could have inaccurate contract information. All in all, the task of knowing the exposure in the different currencies was not as simple as it might seem.

Veronica spend multiple hours explaining her work to me. She did not know the foreign currency exposures at Bank F. She lacked clarity and tried to improve the knowledge within Bank F on the exact numbers. She did not calculate any other risk measures, prioritising on the basic question of the exposures. The calculation department would deliver their figures to her. She then had to check them before the meeting. The calculation department would also suggest transactions based on their data. Veronica could then oppose the transaction if she thought it should not happen.

In front of her computer, Veronica told me how she looked at the calculation department's data. She namely compared them to the accounting data. The two could not be too far apart, even though they had distinct calculations. She did not trust the calculation department's data. It changed continuously and she had not found any foundation to the specific figures.

Veronica did trust the accounting data. She took them as the starting point of her analysis. If the calculation department's data approached the accounting data, they might represent the accurate economic exposures. Why did she prefer the accounting figures? Her argument resembled a proof by contradiction. Namely, if the accounting data was not accurate, Bank F would find itself in extreme financial trouble. Bank F did not find itself in such an extremely bad situation. Consequently, according to Valery, the accounting department produced roughly accurate figures. She acknowledge they made mistakes but their data gave her a benchmark.

The data that came from the calculation department was inexplicable to her. If she would go into the files that led to the final number, she saw additions and subtractions of amounts that did not have a clear explanation to them. Some of those were justified. For example, Veronica understood adjustments coming

from the transfer of contracts between entities. At the same time, Veronica could not justify most exposures. If the calculation department proposed a transaction with unjustifiable figures, she opposed the transaction. She opposed many a transaction proposal.

Veronica created risk assessments on the incoherence of data and disagreement with transactions. Through the official channels, her knowledge only made it to the documents and the ears of her boss, Niklas. She would talk to people at her level in the finance department but not necessarily in the calculation department. At the same time, Niklas would present the assessments to the his peers in other departments. The numbers thus travelled from Veronica to Niklas to other managers.

On Niklas' hierarchical level, the numbers did not relate to their calculations. The exposures affected the financial situation of the organisation. So even though Veronica had created a technical frame, the managers used the numbers in their own world outside of her technical assessments.

Meeting on Foreign Exchange Rate Exposure

The following is an extract of a meeting on the exposure of Bank F's foreign exchange rate meeting. It is an extreme example of how meetings happened at Bank F. It was the only meeting I encountered in the research where people shouted on multiple occasions. While it was an extreme, in tone and differences in views, it was in the line with other meetings. Nothing ever seemed to go right at Bank F.

The transcript put forward underneath is the culmination of these problems. Yet the discussion hardly ever became technical. Measurements and techniques were not discussed. The discussion revolved around the impact a new transaction would have and the historical events that might have led to the exposures.

Niklas was the head of the team in MRM handling balance sheet risks, Peter led the foreign exchange rate calculation team and Isabel managed the department that handled the liquidity in the finance department. Ginny was present from the accounting department, as was her boss, Andrew. Elaine worked for Peter in the foreign exchange rate calculation team.

Peter, Head of Foreign Exchange (FX) Calculations: About NeoMoney. We have 1 billion NM, of which 900 million are a 'wedge' we put there after the 2008 crisis.

Ginny, Accounting: I do not know of such an exposure! How can you have such a number! We have a 104 million here, a billion is enormous. I do not know about this, these are not in my numbers.

Elaine, FX calculation: We propose to eliminate the wedge; it would bring the numbers together. The wedge was added 6 years ago. If we just delete it...

Ginny: No, we...

Niklas, head FX risks: BUT WHERE DOES THE WEDGE COME FROM? You do not know where it comes from? WE CANNOT GET RID OF IT JUST LIKE THAT!?

Peter: Ok, that is for the next meeting. Now GeoMoney. We are 150 million GM negative, so we buy 150 to neutralize.

Niklas: Wait, was GM not covered by derivatives? The exposure is not supposed to exist

Andrew, Head of Accounting: If I remember well from 5 years ago, you are right. And the derivatives are supposed to be in our bookkeeping

Niklas: If so, why the exposure?

Andrew: Well, maybe the contracts are lost...

(All 15 people in the room shrugged, lost contracts were nothing new)

Peter: We will study this. We have an exposure of 100 Million of ForRate and ...

Meeting on Foreign Exchange Rate Exposures at Bank F - Part 1

The above shows how the participants in the meeting accepted an inexactness of the data. In this case, the differences were so large and had lasted for such a long time that some of the involved also got angry. The pace was fast. For many of the currencies, the participants did not make a decision regarding the sales or purchase. At the same time, if we look at the discussion itself, it focuses on the

numbers themselves and some transactions that the people knew of. Further on in the meeting, transactions were proposed.

Even if the calculations were unclear and methods not discussed, the people in the calculations department did suggest transactions. Niklas, with Veronica's assessments did not agree and prevented action. Still, the final objective was the transaction, not the underlying calculation. Thus the additions, subtractions and in- and exclusion of the different exposures were not off the table.

Even though the participants did not discuss the calculations, they did talk about the effects of a number. Take for example the following exchange that happened later on in the meeting. A discrepancy existed between the accounting and economic exposure. However, they went in the same direction, both showed they needed a lot of SafeMoney. Veronica and Niklas accepted the purchase of SafeMoney and Bank F could buy some to neutralise at least part of the position.

The technicalities behind the exposure remained unclear. However, the three managers at the table, Niklas, Peter and Isabel, saw they could neutralise some of the unknown position. The foreign exchange balance had to be neutralised for the stability of the bank.

Peter: Lets go onto SafeMoney. Three months ago, we sold 10 million of SafeMoney but we should not have done so.

[The documentation of the meeting showed a difference between the accounting and economic positions of 4 million, with the accounting value at -10 million and the economic value at -14 million in SafeMoney]

Niklas: Ok

Isabel, head of the finance department's : Yes, lets buy them

Peter: So for FlorinCurrency ...

Meeting on Foreign Exchange Rate Exposures at Bank F - Part 2

On SafeMoney, the documents showed a difference of four million between the accounting and the economic figures. The participants did not discuss the difference or the reason for the difference. The meeting came to its end and the proposed transactions had to be handled quickly. Peter and Niklas agreed that at least the minimum of the two numbers should be covered. In this case the

accounting numbers gave the lowest exposure. The managers thus accepted to buy 10 million of SafeMoney.

None of the participants lost energy on the question why the numbers were the way they were nor why the transaction of three months ago had happened in the first place. The technical frame was not discussed.

The outcome did matter to the managers. They preferred that Bank F did not have a negative balance on SafeMoney. This followed the political frame. The foreign exchange balance had to be neutralised where possible. If Bank F would not do this, the foreign exchanges might bring the organisation into trouble again.

Namely, if they needed a specific currency to refinance but the market would not give it to them, Bank F had a problem. Since they were a European bank, they could relatively easily obtain euros from the ECB. The states that owned Bank F were also financed in euros. However, transactions in other currencies had to go through the market. The survival back-up plan of the states and related central banks did not resolve the problem of foreign exchanges. They namely had euros, not SafeMoney or other. Therefore, the non-euro denominated currencies could lead to serious problems. This dependency on the market and the possibility of things going wrong was a political frame. The market had resources Bank F did not have. Thus, the different actors in finance and risk management had to try to circumvent the foreign currency dependency.

While the technical frame was not clear and its output even less so, the specific consequences in the political frame were. Thus, Niklas the risk manager agreed to a transaction. The technical frame was created by the non-managers, who delivered its outcome to their managers. The latter saw the numbers and had their own political frame, that of the zero exposure in foreign currencies.

The foreign exchange rate meeting shows how the technical and political frame come together. In this case, the calculation department did not provide the right technical frame. Their numbers did not fit the knowledge standard Veronica expected to see. At the same time a political frame existed, the reception of the numbers by the managers and the related objective of the neutral foreign exchange rate position. If those who received the outcome did not accept the technical frame, as was the case with NeoMoney, they would leave the outcome

aside.

At the same time, the technical frame was not under discussion, the outcomes were. The knowledge practice itself was for the lower echelons in the hierarchy who would accept or not the technical frame. If there was even the slightest adherence to the norm, the political frame came in. The different managers would decide upon actions in the resource dependencies rather than the knowledge standard.

3.5 Conclusion

The concept of framing relates to the environment in which it takes place. Who makes a number, what are the techniques to create it but also, to whom is the assessment addressed? I distinguish two types of framing from the literature. Technical framing relates to the knowledge practices and material that make a number in the market. Political framing refers to the reception of the number and the related resource distribution.

In order to understand which type frames financial market risks, I described the environment of the risk assessments. There is the financial market, the sector in which the organisations operate, the regulator and the organisation itself. The risk calculations take place in these organisations that themselves fall into these other places. Here, we can decipher the type of framing.

The two organisations had different techniques to measure risks. Bank F worked with both exposures and predictions of losses of the specific products they owned. In Insurance Company V, the individual products were less important. There, focus lay on simulated balance sheets that incorporated both future payments and value changes. Both companies used similar probability distribution functions, stochastic models and accounting practices.

Their technical risk frames varied. The risk numbers had other scales of calculation and time horizons. In Insurance Company V, the simulated future lasted for multiple decades and the risks related to the balance sheet as a whole with its general groupings of products. At Bank F, each small product had its own risk calculation yet the overall balance sheet picture lacked. Even though its future lay in the next couple of years rather than decades, Bank F had a delay

of a day for its risk measurements. Insurance Company V could, at its quickest, have a vision of risks over the last month. The two types of risk assessments could thus not be compared in their exact technical outcomes.

At the same time, the usage of the calculations and assessments was remarkably similar. This is where the hierarchy comes in. People in management positions did not discuss techniques in general. They saw the impact of a specific number. The people lower in the hierarchy tried to make sure that the outcomes of their technical frames fit their managers' expectations. At the management level, the technical frame was not part of the discussion. What mattered was a numbers' impact and its coherence. Did a number look right? Meaning, does it resemble previous numbers and/or have a positive effect for the financial data?

In most cases, the political framing went above the technical framing. The latter was necessary but highly changeable as well. Since the technical frame was not watertight and malleable, the political framing could easily trump the former. The management of risks had thus more to it than a simple or complex calculation. The world around it, the social relationships and distributions of resources thus had an impact. In order to understand the management of financial risks in large financial organisation, we thus need to look into the situation within the organisation. But first and foremost, the object requires definition.

Chapter 4

Opening up the black box of financial risk

Financial risks can be many things and the term itself obfuscates underlying practices. They remain a black box. Amongst others, they can be dangerous financial interactions, default probabilities, a negative event. Before going into the usage of financial market risks, the concept itself requires further scrutiny. This is the first step to the understanding of the social usages. Therefore in this chapter, I open the black box of financial market risks. I do so by understanding the risk managers' definitions, identifying who says what and by following the practices of one specific risk.

The studies of science and technology use the term of opening the black box (Bijker, Hughes, Pinch, & Douglas, 2012). Black boxes are technological or knowledge devices that hide the technological details and spit out an accepted truth. By opening one, one makes the implicit assumptions visible (MacKenzie, 2005). Technological devices are multiple and people use them differently (Elzen, 1986; Agalianos, Whitty, & Noss, 2006). They therefore do not only depend on the construction of the object but also on the people involved as well as the usage. To open up the black box thus means three things. First of all, it is about the meanings the actors involved give to the technical device, in this case financial market risks. Secondly, different groups give other meanings to the object, implying a social factor that influences the creation of financial market

risks. Third of all, there is the usage of the meanings and its outcomes.

One might see defining financial risks as a trivial exercise. However, by understanding the definition, we can understand the risk manager's labour and its outcome. The definition demarcates what risk managers look at. For example, if the definition is a calculation related to investments that implies that incalculable aspects are left aside. Take the example of the subordinate debt market in the US before and after the crisis. By taking credit ratings as risk assessments, multiple owners of the credit derivatives did not see the financial losses that lay ahead (MacKenzie, 2011). The understanding of financial market risks by the people who handle them relates directly to how they interpret financial risks. As a consequence, the definition relates to the risk managers ability to react.

The construction of the social is key in opening a black box. The actors who work with financial risk create risks by defining them. The social constructivist approach of this research suggests that risks and their development could have been different than we know them right now (Hacking, 1999). But what is a social construction then in the case of financial risk management? First of all, it is about sense making. Actors attribute meanings to the object they work with. Besides, there are multiple actors might have different visions, based on their career backgrounds or their daily work. The different groups of meanings can have repercussions on how the risks are dealt with. Thus, besides actors and their meanings, it is also about how they handle the different forms of risk.

As said in the methodology, this research's elementary particle of observation is the communication between actors. To understand financial risks, I thus need to know about the related communications. The different actors have their own sense making of the object they work with. Multiple ideas are constructed at the same time within the same sphere. Take for example illnesses and the different stages they go through (Mol, 2002). People understand their illness by their feelings of discomfort within their body. Doctors see a diagnosis, a disease that fits the medical standards. Both have a different image of something similar, based on their own expertise and background. Thus, I can expect that risk management knows a similar multitude of knowledge practices, probably even with different definitions amongst close colleagues.

To show the different meanings the participants give to financial market risks

is not enough to open the black box. A multitude of definitions without order would imply a chaos in which no one knows what the other is talking about. Yet risk management departments are able to produce risk numbers, write in annual reports and report to the regulator about the different risks. So there is a consensus, at least amongst groups of peoples. MacKenzie and Spears (2014) call the set of people who use a specific method as an evaluation culture, in their case the Gaussian Copula to understand mortgage risk in securitisations. Arjaliès et alii (2017) discuss how investment managers also have separate evaluation cultures that go beyond the boundaries of the organisation. One aspect of the black box is thus to know who gives which meaning.

What still remains to be studied is who gives which interpretation to the financial object. This pattern of meanings can come from multiple factors, amongst others the background of the actor. The social determination of economic interpretations has been a theme in Bourdieusian studies of economic life. Take for example the work of Godechot (2000, 2001) who relates the social background of a trader to their methodological inclination. Another study of economic actors' social background and theoretical vision comes from Lebaron (2008) who analyses central bankers and the influence of career on the central bank's policies. In both studies, the individual's background makes that they use different policies.

While this research does not share the deterministic notions used in a Bourdieusian approach, the study of individual backgrounds can be very useful. Namely, if there is a pattern in who uses the different risk definitions, this can tell us something about why the actors give the specific meaning to the object. The pattern does not necessarily have to come from the educational or class background of the different participants. It can also come from the colleagues they have encountered or the team they work for.

The definition of the financial object influences its usage and its possible financial outcomes. Take for example MacKenzie's study (ibid.) on the methods used in the US mortgage securities market. There, different knowledge practices around risk assessments existed alongside one another about securitisations, even in the same bank. On the one hand there were those who looked at the mortgage characteristics, on the other a group that focused on the default correlation. The second group took the output of the first and put their knowledge practice on

top of it, creating multiply structured credit products. In doing so, they also multiplied the effects of default. It was the usage of the default correlation without looking at the mortgage details that exacerbated the financial losses encountered in the financial crisis.

In the opening of the black box, one aspect needs to be added - the way in which the different actors use the risk definitions. Not only the discussion, or the actor, also the practice of the object help understand the risk object. In the case of natural risks, Wynne (2002) shows how the definition by a dominant group of scientists makes social concerns of said risks illegitimate. Thus, the usage of a technical device has consequences for the people and environment in which it is situated.

The chapter starts with a discussion of the risk definitions, first in banking, then in insurance. The risk managers talk about a multitude of risks. Some talk about a direct measurement of financial products, others go into the consequences for the organisation. In the multitude of risk definitions, I identify two recurring aspects. Namely, the participants distinguish between the risks at the moment of decision making, which I call the risk ascription, and the problems they see coming and try to avoid, which I define as the consequence attribution.¹ The main distinction between the two is the visibility of the future. Risk ascriptions relate to relatively standardised assessments (mainly quantitative) of the financial activities that take place. This includes the assets that are held. Attribution of consequences relate to expected negative events that might come financial markets. These are visible to the risk managers and do not necessarily relate to the ascriptions.

The risk managers' distinction between risk ascription and consequence attribution can easily be explained with the analogy of sailing a boat. One can calculate the chance that it will sink. Before and during the voyage, people can create these numbers. This is the risk ascription. You calculate the probability of the negative event, sinking in this case. Then, during the trip, the hull shows signs of wear, holes appear indicating that the boat will sink soon. These are the consequence attributions. By sailing, you have obtained holes that, unless you

¹This distinction resembles by Luhmann's (1993) theoretical study on the attribution of risks and danger in the future, however the practices did not exactly follow Luhmann's distinction.

plug them, will sink the boat.

Following the analysis of what the participants mean by financial market risk, I go into the question of who gives which definition. The different definitions depend on the work experience of the risk managers. A Multiple Correspondence Analysis (MCA) helps to explore some more quantitative data on the risk definition and the risk managers' backgrounds. The outcome of this geometric data reduction tool is that the different definitions relate to the risk managers' career backgrounds.

Finally, at the end of the chapter, I go into the practical usage of financial market risk definitions. With the help of one specific risk, interest rate risk, I disentangle how the risk managers work with the interest rate risks. With that, the everyday risk object's details become clear. The risk managers might have a very specific idea of what the interest rate risk is, they still work on other aspects. And when a specific definition creates its own problems, the risk managers also make sure they counter them. However, before I go into the risk usages, I describe what the risk managers describe as risk.

4.1 Risk in Banking

Risks seem to be everywhere, including in the risk managers' physical environment. As an intern at Bank F, I had to follow a health and safety training. Bank F was located in a skyscraper and thus required to elaborate safety procedures. The training lasted roughly two hours and took place in one of the larger meeting rooms, where we would also have the monthly discussions on the financial risks. Contrary to the discussions on financial market risks, the message of the training was very simple. The building was designed to withstand fire. In case the fire alarm would go off, one had to go to the staircases. These did not burn. The floors would withstand fire as well. The pillars that upheld the ceiling would last three hours before burning.

The man who explained the fire safety did not doubt these numbers, the certainty around them structured the whole evacuation procedure. Since the ceilings would not catch fire, only people of the floor of the fire would evacuate the building. The elevator would not open anymore on the floor with the fire.

People on that floor would take the stairs. The latter did not burn either, according to the presenter. So one could safely take the stairs to the elevator a floor down, where the elevators did open again. The whole explanation of the fire risks was one of certainty. There were certain times about when what would burn, when the walls would break down and when the pillars would catch fire. This opposed completely the financial risks that I worked with in Bank F.

The financial risks of Bank F's risk managers were never this clear. For example, no one spoke about the VaR measures as true. None of the calculations was clear or certain. It could go any other way. Opposite to the health and safety trainings, the financial risks assessments had no certainty attached to them. The different risk managers even answered the question to what those risks were in multiple ways.

Risks as the Calculations of the Financial Product

Bank F officially had one main risk measure of financial market products, sensitivities. They showed how much a percentage change of a parameter would change the final value. Sensitivities are a quantitative risk assessment. The risk managers received daily reports on the development of these measures.

An example of a sensitivity comes from a simple interest rate swap. Bank F would receive the flexible interest rates in exchange for a fixed one, determined at the purchase. So the value of the swap changed if the short term interest rate changed. The sensitivity would then be the amount the value of the swap changed if the flexible interest rate changed with one percent. The value of such a swap only depended on the interest rate. Thus no other risk measure would be calculated. However, in the case of another type of derivative, for example a swap of interest rates from different currencies, the risk managers received other value-changing factors. In the case of the interest rate currency swap, they had both interest rate and the related exchange rate sensitivities. The risk measures directly related to the inputs of the value calculations.

Some risk managers at Bank F took these sensitivities as the basis of financial market risks. They defined risks as the inputs to the calculations of the financial product. Take for example Ruth, who controlled Bank F's risk calculations on

the different portfolios with financial products.

Risk is related to whatever you have in your portfolio. What can one lose based on the variation of the market parameters? In general, it is about the sensitivities of your portfolio. For example, if you do not have a foreign exchange rate exposure [of your products], you do not have an exchange rate risk. It is all about mastering what is in your portfolio, that way you can quantify [the risks].

Ruth, Risk Manager Bank F

Ruth thus saw risks as the losses on the variables that helped you calculate your portfolio value. Miriam explained financial risks in a similar way. She worked closely together with Ruth. In a previous job, she had been a trader. She explained risks as if she was behind her trading desk, looking at a screen with key numbers of the portfolio she had to manage. Risks were namely the factors your product relied on. So, in the case of a foreign exchange derivative, the risks of the product were the changes of those currencies. It was all about knowing one's portfolio and the changes it made based on the input parameters.

Both Miriam and Ruth's definition of financial market risk follow Knight's (1921) distinction between risk and uncertainty. They calculated the possible losses of known variables. Both of them also worked directly on the sensitivities. The definition of risks as the calculable parameters thus followed their work practices.

Not just participants at Bank F defined risks as calculable probabilities of market variables. I met Felix in the first stages of the research. Felix had a PhD in engineering. He worked at Bank Z, calculating and modelling the risks for fixed-income products, such as derivatives and bonds. He defined risks as mathematical calculations that related to the investments in the bank's portfolio. At the same time, he went beyond the simple sensitivities that Miriam and Ruth looked at. I simply asked him: 'What are risks for you?' He told me that he knew the bank might suffer from something but it was unknown to which extent. He tried to find this unknown with the most objective calculations as possible. His risk measures were supposed to be as clear and true as possible in this environment of unknowns. The market gave him the data and then he tried

to model it, just like in his work in physics. Risks related to the changes in the market data.

He gave the example of the Value-At-Risk (VaR) models that were used in risk management. These gave him some information but not enough. Felix also had other indicators of the different investments that helped understand the VaR movements such as the variables related to the different mathematical moments of a function, the greeks, or sensitivities. All these variables still related to the same underlying dataset, the market value changes of a specific product. Felix's risks measurements thus tried to control a future that was hidden by the probability calculations and related to the knowledge of the currently held investments. He went beyond VaR measures and tried to obtain more information of the value changes. He did this with the help of other calculations based on the same market data used as input for the standard risk measures.

Miriam, Ruth and Felix all worked with the calculations of risks related directly to the investments. The three of them saw risks therefore as a calculation related to the changes in the value of those financial products. I call this definition of financial risks the risk ascription. In this sense, financial risks are calculations related directly to the investments. At the moment of risk taking there is thus also a risk calculation. The numbers that come out of this process are probabilities or possible losses that could happen in the future. However, when that future event might happen, remains undefined and invisible in this case. The risk ascription was not the only risk definition used by the risk managers.

Calculations and Consequences

In roughly the same period of the research as I had interviewed Felix, I met Dirk. He was the head of the a team that calculated the risk numbers at Bank Y, one of the largest European banks. He explained risks with the help of probabilities of risk categories but he added a dimension, the one of events that could harm the Bank, events one did not know about. He had previously been a central banker and a trader. After a long interview about his team, the regulation and his previous life as a trader, he defined financial risk for me.

And what is risk we are dealing with? [...] I would say [...] we are

dealing with any kinds of risk.

Dirk, head of risk measurements at Bank Y

At the first look, Dirk did not see risks as calculations. He saw ‘all’ risks. However, to elaborate his definition, he went on with a summation of risks that he deemed well-defined, like operational risk, interest rate risk, counterparty and credit risks, liquidity risk. He saw them all as calculable, with knowledge of the past.² At the same time, he also saw his work as trying to quantify unexpected events, thereby looking at what was already a loss but just not qualified as such³. His work was not just about the control of the specified risk categories, it was also about the problematic events that might cause losses for the bank he worked for. Dirk believed he could calculate them.

In Dirk’s terms, risks were just all risks; both known categorisations and unknown, all quantifiable. Where his definition had started out as a clear example of a set of known calculable risks, at the end of his discourse the definition was like another type of risk. Negative things might happen in the future that are not part of the calculations but that are part of the risks. He still wanted to quantify the latter, even though quantifying the unknown might seem like an impossible task. With these two aspects, Dirk described both an ascription of risks and a form of a consequence attribution. Just as Miriam, Ruth and Felix, he related risks to probability calculations of investments, the risk ascription. The future remained relatively invisible since it was part of the realm of chances. Then, there were the consequence attributions, the future negative events that could impact Bank Y. Other than we will see later on, Dirk was unaware of what these events were.

Nikki shared Dirk’s double sided definition of predefined calculations and negative events. She worked as a risk manager at a European brokerage firm.

²This knowledge of the past is interesting since banking risk models generally do not look at historical data, they look at distributions and current market parameters. He was the only one who put this forward.

³He cited here the book by the same name by Nicholas Taleb (2007) in which the author goes into financial crisis and losses and the probabilities related to negative events. It is similar to Popper’s (1959) reasoning on falsification rather than verification. However, the outcome is not that one is not able to make conclusions about the future based on history but that the tails of the chosen probability distributions need to be thicker. That means thus that risks can be calculated, something the interviewee also seems to imply

She controlled the transactions of the brokers with the help of limits, whereby one could never have more than a specific amount of a specific security. She thus controlled the financial market risks with a relatively simple calculation, counting to a maximum amount. At the same time, Nikki discussed the possible losses that could happen as part of financial risks. That was in line with defining risks as possible problems.

At Bank F, I also encountered the double definition of risks as both calculable and unknown. Take for example Valery. She was the head of the Market Risk Management Team (MRM) and had previously worked as a derivatives trader and managed the finance department of one of Bank F's branches. On the one hand, she discussed risks with the help of the different calculable risk categories. However, when explaining the differences between the categories, she saw similarities. She explained this as a correlation between different risk measurements. Not only did she see a correlation she emphasised that, in practice, risk measures overlapped.

Take for example a bond's interest rate, credit and liquidity risk. The risk managers at Bank F generally accepted that the credit risk could be calculated as the difference between interest rate on the bond and risk-neutral interest rate. This was called the spread. The risk-neutral rate could be taken from inter-banking funding rates like LIBOR and EURIBOR or a sovereign bond. However, with the 2008 crisis, a new risk had come into existence, liquidity risk. To buy a bond, one needed funding (cash), which had been more and more difficult to find. The scarcity of money had led to higher interest rates. Therefore the spread that was calculated partially incorporated this liquidity risk, making it difficult to distinguish the risk categories. Market indicators on the final costs were not available either. Liquidity risk had become part of interest rate and credit risk, definable yet incalculable. Liquidity and credit risk could not always be distinguished from one another. Valery identified the short-coming in predefined risk definitions.

At the same time, Valery mainly worked on something else. Namely, on a daily basis, she dealt with the problems that came at her. As head of the market risk management team, she would spend her days in meetings where problems were discussed. There were the liquidity problems mentioned above, there were

value changes of bonds that could endanger the equity position and then there were an enormous amount of operational (IT) problems. The latter made it difficult to know what the portfolio values were. Hardly ever did Valery focus on the calculations themselves. She would talk about the impact and the need to resolve certain problems. Even though she might define risks as calculations, as the risk ascriptions, her work focused on problematic events.

There was thus another aspect to the financial market risks in banking than the predefined calculations, the risk ascriptions. Dirk hinted at it, Nikki directly defined it and Valery worked on it. Negative events existed that had to be dealt with by the risk managers. This is what I call the consequence attribution.

Seeing Problems

At Bank F, some emphasised the problem-aspect of financial market risks. Gerard, the risk manager with whom I shared an office, had heard Ruth talk about risks as calculative categories. While I accompanied him for a smoke outside of the building, he vehemently expressed his disagreement. He thought it was stupid what she had said. To him, risks were not only a measurement of an investment. They were more than that, it was about all possible losses.

Before joining the risk team as a direct support to the head of market risk management, he had worked in the finance department for more than five years. According to Gerard, risks were related to all possible financial losses. His disagreement had been clear but he was not able to define financial risks as easily. It took him a while to come up with an answer. I had to coax it out of him. Even though he worked with financial market risks on a daily basis, he did not have a clear definition. It shows the importance of the topic yet its complete ambiguity. Financial risks were many things for many people at the same time. They were just there, part of the work.

Gerald had, in his previous work, seen all possible financial losses and the liquidity problems turn into negative events. He had taken part in many of the discussions around Bank F's default. His definition related directly to this experience. To him, risks were not calculations related to investments, they were possible losses related to the organisation as a whole.

Take the example of liquidity. In the middle of the fieldwork at Bank F, the availability of cash had (another time) become a concern. The risk managers had to contain the problem. At the same time, they were not quite sure how to do so. They had seen that the need for cash had increased quite unexpectedly for Bank F. Obtaining the cash in the market remained difficult. The risk managers followed the cash needs. They had little power to change the situation, neither could they calculate a probability to the event that cash might run out. The latter was not necessary. Obtaining the cash was the solution. A control through numbers did not help. These liquidity problems were dealt with immediately. Other than, for example calculations of interest rate risk, the liquidity risk related to a foreseeable future.

Gerard was not the only one who saw risks from this perspective of losses. Robert had been liquidity risk manager at Bank F. He had made the step to Bank D to work in a similar position. He saw risks as the problems that came to him. The crisis Bank F had gone through had been very instructive to him since it had shown him the unpredictability of trouble.

The first memory I have of the crisis is, and I believe this is a risk management viewpoint, that is to say that one has to pay attention because everything will go wrong at the same time

Robert, Bank D

One of the lessons that well-read risk manager Robert had taken from the crisis was that all problems came at once. During an interview about his work as a risk manager, he described accounting rules as easily as the workings of the bank. However, the emphasis lay on the problems he had encountered working for Bank F. There had been the bonds that had lost their value, the data that was in-transparent and the exotic products whose prices had to be recalculated. Besides that, there were liquidity questions and interest rate curves that did not conform market standards. He spoke about problems that had occurred and how he had tried to avoid them. The problems originated, on one way or the other, from financial markets. He attributed the consequences to the organisation he worked for.

Yvonne worked at Bank X in the regulatory affairs, part of the risk management department. She did not see risks as calculations. She defined risks as the problems her bank could encounter. She identified processes and habits within Bank X that caused financial losses. She explained her work as continuously preventing traders from doing crazy stuff (her words). At the same time she helped them use the regulatory rules to their advantage. So she prevented the negative events but did not prevent risk taking.

To Yvonne, risks were everywhere. Nevertheless, she mainly found them in the back office. These people filled in the forms and sent contracts related to financial products. They made mistakes. Too many times had she seen that old contracts had gone lost or numbers and issuers written in wrongly, thereby nullifying the value that the calculations had shown. She called risks the stupid things. Her definition of risks was far from the calculation, it dealt with the problems that could happen and the losses that occurred. She expressed this as follows:

It is that you cannot be sure about the price of your product, you can't be sure that your client will be able to repay in a few years because many things will happen. You cannot be sure, I mean it is stupid but, today we, all the banks are looking again at their contracts with the clearing houses. Most have lost their contracts with the clearing houses.

We have many contracts with people, stupid loan contracts for a few thousands, nothing, when we ask the client to repay us, they say what are you talking about, we don't have any contract with you. They lost it, we lost it we don't have any proof anymore that we had a contract together. Banks merge with other organisations. All the loans are sold to one company or the other, we do not find the contracts anymore. At one time we have input the data in the system, we have changed the system, we forgot to keep a set of contracts. I mean, there are so many errors, it is life. It is just life. People change departments. They knew that he had something somewhere in his basket. However, the others do not know this. With the change,

the knowledge gets lost. This is risk, this is real life. And it is not because you are bad, it is because you are human. When you put data in the system, there are so many errors. Sometimes when, we have seen contracts where for guarantees, where the beneficiary was not the good one. Because the seller, the trader when he filled up the holes he misplaced the names. Stupid errors. But when you want to call for the guarantee they tell you: haha sorry guy, you paid the premium for twenty years but it was not a good contract, you cannot claim today. This is risk.

Yvonne, Head of Regulatory Affairs, Bank X

She told me about the loss of contracts, the loss of a data-entry in the database or naming the wrong person as contract partner. The risks were these small human errors of people in an organisation. Yvonne thus had a relatively negative view of the situation at her bank. She saw problems everywhere and especially in the human errors. Her definition of risks was based on the losses that she had seen happening. These problems were not calculable, they were human. This relates to what Gerard and Robert said but also the second part of Nikki, Valery and Dirk's definition. Namely, risks are the losses that come at you. They are an event that has negative consequences to the organisation you work for. To Yvonne, risks were thus consequence attributions.

How to compare the different definitions, the calculations, the risk ascription, the upcoming problems, the consequence attribution? The visibility of the future matters as well as the work that people did. Lets look into time first. There were two moments that the banking risk managers dealt with. On the one hand, there was a relatively abstract risk related to financial investments and data directly related to these investments. This can be seen in a relatively far future where risks are probabilities, not visible realities. On the other hand, the problems aspect of the risk definition relates to a foreseeable future. There, negative consequences can be already be seen and they need to be avoided. It is therefore an ascription of risks to current and future investments and an attribution of consequences to the organisation. In the risk ascription, the The latter is when one can see the losses coming, thereby trying to avoid these consequences for a specific entity.

Besides the aspect of time, the risk definitions relates to peoples' daily activities. If a risk manager worked directly with financial losses, the risk definition skewed to the consequence attribution. If they looked at investments daily, the definition related to the probability measurements. What the risk managers saw and had seen seemed to matter in how they defined risks.

But how did this happen in the insurance company? What kind of risk definitions did I encounter there? The aspect of foreseeable consequences became even more clear in insurance. There, the financial investments were not directly involved. The calculations related to the risks of the firm rather than the loss of a specific investment. The insurance risk managers dealt on the one hand with the calculations of regulations. On the other hand, they handled the negative financial consequences that they saw coming.

4.2 Risk in Insurance

While in the banking environment financial risks were very present, they were less so in insurance. The focus lay on insurance products and related risks. They sold life insurances for example, or car insurances. The income came from the fees and pay-outs related to those rather than changes in financial values. At the same time, the insurance products money had to be kept somewhere. They invested in financial markets to make sure they could reimburse their clients. The focus lay with the insurance products, the market value changes came second. Solvency II (SII), the new European insurance regulation, had put forward the importance of financial market risks.

Solvency I implemented prudence, Solvency II focused on risk measurements. Prudence related to carefulness, risk measures to accurate probabilities of losses. Under SII, the insurance company's balance sheet had to represent accurate risks.⁴ Where in banking multiple risk definitions existed independent of the regulation, in insurance they directly related to the regulatory environment. At the same time, I encountered a similar distinction between calculation and negative events in both the accounts as well as the risk managers' work. And just as in

⁴Note that the passive side of an insurance company's balance sheet is already a risk calculation. This is not the focus here since it was not the focus of the risk managers either.

banking, a multitude of views on the definition of risks existed. They went from mathematical accuracy to holistic views. The distinction between calculation of a relatively abstract and a visible one was even more pronounced in insurance. Since the risk managers there went through a transition from regulation about carefulness to one of calculations, they also saw the contrast between the two.

Before I go into the insurance risk managers' construction of risk, I want to emphasize a difference between the work in the two sectors. The different level the risk managers in banking and insurance worked on. Those in banking would work directly with investments, in insurance they worked on the risks of the organisation. Calculations in insurance were therefore also on the firm level, in the bank on the level of the specific financial product. The insurers created risk numbers on relatively long terms rather than every day, they calculated them every month or quarter. They did not have a direct interaction with financial markets even though they did calculate risks related to it. The latter only took place through aggregations, concepts and calculations rather than interpreting the market directly.⁵

Solvency II and Accurate Risk Calculations

Before the implementation of Solvency II, insurance took prudence as guidance rather than risk. The change to risk measures was a contested one. Not everybody in and around insurance companies agreed with SII's changes.

Lucius, head of the Association of Actuaries, explained his vision on the new regulation during an interview. He had preferred to stick with the old one. Lucius believed that SII's quest for risk accuracy was already outdated. The elderly gentleman told me in woolly language that the new regulation did not meet the standards of the time. SII had been constructed before but implemented after the 2007/2008 crisis. The regulation had not incorporated the lessons of the financial and Euro crisis. He said that SII's financial risk concepts were less safe than under SI.

Solvency I had namely required insurance companies to invest and calculate carefully. That meant buffers existed everywhere, from the calculations

⁵The market here is, for example, the Bloomberg terminal. See previous chapter

to the balance sheet in itself. Those buffers gave general safety rather than accuracy. In Lucius' eyes, the risk approach of SII would only lead to trouble since it took away existing safety buffers.

Others, on the other hand, thought that risk accuracy in calculations was key. SII was the right way to approach the insurance industry in their eyes. Drew was one of them. He worked for Reinsurance I and had helped with the implementation of the risk model for Solvency II in an insurance subsidiary of a large bank, as well as for a regulatory body. During the interview, he discussed the issue of prudence and risk. He did not necessarily have a preference for prudence. Actually, for him accuracy of financial risk was more important. Prudence could be misleading, accuracy through calculations not. Risks in that sense were the truth. With this truth, possibilities of losses could be seen and used for decision making.

With Solvency II, the risk calculations of the life insurances had to incorporate financial risks. One of the participants, Jane, had worked on the first steps towards the SII models. She had done so at Insurance Company T, an organisation that was similar in size as Insurance Company V. It had been one of the actors that had pushed for the implementation of Solvency II. In the mid 2000s, it had sought the help of a financial mathematician to help change the methodologies of its products. Insurance Company T wanted to align itself with the banking sector in the way it calculated the value of its products.

The process of alignment to the banking sector had resulted in the creation of stochastic models for the insurer's products.⁶ Jane had worked on making those general ideas work for the whole organisation. In order to do so, she had analysed the monetary effects of the new types of calculations. She told me that she and her colleagues had preferred the new calculations gave a capital requirement and liability⁷ decrease.

Both the life liabilities' as well as the financial assets' calculations had become risk-based. With that, Jane meant determining liabilities and assets on the simulations of the possible future values. For the simulations, they used stochastic

⁶See chapter 3, section 1.1 and 3.2 on insurance's VaR models

⁷An insurance liability is that what an insurance company needs to hold on to in order to be able to pay its clients for the insurance products they took. It is a provision. If the assets remain the same value, the higher the liabilities, the lower the capital.

models. The non-life liabilities remained based on the historical events and did not take into account the future values. Within Insurance Company T, the first steps towards the SII model had been done internally.

The banking methodology of risk calculations had been translated to insurance as simulations of future values. The latter became the accurate risks, the possible changes in the value that could be calculated. Solvency II had led to calculations on an organisation wide scale. The internal model simulated all business lines. Then, it would find a final capital requirement amount. The simulations represented the accurate risk assessments the regulator required.

I even started my internship at Insurance Company V with an explanation of accurate risks and the related calculation categories. Alice was the first person I met. She managed the life and financial market risk modelling team and became my boss for five months. To help me understand the work of the risk department, she gave me an enumeration of separate risks. There were, amongst others, longevity risk, interest rate risk, equity risk, credit risk, counterparty risks and mortality risk. I wrote them all down, only partially understanding the importance of the list. The probabilities of these categories were assigned to aggregations of the insurance companies' products. The combinations of the different risks would be projected and created the final capital amounts.

Thus, financial risk, for those who dealt with the calculations, related to the multiple, pre-defined, risks implemented in the Solvency II framework. This was also what Alice had explained to me with the risk categories. The financial risks had a two pronged effect on the final regulatory requirements. The different simulations of the financial market risks did not only impacted the expected values of the assets. They also impacted the insurance company's liability risk calculations. The financial risk calculations thus had a more complex impact on the capital requirements than the other risks.

Even though the risk categories made the calculations of the regulatory risk calculations, the risk managers did not always see them as risks. The risk categories were part of the contested Solvency II framework. Risk managers in Insurance Company V distinguished between the regulatory calculations and risks. What the regulator said they had to calculate did not always correspond to what the risk managers saw as problematic.

The regulatory requirements and the concept of accurate risks follow the risk ascription-definition. The calculations of possible future losses are made related to the products currently on the books. When that simulation becomes a reality remains unclear. The risks in this case are defined as a mathematical probability in an unknown future.

No one pretended that the numbers that went in or out of the model represented the organisation's exact risk measures. The regulator required the calculations. The risk managers created the numbers for the regulatory reality.

Risks and Negative Consequences

The capital requirement model calculation used the different risk categories that Alice had put forward. At the same time, the people in the risk division also worked on other assessments. They looked at the structure of the balance sheet, helped the finance department with the liability calculations and analysed portfolios they thought might lose money. All of this related to more direct issues of problems, and thus the negative consequences, than a far off possible loss.

Take the example of Brad. Brad worked on the financial risk model. His work involved involve the calibration of variables. He was also supposed to be able to explain the working of the model on the financial side in a multitude of situations. During my fieldwork, the local regulator had asked a set of questions about the financial market risk calculations. Given Brad' tasks, he had to answer them.

Even though these questions jeopardised the regulator's acceptance of the internal risk calculations, Brad had other priorities. He decided to work on a balance sheet reshuffle rather than on the regulatory questions about the risk calculations. He had to figure out how he could prevent one of the insurance entities from bankruptcy. The head of the division, CRO Patricia, had asked him to look at the entity's balance sheet. She expected the entity to show a lack of equity in the next quarter. So she told Brad to solve the problem, avoid the bankruptcy.

Brad suggested multiple financial and accounting strategies to do this. This was urgent work, the regulators could wait another week or two and Brad pre-

ferred to put his efforts in the avoidance of the entity's default. Patricia wanted him to help avoid a default, which could happen relatively soon.

Risk management's preference thus lay with the avoidance of an upcoming negative event rather than calculations of risk assessments. Brad spend his time on the avoidance of consequences, namely bankruptcy of the non-life entity. His preference shows the second aspect of risks in insurance. The risk managers dealt with the risks they saw coming. Generally, the consequence avoidance happened outside of the SII scope. In other words, risks went beyond the question of mathematical accuracy. The risk managers in Insurance Company V also had to avoid negative consequences. The future negative events were financial losses, bankruptcy and not being able to pay back the insured.

Two of the interviewees expressed this view extremely clearly. Both of them were head of a risk management division, the CRO, and had the responsibility to implement SIIs risk models. Patricia, CRO of Insurance Company V, and Jonah, CFO/CRO of Insurance Company W, had first hand experience with both the regulatory model and negative consequences on an organisation-wide scale. Neither of them saw SIIs accurate risk measures as true. The internal risk calculations existed because the regulator demanded them. However, risks related to something else than the measure. It dealt with the things one could lose.

Patricia was Insurance Company V's CRO. First and foremost she was extremely unhappy with the Solvency II model. To her, the required calculations did not handle the risks right. The operations were so complex that very fewer people understood their outcome and even less could explain them. The calculations therefore did not result in a risk control. SIIs risk model did not show the right risk. It did create an economic reality that the risk managers had to deal with. With that, Patricia categorised the SII calculations as a risk themselves. But what then was risk to her?

Contrary to the accurate calculable risk approach, Patricia saw risks as polymorphous and heterogeneous. They could be assessed in many ways, with calculations or other types of knowledge. She compared risk management to her intuition. At one point she had written a white paper for the CEO. In it, she had described all the points in the organisation that she saw possible negative

events. And ever since she had put forward that document, all the problems she described in the paper had become reality. The CEO did not take her seriously when she gave him the paper "Another lady of the risk department with a set of problems", he said according to her. But since she predicted all the problems Insurance Company V encountered later on, she gained respect within the board. To Patricia, risks related to future problems, identifiable as specific events.

How had she known that these things were problems? 'Intuition', she responded. She just knew. Opposite to the rationality of calculation, Patricia described her knowledge of risks as part of the emotional realm. This of course opposes directly the theoretical notions of risk as rational or a control through risk calculations. Risks here did not have anything to do with probability theories. It was about the visibility of certain problems, even the capacity to predict them intuitively.

What can be clearly seen here is a responsibility for the calculation of risk models and possible negative consequences. Patricia also highlighted that the model itself could bring the company into difficulties, something she wanted to prevent. Risk from financial markets were encrusted in the calculations of the regulatory model. The exact exposure of risks on the different products mattered less in Insurance Company V than in Bank F. What did matter was the balance sheet in which financial values were incorporated and the possible problems that could arrive to this accounting reality.

Risks were calculated and accounted for in the long term. If the risk managers did not make these calculations, problems could arrive from the side of the regulators. The latter was also very much part of the risk assessment. With that, Patricia's definition of risk in Insurance Company V encompassed a large realm of possible problems. She brought calculations and possible negative consequences together. The financial risk itself did not relate to a specific investment, other than in Bank F. The exact origins of the risks were partially left aside when making a risk assessment. The focus lay on the negative consequences something could have to the insurance company. Problems could come from a bad calculations, from not following the rules or not obtaining enough capital in time for a specific entity.

In the first steps into the insurance field, I had the opportunity to interview

Jonah over the phone. He was both Chief Finance Officer (CFO) and CRO of a middle size co-operative insurance company, Insurance Company W. He expressed a risk definition that related to Patricia's focus on problems. In his discourse on the risks he encountered, he did not utter anything with regard to accurate calculations. He did not go to a rational form of control of the future. Neither did he think Solvency II's accurate risk measurements would help his investments. His vision was the following: Whatever one invests, one can lose. Even though directly related to investments, risks here were about consequences.

This risk vision came from Jonah's first experiences as CFO. The subprime crisis had hit Insurance Company W relatively early. They had found a big portfolio of non-performing subprime bonds even before BNP Paribas had fessed up their losses in the spring of 2007.⁸ This was more than a year before Lehmann Brothers had bankrupted in autumn 2008. Jonah's predecessor had been ousted due to these losses. So when he had started his work, Jonah had to clean up a big part of the structured products. They had been lucky. They had seen the losses in the underlying payments of the bonds. Nevertheless, they had been able to sell the products at a reasonable price. Different market actors had still wanted to buy the products. Jonah told me that the cleaning-up had had formed him for the rest of his career. He wanted to invest in products that had the least possible complexity. Bonds, for example, and stocks obtained his approval. With these products it was relatively easy to understand where future losses could come from. If one would add complexity, for example in derivatives the causes that might lead to losses would be much more difficult to understand. Losses (and the risks before that) could not be prevented through complex calculations. Complex mathematics would only make it more easy for possible problems to occur.

Jonah clearly focused on the consequences of investments. He tried to know more about the causes of possible losses but was aware of the final outcome, a loss. To him, the risk was not controllable or calculable. One could only be very aware of the possible consequences. Thereby, if one would see a negative event coming, one could act on time. This relates to Brad's preference for finding a solution to the non-life's capital problem. Patricia had instructed him to find a solution to avoid its bankruptcy. Negative foreseeable consequences were thus

⁸Generally seen as one of the first moments of the subprime crisis (Mishkin, 2011)

attributed to the financial reporting and avoided.

To summarise, in the insurance fieldwork, two visions of risk were thus also visible. On the one hand, there was Solvency II's implied risk as accurate calculations of an undefined future. On the other hand, risks were a possible negative consequence to the organisation. The latter could even come from the specific calculations used in the insurance company. Where Alice worked on the model, she explained risks with the different calculations. On the other hand, Patricia and Jonah saw a larger picture as the heads of the risk divisions. They did not believe the calculations, they focused on the negative consequences that came at them. Thus, the work environment seems to matter in who uses which risk definition.

Other than in banking, risks in insurance were related to the organisational situation rather than the market values. Risks could be calculated but at the same time negative foreseeable events were also part of it. Even though multiple definitions existed, risks were always ascribed to certain actions and or attributed to consequences. The ascription was to the (possible) products on the books, the attribution to foreseeable negative impacts to the organisation's financial status.

The relation between work and risk definition does not just come forward in the insurance world. In the banking world, a similar trend was visible. People who worked with investments (banking) or regulation (insurance) and their risk calculations, saw risks as a set of categories that could be calculated. Miriam did this, but also Alice. They thus described a risk ascription. Then, there were those who worked with financial losses on a larger scale, they saw the negative consequences to the organisation. The two CROs in insurance had this vision but so did Gerard and Robert, who had worked on Bank F's balance sheet. They thus saw a consequence attribution. To further explore this dimension of risk definition and work, lets explore another part of the data.

4.3 Who says what?

At both the fieldwork locations, questionnaires were handed out to the participants about their definitions of risks and their backgrounds. In Bank F, seventeen people filled out the questionnaires and in Insurance Company V, nineteen.

Even though these numbers seem small, they still help understand the different risk managers' point of view. The questionnaires also allow to understand who has which risk definition. With the help of a multiple correspondence analysis (MCA), the relation between person and risk definition can be found. The two MCAs, especially the bank one, showed that people with different work experiences define risks differently.

The variables in the MCA are the following, with some differences between the bank and insurance questionnaires. The variable of most interest is the risk definition. Then, there are two variables on the work roles, the current role in the risk department and their previous position in the bank. A fourth variable is the highest education obtained. The fifth variable is on the place the person has in the hierarchy. The sixth variable is how the risk managers see the role of their department. The insurance MCA has a final variable, internal or external, to distinguish between the consultants who filled out the questionnaire and those working directly for Insurance Company V. The variables and the related categories can be found in figure 4.1 for Bank F, and in figure 4.3 for Insurance Company V.

Method Parenthesis 1 *Background of MCA*

In order to open up a black box, one has to look into the object. That means asking questions about the meaning, assumptions and usage of financial market risks. The ethnography is the ideal method to do so. One of the ethnography's main limitations is the viewpoint, which is solely the researcher's. That limits the possibility to see the different events. The questionnaire helps circumventing this. It allows for a participants point of view. These extra sets of eyes help triangulate, as far as possible in an abductive epistemology, the outcomes of the research.

The epistemology and approach mean that inferential statistics cannot be used. The latter requires a random or representative sample used to represent an underlying (largely undefined) population. First of all, in the case of the questionnaires the population is the risk team. In the case of the bank, that is a group of 22 people (at time of sending out the questionnaire), the insurance company 91 (which included consultants). The insurance's questionnaire has 19 data points, the bank's 17. The questionnaire thus captures the population of the bank, except for five persons, and the insurance's roughly 20% of the

population. In neither of the cases can I assume randomness. People who were more open to my presence on the floor were more predisposed to respond. So, generalising to a larger population does not make sense. Secondly, the basics of inferential statistics imply that there is a truth outside of the social in which it is constructed. The research presented here takes the opposite view. That makes inferential statistics not helpful. So how to use this data?

The insurance questionnaire has seven variables, the bank six. Each variable has up to five categories. For example, the insurance questionnaire contains 3600 possible sequences. That is a lot and also a lot to see an order in for multiple respondents. Descriptive and data exploration methods do respect the local and could help reduce the dimensions of the dataset. Since the questionnaire is made up of nominal variables so few options for such a dimension reduction are left. Multiple Correspondence Analysis (MCA) is one of those options and a relatively good one. Even though I have a low amount of responses, 17 (bank) and 19 (insurance), for an MCA, it can still give an idea of the relationships in the dataset.

An MCA shows data in one comprehensible space (Renisio & Sinthon, 2014). The MCA takes frequencies of related categories compared to what the average would be. Then, these are distributed over an n -dimensional space based on the influence the category has on the dimension. This is the process of orthogonalization (Greenacre, 2017). MCA's are sometimes used in contexts of generalizations. For example, it is a key tool for Bourdieusian analysis of fields (Lebaron, 2009). However, that is not the outset of this research and the MCA's presented here should not be confounded with this approach. The geometric and exploratory aspects of the method are useful. They help reduce the dimensions of the data and respect its specificity at the same time.

Even with the MCA, the low amount of items remains problematic. The amount of categories yet their little frequencies can give results that are not as easy to interpret. All items can become an outlier. In this research, I accept that limitation. The richness of the questionnaire data requires dimension reductions. The MCA does so in a systematic way with interpretable results. The data reduction itself helps further understand which actors see what as risk.

The MCAs presented here should thus not be seen as a generalisable conclusion to the risk question in insurance and banking. They are a tool to

easily present relationships that were beyond the reach of the ethnographer herself. The MCA shows a second viewpoint on the same population.

A proxy of the explanatory power of the MCA is the variance explained. Since the MCA extracts dimensions based on the relation between the frequencies and the differences from this, the variance explained tells us how much of the total variance is explained by the specific dimension. In the case of the bank MCA, dimension one has 18.60% of the variance explained and dimension two 14.04%. In the insurance MCA this is 16.01% for dimension one and 13.96% for dimension two.

For the exact questions of the questionnaire, I refer you to Addendum II. You can find the exact coordinates, the different categories and the explained variance of the different eigenvectors (dimensions) in Addendum III.

4.3.1 Risk Questionnaire Bank

The risk questionnaire data of Bank led to an MCA with three different groups. The answers in the questionnaire were highly diverse but once coded and re-coded, systematic categories became apparent.

The main variable of interest is the risk definition the participants used. The questionnaires gave a similar (diverse) image as the fieldwork did on the definition question. The question: *What is financial market risk?* gave 17 different answers. They could be categorised into three different categories. All answers included risks from the financial market, yet their impact varied.

As first category, there were those who related risks to the losses of financial products themselves, in the MCA the category *RiskPortfolioImpact*. The risks were part of the indicators that were used to calculate a portfolio or a financial products. This relates to the definition of those who saw risks as the predefined and calculable categories, changing a product's value.

The second category came from those who identified the losses being for Bank F, in its financial reporting, in MCA *RiskBalanceSheet*. The negative effects were everywhere and did not just limit themselves to the changes in the variables that influence a value calculation. This seems to relate to discussions about risk being everything and mainly the negative consequences for the organisation.

The third category was defined by risks that were calculable, related to unde-

Bank MCA variables - Categories					
Risk Definition	Risk Balance Sheet	Risk Financial Variables	Risk Portfolio Impact		
Team (current role)	Market Risks	IR_FX (interest rate and foreign exchange rates)	Liquidity	Valuations	General
Previous Career	Finance	Front Office	Quant	Analyst	Risk Control
Education	Fin(ance) Master	Math(ematics degree) or Engineering diploma			
Hierarchy	H4 (non-management)	H3 (management)			
Role Department	Risk Measures Methods	Role Unclear	Follow Control Market Risks	Risk Measures Methods Reg(ulation)	

Figure 4.1: Variables of Bank F's MCA

defined losses or just the calculations. In the MCA this is the label *RiskFinancial-Variables*. This category seems to focus on the calculations and the risk factors itself, just as the portfolio definition, but does not add a dimension of losses to a specific quantity.

Taking the MCA, the three different risk definitions relate most to the work environment of the respondents. It namely links to the work they did or had previously done (see figure 4.2). This resulted in three different groups in the MCA. But lets first go into the first two dimensions of the MCA.

The first dimension, the horizontal axis, distinguishes on work experience. The education of the respondents, the two risk categories that mention risk as a specific consequence, hierarchy and the previous career, all fall on this axis. One can thus say that the axis represents the working environment that the respondents have encountered during their career.

Those with a mathematical background are on opposite sides of the dimension from those with a masters' degree in economics or finance. Similarly, people who used to work of a financial analyst and risk control (similar to the economics/finance masters) are separated from those who used to work in the front office, as a quant or in the finance department. The first dimension shows the people with a strong mathematical background on the right, the people with a business or risk control background on the left.

Hierarchy matters as well in this first, work experience, dimension. Those with a management role are distinct from those with a more analytical or operational role. H4 (low hierarchy) finds itself on the left, H3 (management role) on the right.

The second dimension, the vertical axis, shows the nature of the financial market encounters. The risk managers either saw a financial market where they could trade products or a general, relatively abstract, idea. Quants and people who used to work in the finance department are part of the group that did not have direct relationships to financial markets. Analysts, people in the front office and in risk control had a more direct relation to financial markets.

The role that the market risk department has, is also divided on the second dimension. There are those that see the role of the department clearly as following and controlling market risks, the people at the bottom. At the top,

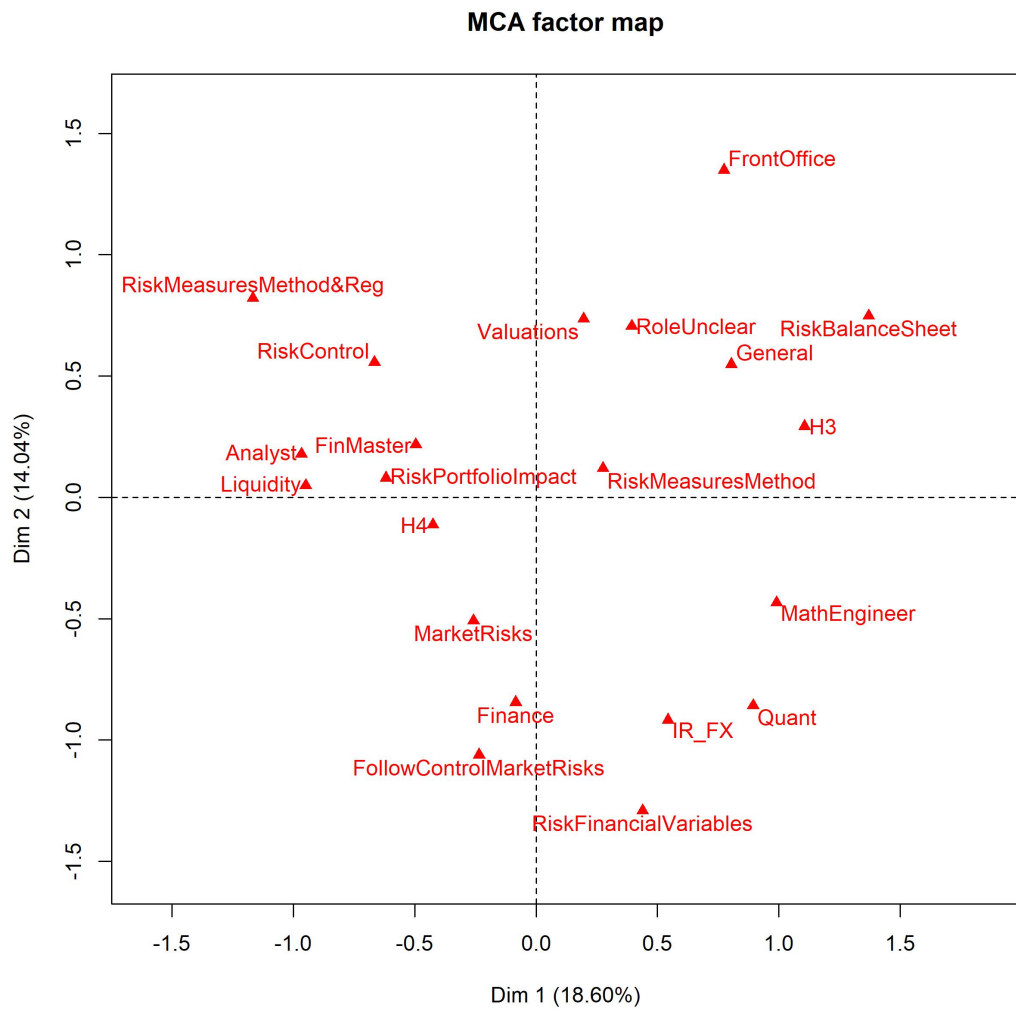


Figure 4.2: Dimension 1 and 2 MCA Bank F Financial Risk Management

the categories risk management's role are the determination and control of risk measures and methods. Besides, people who do not see a clear role for risk management also falls on the top half of the MCA.

This dimension thus shows on the bottom the categories that have an abstract idea of financial markets and their risks. At the top of the MCA, the causes and consequences of financial markets are more clear. The people related to the top categories have worked closer to the transactions. They seem to have a practical insight into these markets.

In the two dimensions, work experience and abstractness of financial markets, three different groups appear. There are those who score high on both the second and first dimension, the first group. Then, the second group scores high on the second but low on the first. The third group scores low on the second dimension but around the zero point on the first.

The first group is the one with high scores on the first and second dimension. The risk definition is of the organisation as a whole. Management positions are part of this group (label $H3$, non-management $H4$). They also have concrete experiences with financial markets. They thus fall in the right upper corner of the square. One can see here that the risk definition of risk as a question of consequences for the whole organisation relates directly to the work the people did. In their management roles, they namely encountered the effects of risks for the whole organisation.

The second group can be found in the upper left corner of the graph. It combines the category of a financial masters' degree, previous work in risk management or as a as a financial analyst and the classification of the role of the risk management department as one of a control of measurements and methods. A second category found in this group related to the role of the department is also the one of an indistinguishable role. They see financial risks as measures that have consequences for the financial portfolio are in a more operational job. The financial market is relatively tangible since they have worked relatively close to it. The former work of the risk managers are also related to the practical aspects, such as the analyst, in this group.

The third group find themselves on the bottom of the graph. They do not see organisational nor financial portfolio consequences of risks, financial risks

are just calculations. They used to work as a quant or in finance and are thus related to the financial markets in a relatively abstract fashion. They see the role of risk management also as following and controlling market risks, rather than being unclear about the role or seeing it specifically on the control of measures and methodologies. This group finds itself on the lower values of the second dimension. They remain undefined on the first. This is the abstract group. Financial risks are measures here and the risk managers also qualify their roles as measuring risks. Their previous work related to distant financial markets. The abstract measure and the lack of experience with direct transactions relate to one another in this third group.

The three different groups that come out of the MCA are in line with what the participants told about financial risks. Risks can be abstract measurements and they can strongly relate to a specific object it has consequences on. The definition of financial market risks is heavily influenced by people's work experience. Higher in the hierarchy, where general negative financial market consequences for the organisation are part of the discussion, the financial risk definition is related to the organisation itself. On the other hand, people with more operational tasks that look at portfolios limit risks to the portfolio. In cases where the background is in finance or as a quant, the direct consequences of financial markets could be seen less, thereby also limiting the definition to the calculation rather than its consequences. The MCA thus shows a relationship between the work experience and the risk definitions in Bank F. How does this work in Insurance Company V? Does the same pattern between work experience and risk definition come forward?

4.3.2 Risk Definition Questionnaire Insurance

In Insurance Company V, I sent out a similar questionnaire to the risk managers. In this form, other than in the bank's, the question on risk was not limited to financial risks. It was about risks in general since the respondents looked both at financial and insurance risks. Financial risks were namely used sparsely by the risk managers. The questionnaire captures 20% of the population. The data has a larger variance between items than in Bank F. Similar to the Bank ques-

Insurance MCA variables - Categories						
Risk Definition	Uncertain Event Ascription to Products	Uncertain Event Consequences	Calculable Probability			
Risk Role	Act and Control	Handle Shock to Balance Sheet	Maintain Solvency	Management Decisions		
Highest Degree	Actuary	University Degree Mathematics	Business Degree			
Previous Career (PC)	PC Non-Life Actuary	PC Life Model	PC Financial Market	PC Management PC Actuary	PC Finance Actuary	
Current Division	Regulation	Model Life	Model Non Life	Non-Life Actuary	Life Risk	
Hierarchy (H)	H5 - Non-Management	H3_4 (3 and 4) - Management				
Internal External	Internal	External (consultant etc.)				

Figure 4.3: Variables of Insurance Company V's MCA

tionnaire, multiple groups become apparent. Since the data has more variance, the demarcations between the groups are less clear.

The risk managers gave, again, 19 different risk definitions for 19 questionnaires. I have grouped the responses into three different categories. Eight respondents call risk uncertain and then attribute it to a consequence, the label *UncertainEventConsequences* in the MCA. Then, six respondents not only attribute uncertainty to consequences, they also relate them to actions that were carried out. This is the label *UncertainEventAttribution*. Five respondents emphasise the calculable aspects of risks, the label *CalculableProbability*.

Other than in banking, the risk definitions almost all include a concept related to the uncertain. Thus, the random and the unknown are part of risks for the insurance participants. Only a small group identified risks as calculations (five

people). Consequently, the rest of the risk managers define risk beyond the controllable. They focused on the negative effects that risks might have.

The respondents all have similar educational backgrounds, either actuary degrees or mathematical university degrees. One respondent has a business degree. In the fieldwork, people with actuary degrees had more status than those who did not. However, both mathematical and actuary degrees lead to similar skills. Actuaries and mathematicians can calculate probabilities, handle and program large datasets. Only, the actuaries had more knowledge of the legal situation. The two diplomas however do not distinguish the groups as such. Actuary and mathematical degree lie relatively close to one another on the MCA.

The diplomas do not define the groups, work experience does. Three groups can be identified. There were the managers or those with management experience, the people modelling the life risks, and those modelling the non-life risks as well as looking at the life and non-life risks. Lets first look at the two most important dimensions of the MCA.

The first dimension distinguishes between those who are modelling the life risks with the others. The external people, the consultants, are regrouped with the life modellers. The second dimension separates the managers from the rest ($H3_4$ is management, $H5$ is non-management). The risk definition of risk as consequences (label *UncertainEvent_Consequences*) is also part of this dimension. The horizontal axis is about calculations on life risks and the rest, the first dimension. The vertical axis, the second dimension, shows the organisational level of work experience, either relating to the whole organisation or a small part.

First of all, lets discuss the group from the middle to the top right corner. Management experiences fall there as well as management functions themselves. The risk definition is about the negative consequences for an entity, mainly the organisation. This group relates thus to the larger picture of consequences in the organisation. The risk definition of negative consequences thus pertains to those who also work with those negative consequences.

The right bottom corner holds the second group. The non-life model risk managers are here as well as the life risk experience (but not model). The risk definition here is not just about uncertain consequences, they also come from

certain activities that people or the business carry out. That relates directly to the work that people do. In the risk control of life products but also the non-life department as a whole, people worked directly with the products. Even in the non-life risk model department, the calculations had to do with the historical movements, not with elaborate calculations about a theoretical market. The risk definition thus relates to the work experience of risk assessments of known products and their direct consequences. Group two is about the people that handle and calculate

The third group is the one on the left. The first dimension distinguishes it from the rest but not the second dimension. Here, the life risk modellers can be found, as well as the consultants (*external*). The definition of risks as calculable is part of this group. Given the work of the modellers on the life risk side, as well as the consultants, this seems logical. Other than the non-life modellers or the life risk managers, they calculated the risks with foresight models. These people continuously worked on risk calculations rather than negative events or products and their risk assessments. So their risk definition as risk as calculable relates directly to their activity.

All in all, the first dimension thus shows the difference between calculations of life risks and the rest. The second dimension distinguishes on the management experience. The risk definitions directly relates to these positions of work. On the first dimension that means the assessments either related directly to products and consequences or to an abstract calculation. The second dimension gives us the management and non-management experience. There, risk are either uncertainties that leads to specific consequences or come from a direct effect of a product. Risk definition thus fell together with the work the insurance risk managers did, just as happened with the risk managers in Bank F.

Generalities MCA

The two MCAs give an idea about the different definitions and who they relate to. People's experiences seem to make their risk definition. The circumstances of the work thus make the definition. This leads the way a general definition of risk that takes those circumstances into account. When one sees for example consequences

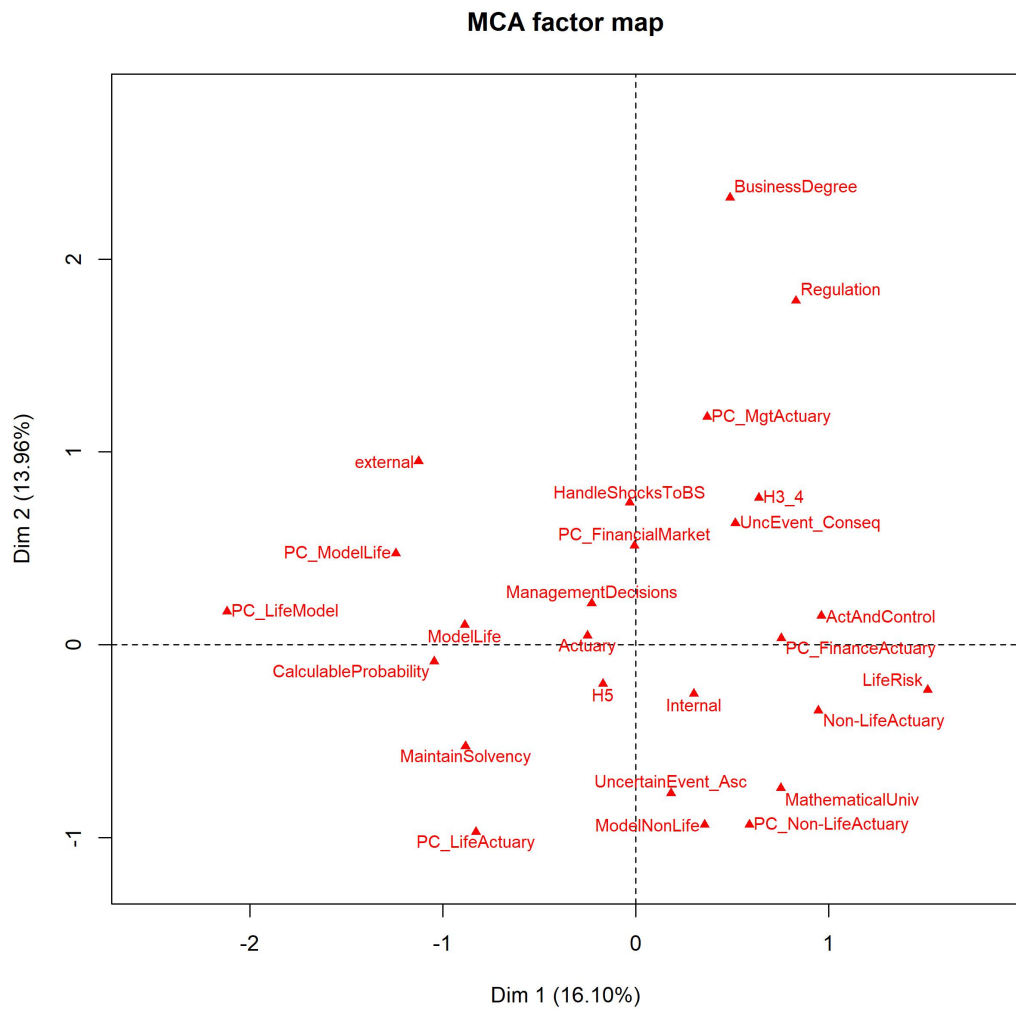


Figure 4.4: Dimension 1 and 2 of the Insurance MCA

to the organisation as a whole, the risk definition is that as well. When one has a background as a quant and has hardly seen the consequences of financial market risk, the definition seems to be limited to abstract measures. Risk can thus be attributable to a specific thing, like an organisation or a portfolio. They can come from financial markets and insurance products on their own or their measurements.

Where the interviews and fieldwork also showed a time aspect to the definition, this is less clear in the questionnaire data. Some answers focus very much on the ability to measure, and thus imply a possible loss in an undefined, invisible, moment of time. Others do not go into it, leaving the time aspect open. What does become clear is the importance of experience and thus circumstances in the specific risk definitions. Risks have consequences to entities that are visible for those who work with them. The negative effects around risks are attributed either to the financial products or to the organisation.

4.4 Interest Rate Risk

Where the definitions of the participants show a multitude of risk that go into consequences, origins of risks and specific measurements, the MCA shows the importance of experience. The two can be brought together when looking at the interest rate risks. By focussing on one specific topic, I untangle the social construction of financial risks. The general visions and the relation between work experience and risk definition affect the management of the interest rate risk. Multiple risk definitions exist alongside one another. Risk managers work both on the calculations of interest rate risks as well as on the prevention of its negative consequences.

Why look at the interest rate risk and not another type of risk? Even though categories such as counterparty or foreign exchange rate risk are also financial market risks, they are less widespread than interest rates. The latter is at the centre of most calculations in finance. First of all, it is the denominator of the Net Present Value calculation, a standard in the value calculations of financial products. Secondly, the interest rate is part of most longer term financial contracts since it takes into account the cost of borrowing. Third of all, the interest

rate does not only influence the value of the financial assets. The interest rate forms an intricate part of the quest for funding in banking since it determines the cost of cash, otherwise also called liquidity.

In both fieldwork locations, the interest rate was part of the daily discussions. By going deeper into the usage of this object, the time, responsibility and calculation aspects of financial market risks come together. As with the definitions, I show that interest rates have both the risk ascription and the consequence attribution. Time also matters. On the one hand there are urgent problems to be resolved that might come from the interest rate, the consequence attribution. On the other hand, long term decisions about what to do with the interest rate had calculations and rationalisations attached to them. At the same time, those long term decisions, either made during the fieldwork or previously to it, had their own urgent needs attached to them. So the long term, or the invisible future moment, had at the same time a very visible possible negative consequence attached to it.

A rationality of control tries to get a grip on the different future negative event. In doing so, it can bring its own (unexpected) negative consequences in financial organisations. The risk ascription is the rationality of control, the negative consequences the consequence attribution. Just as Beck (1992) showed for nuclear energy, the financiers had ways to control risks that themselves caused trouble. In the case of nuclear energy, the creation of a stable energy supply to avoid natural risks led to the creation of larger problems. The risk managers in the two fieldwork locations, similarly, had created interest rate risk measures to control possible consequences. However, the measures themselves had created unintended consequences. Other than natural risks, the consequences relate to socially malleable objects. The negative events concern cash transactions or balance sheet values. These are social values that actors can change.

The interest rate risks, both its ascription and attributions, are therefore a construction within an organisational and market environment. The risk managers worked in this malleable environment, both working on the prevention of negative events and creating rationalities of control at the same time.

The Interest Rate Risk Definition at Bank F

As said in the previous chapter, Bank F had been in trouble ever since Lehmann Brothers had defaulted in 2008. The problems just piled up afterwards. Bank F did not have the capacity to spread out the losses because the diversification of risks was not possible any more. The default of Lehmann in 2008 had caused liquidity problems. Afterwards, the risks that turned into problems kept coming. Bank F had been nationalised after a couple of years of muddling through.

One of the problems that hit them later on was created by interest rate exposure. However, part of the risk managers was convinced that there was no interest rate risk. There were multiple definitions of interest rate risk among the risk managers. This heterogeneity did not necessarily change the approach in risk management. Some risk managers continued to see the interest rate risk as a relatively simple calculation based on the product the bank had bought. They thus saw a risk ascription. Others saw a more general interest rate risk, one where the latter could cause negative events for the Bank. This group looked more at the attribution of consequences. However, independent of the definition, they all worked on the possible negative consequences of the interest rate.

Dominant Rationale

At Bank F, risk managers defined interest rate risks differently. But then, they did not distinguish between the different definitions in conversations among themselves. Some gave a clear cut definition of a interest rate risks as calculation, others dealt with the consequences of that definition. This heterogeneity did not necessarily change the approach in risk management. It reflected past events and previous management. One clear cut definition was known across the bank. Fixed interest rates had risks and floating or variable rates did not. This was the dominant rationale that had also led to specific investment strategies.

With the dominant rationale of fixed rates as risky, some risk managers were convinced that there was no interest rate risk. At the same time, Bank F had financial problems because of the interest rate. The problem was not one of measurement or asset quality, it was one of definition. Before the crisis, the interest rate risk had been determined to be one type of interest rates, the fixed

interest rate. Since roughly a third of Bank F's assets before the crisis were susceptible to the fixed rates, management at the time had decided to get rid of it. They did so by buying derivatives that sold on the fixed interest rate in exchange for a floating rate. The organisation, in theory, limited this interest rate exposure.

The first person to explain the dominant rationale to me was Albert. He worked on interest rate's impact on the balance sheet. He told me that the interest rate risk was the fixed rate. He explained it with the help of opportunity costs. If Bank F had a bond with a fixed interest rate, its future value would decrease. Namely, one had invested money in something that could not be invested in something else. However, if the interest rate was variable, that part of the investment could always be invested in something else. So there was no risk related to the interest rate. One always had the opportunity to invest that specific part of the investment somewhere else.

Albert's definition of interest rate risk was shared by others. The explanation behind it, on the other hand, could differ. Even the dominant rationale had a multitude of underlying rationales, depending on the person one talked to. Oswald, who worked on calculations of the bond values, repeated Albert's definition to me. The fixed rate was the interest rate risk at Bank F. However, he did not explain the definition with the help of opportunity costs. Oswald saw the interest rate risk in the changes in cash flows one would receive. The periodical interest rate payment of a bond was namely the interest rate plus the credit risk of that bond issuer (see figure 4.5). The interest rate was fixed but in order to finance the purchase of the bond, Bank F would take a loan through the inter-banking market with floating interest rates. This meant that the periodical cash flows would change, the risk of the interest rates.

The dominant rationale of the fixed interest rates as risky had to a specific business strategy at Bank F. Almost all bonds in the portfolio had a back-to-back coverage with a swap to exchange interest rates. Each bond thus had an opposite interest rate payment attached to it. The swap was a contract of a periodical two-way transaction with another financial service provider. Bank F would receive the floating rate of that moment and pay the fixed rate determined in the contract. Theoretically, the bond's fixed rates converged into a floating

rate, mitigating the interest rate risk as defined by both Oswald and Arthur (see figure 4.5 and 4.6). In practice there were now two interest rate transactions.

The Collateral Problem

By including a swap to the bond transaction, Bank F had also added another financial product to its book that required maintenance. The swap was not just an exchange of interest rates. First of all, there were extra payments above the interest rate, the transaction cost. Secondly and most importantly, most of the swaps had collateral agreements attached to them. The latter supposedly avoided negative consequences caused by a possible default of the swap counterparty. This meant that (part of the) value of the swap was paid to the other. In case one of the two counterparties was likely to receive more interest payments than the other, the other had to put in (a part of) that amount in cash. That way, in case one of the two would default, the value of the swap would not be lost. It supposedly eliminated the counterparty risk. In theory, the transaction with the collateral was risk neutral.⁹

The policy seemed safe on paper, without any negative consequences. The risks were controlled through a mechanism of ascription and then selling that ascribed risk. Bank F would not have interest rate risk, in the fixed rate sense, or a counterparty who might give trouble. The opportunity costs were neutral and the cash flows would not change. They thought they avoided the interest rates' consequence attribution. Reality turned out to be less easily controlled and defined.

By buying interest rate swaps Bank F had changed fixed interest rate income into a variable one, based on the floating interest rate. That way the risk was hedged and the bond only had a credit risk attached to it. However, financial market transactions are not this simple in reality. By buying most of the interest rate swaps into one direction, Bank F had no diversified income. Worst of all, the collateral exchange was not diversified. Bank F either received or put forward cash collateral.

The first years of the crisis, the cash collateral had not been a problem.

⁹This is not necessarily the case. See for example the work of Riles (2011) on the different types of rules that are attached to these collateral agreements

Then, the interest rates started to go down in the Euro area, from 2010 on. The situation changed. Suddenly, the balance sheet started to increase. The liquidity demand increased at the same time. The bank was not doing any new business. The balance sheet increase was exactly the opposite the people at Bank F expected to happen. Then they started looking at the specificities of their swaps.

When the gap between the floating and fixed rates, also called the different legs of a swap, increases, the value of a swap increases or decreases, depending on which rate one receives. For one of the parties the value becomes much higher, for the other, much lower. Bank F had mainly taken swaps where they would receive a floating rate. So the lower interest rate meant a decrease in their value. At the same time, it led to a higher demand of collateral. The counterparty would lose more and more money in case Bank F would default on its swap payments. This collateral thus became problematic. Bank F had to put forward an increasing amount of money into the collateral exchange. Liquidity was scarce for Bank F, which meant that the search for cash was very difficult. During my time at Bank F, the interest rates had even further decreased, with the ECB, the European Central Bank, heading for the zero point and negative rates part of the picture.

The head of the market risk team, Valery, passed by my office late one evening to discuss her day and mine. She explained the whole collateral situation. One of her meetings of that day had been about the difficult cash collateral situation. She explained to me why the collateral was in cash, other than bonds or credits. She gave me a basic question. What is the safest thing to make sure you are paid out in case you are not paid when required? You ask for cash in the background. Swaps and their cash collateral were thus similar to a landlord asking for a deposit or the judicial system asking for bail.

All of this could have been irrelevant. Bank F namely remained a bank and one thing that distinguishes banks from other firms is their access to (almost) unlimited amounts of money. Would it not be savers who put in money, there was the central bank as well as the inter-banking market for the money supply. However, the fall of Lehmann Brothers had caused the inter-banking market to dry up. The latter had never fully re-established itself. Since Bank F could not carry out any new business, it could not attract savings. Besides that, what there

$$\begin{aligned}
\text{Income}_{\text{bond } t} &= \text{Interest Rate}_{\text{Bond}} - \text{Interest Rate}_{\text{Funding}} \\
&= (\text{Credit Spread} + \text{Fixed Interest Rate}) - \text{Floating Interest Rate}
\end{aligned}$$

Figure 4.5: Expected Income of a bond at point t, disregarding payments related to bond value

$$\begin{aligned}
\text{Income}_{\text{bond hedged } t} &= \text{Interest Rate}_{\text{Bond}} - \text{Interest Rate}_{\text{Funding}} + \\
&(\text{Cash Flow Swap}) \\
&= (\text{Credit Spread} + \text{Fixed Interest Rate}) - \text{Floating Interest Rate} + \\
&(\text{Floating Interest Rate} - \text{Fixed Interest Rate}) \\
&= \text{Credit Spread}
\end{aligned}$$

Figure 4.6: Expected Income of bond at point t with swap

was left of an inter-banking market was not extremely willing to lend to Bank F. The last option was the liquidity arrangement at the Central Bank. However, the owners had spoken out against that. Bank F thus tried to scrape the money together on the interbanking market.

The cash collateral that had to be posed was not just a neutraliser of risk. It had effects and became a constraint. While the flexible rate had been seen as non-risky, it ended up having negative consequences in itself. As Oswald told me, the back-to-back swaps were the reason of a very troublesome liquidity situation. Bank F needed more and more money just to pay the swap guarantees.

Handling the Interest Rate Risks

Not everybody saw the floating interest rate as risk free. It was an easy formula, as Robert said (see figure 4.6). Maybe a bit too easy. He had seen people with a short formula, thereby able to cross out the interest rate when it was a floating one. He was not convinced though that that was the risk. There were other aspects that were part of the interest rates that were risky. However, this might have been a bit too simple for him. His opinion of the interest rate risk definition resembled the risks created by the collateral situation. He saw the risk as the overall impact of the interest rates on the balance sheet.

In a similar vein, Jacob, who just as Robert worked on the risks of the balance sheet, described a multitude of risks of the interest rates. He saw three things.

$$Net\ Present\ Value = \sum_{n=1}^t \frac{E(CashFlow)}{(1+r)^n}$$

Figure 4.7: Discounted Value of Asset

First of all, there was the general question whether a high interest rate or low interest rate was good for the profitability of the company. Secondly, an interest rate change could bring value changes. Valuations need discounting to account for the opportunity costs related to a long-term investment (see figure 4.7). That leaves the third aspect. The future cash flows one expected to receive could change based on the interest rates. With these three types of interest rate risk, Jacob focused on the overall balance sheet, not the bonds specifically.

The two went beyond the dominant rationale and looked at the overall consequences of the interest rates. Jacob and Robert's vision reflected the work that the risk managers carried out. Even though Albert and Oswald defined interest rate risks as fixed rates, they worked on the consequences of the interest rate risks. Albert and Oswald spend their days dealing with Jacob and Robert's definition. Albert calculated the cash collateral position, including the impact of the interest rate. Oswald dealt with the bond values the swaps supposedly covered.

Albert and Oswald were not the only ones who spend their working days on controlling the collateral situation. Janice worked full-time on the swap valuations. Besides that, at least four other persons worked on it part-time. In a department of twenty people, one-fifth of the people looked at the interest rate risks, swaps and cash collateral. The negative consequences of the interest rate risks mobilised a large part of the risk managers.

A year after the end of the fieldwork, I met up with Valery, the head of the market risk management department. She recounted how she had been very nervous a couple of months after I had left. The interest rate changes had created an even worse cash collateral situation. The liquidity needs had been so high that default had been a clear possibility. The interest rate risk existed thus in certain practices outside of the fixed rate definition.

For something that was not supposed to be a risk, the risk managers did work on it. The risk ascription had not controlled the effects of the interest

rates. Negative consequences had come on the risk managers' path and they had to prevent those events. In the daily activities, the interest rate situation was a problem. The lower the interest rate, the higher the collateral, leading to even more difficulties to Bank F's liquidity situation. The collateral that had to be put-in had effects. It created constraints and problems caused by the floating interest rate. The risk managers saw a possible negative consequence outside the the fixed rate. They calculated the effects and tried to find solutions to solve the cash collateral problem. They worked on it for months. The interest rate was part of the work on the bank's problems, part of the risk managers practices. The daily activities of the risk managers did not follow the dominant rationale around the interest rate risk.

By choosing to have back-to-back bonds and swaps to avoid interest rate risks, Bank F created a risk trap for itself. The people inside the bank followed a strict rationale of risk ascription and assumed control. However, the fixed rate rationale had led to negative consequences for the organisation. They had not expected that the interest rates had changed the way they did. Neither had they expected the significant change in the once so secure liquidity situation. The rationale of control through risk ascription had thus turned into a practice of consequence attribution.

Even though the dominant rationale had created its own trouble, it was still held by some. These people had worked for years on the strict definition of risk ascription. When the trouble then came, they did work on the consequences of the interest rate risks. Some risk managers had incorporated that experience into their definition. All then handled the collateral situation as best as they could, attributing it directly to the decision to have back-to-back swaps. The upcoming problems mattered more than the dominant rationale of the risk definition, or even the multitude of rationales.

Interest Rates in Insurance Company V

In Insurance Company V, the financial situation was less dire. The organisation was solvable, contrary to Bank F. It could make new investments and pay dividend to its shareholders. However, just as in Bank F, the practice of interest rate

risk ascription and consequence attribution differed. Here, the implementation of a specific risk ascription created high financial costs. The risk managers tried to limit this cost. Even before the risk managers would control the interest rate risk based on the different calculations, the latter already created trouble.

In the insurance company, the interest rate risk was less related to the financial market products. The calculations already included the possible consequences for the organisation, with endless simulations of the balance sheet positions. The different risks were calculated through an internal model that spat out a capital requirement. This was based on the possible movements of the balance sheet rather than the exact market exposure at the end of the day. Even though at the base of the calculation the outstanding investments were used, risks were not measured on a day-to-day and contract base basis. Interest rate risks were one of the parameters that had an effect on the required capital amounts. And capital was costly.

The interest rate risk parameters in the model came from historical data. They used a form of factor analysis to calibrate a distribution. The historical data was explored based on the eigenvalue characteristics of the matrix. New variables came out of the calculation, the input for the stochastic projections. With that, the model calculated the different interest rate risks for multiple periods and currencies. This then was the basis of a simulation of the asset values over a sixty year period. By calculating different scenarios of the assets based on this factor analysis, they obtained the long-term evolution of the assets. The regulatory capital requirements used these value changes. The interest rate risk related to the long-term effects on the insurance company's portfolio.

Vicky, Brad and Martin modelled the financial risks. They did not focus on the interest rates as such. It was just one of the parameters in the databases they converted. Even though they had the documentation on the interest rate risk, they did not change it themselves. Their work focused on the conversion of the value changes of the local portfolio with the help of all risk projections, not just the interest rate risks. These were large databases. For each calculation in which new local projections were needed, they recalculated the assets. They would have multiple computer programs in which they transformed the asset values. They made the data fit the next step of calculations. Each step required testing,

to see if the original data was coherent and if the outcomes were coherent. The long-term interest rate risk calculations was one small part of the entire database.

The interest rate risk factor came from both historical data and projections. This whole calculation gave the changes of Insurance Company V assets, caused by the interest rate risk. No one knew when or if these changes would happen. At the same time, this was a way to calculate the value changes that fell in the frame the regulator wanted. The risk ascription of the interest rates was thus part of the database of Vicky, Brad and Martin worked on, together with the other financial risk categories. But, as can be expected, the risk parameters in the model were not the only interest rate risk classification. There was also the effect of the discount rate.

The calculations of future liabilities and assets, and with that the capital requirements, brought another interest rate effect with it. One of the basic ways to determine a value on either side of the balance sheet is with the help of discounted cash flow. The input here is an investment's incoming and outgoing cash flow. These cash flows are then discounted, or, divided by the interest rate one would expect to have on those cash flows. This directly relates to the concept of opportunity cost. Theoretically, you could invest in a risk-free product and collect the interest rates. In general these products are government bonds. However, since the European sovereign debt crisis of 2010, they have been seen as having risks.¹⁰ In the end the cash flows of each period, divided by the interest rate that is raised to the power of the amount of time periods passed from the moment of calculation gave the discounted cash flow value (see equation 4.7).

Calculations for asset values and insurance products liabilities used the discounted cash flow formula. Insurance Company V had a large portfolio of life insurance products. These products can be similar to a savings account at a bank. They can also have a longer-term period, like pension savings or a payment of money after someone's death (old fashioned life insurance¹¹). EIOPA is the European insurance regulator. Given its importance for the calculations and difficulty to determine, EIOPA set the discount rate. Even though this external

¹⁰See here already the difficulty to find a defined risk. In Bank F, the LIBOR/EURIBOR rates were seen to partially hold liquidity risk

¹¹see the work of Zelizer (1978) for a history of US life insurance

party set the discount rate and not the market, it still impacted the consequences of the different regulatory required risk measurements.

One of the specifics during the fieldwork was a low risk-free interest rate. The low rates did not impact the calibrations of the models any more. With the discounted cash flow calculations, they did impact the outcomes of the assets and liability projections. Thus, the low rates had an effect on the regulatory required capital. A low discount rate meant higher asset values on the balance sheet. At the same time, the related liabilities would increase too. And the rise of the liabilities exceeded the one of asset values. With the low interest rates, the long term insurance products did not lose enough value over time. Not only did it make the liabilities side of the balance sheet higher. It also led to a growth in the regulatory required capital. Their input variable was namely the projected discounted liabilities. The low interest rates created higher liabilities on the long term insurance products as well as much higher risk calculations.

High regulatory required capital meant less dividend for the shareholders and more costs for the insurance company. Luckily, the regulations allowed for an exception to some of Insurance Company V's life insurances. A specific portfolio resembled pension products. Pension funds also sold them. Yet they did not fall under SII and the insurance companies did. Unfair competition could thus exist between the two, unacceptable in the EU's internal market. The regulators thus allowed for an exception of the SII rules for the portfolio of pension products. That exception could lower the capital requirements of SII. It did not just lower that amount, it did so significantly.

The reason behind this was that low interest rate risk led to very high capital charges on the pension fund liabilities. Pensions are, by definitions, very long term savings. With a low discount rate, the denominator of the discounted value function is small. The final sum is therefore relatively high. That might sound like good news because the value of the pension is higher. For the insurance company, it is the contrary. It namely means that they need to keep higher reserves (liabilities) to prepare for the pay-out of the product. Consequently, with Solvency II, the capital requirements are also higher. The calculations thus ascribed a higher risk to the pension funds. At the same time, the risk managers could also attribute a negative consequence to the discount rate, namely more

capital costs.

To avoid the higher charges, a small team of the risk management division had the task to avoid that negative event. A team of three people worked for a couple of months to calculate the effects of a regulatory regime change of the pension funds. They did this based on simulations of the liabilities without touching the interest rate risk calibrations and parameters. The small team tried to find the effect of the low interest rates and what the gains in capital could be. Yet the calculations were nowhere near the same ones as the calculations of the interest rates' factor analysis. Important here was the effect on the projections of the liabilities themselves rather than the interest rate risk factors. The calculations on the impact of the interest rate risk thus related to the effects of the different liabilities on the regulatory capital requirements. The risk managers did not change the parameters.

In the end, the small group of risk managers found two portfolios that could be reclassified. With that, they diminished the required capital substantially and prevented some of the negative consequences of the low interest rate risks. The risk parameters of the capital model, the risk ascription, did not take these consequences into account.

The interest rate risk calculations were thus very different from the negative effects the interest rates themselves had. The risk managers tried to diminish the negative effects of the capital requirements of the pensions, caused by the low interest rate risks. The definitions of interest rate risk were thus not the same throughout risk management, nor were the calculations. The risk parameters did not incorporate the discount rate's impact on the capital. The origin of the risk was the same, interest rates, yet the work on the calculations and the avoidance of its consequences were two completely different things. The definition of the risk ascription also created a negative consequence.

Interest Rate Risks Generalities

Both in the Insurance Company and Bank F, interest rate risk practices were two-sided. The risk managers had an idea of future interest rate risks, which led to more or less complicated calculations of interest rate risks. This was the

risk ascription. With that, they created a controllability of an abstract future. Think of Bank F's risk managers who said that they did not have an interest rate risk exposure because it had been continuously hedged. On the other hand, there were the visible effects of the interest rates that they dealt with. The negative consequences of a not so far away future became visible. This was the attribution of the consequences of the interest rates. Insurance Company V's high cost of capital came from the interest rate risk, as did the cash collateral situation at Bank F. The risk managers could see the direct impact of the negative consequences to the organisation.

The different calculations could create a problem, as it did in both organisations. Even so, the risk managers did not abandon the risk ascriptions themselves. What they did, was prevent the consequences where possible. The risk managers worked on the risk ascriptions and the consequence attribution alongside one another, sometimes even in the same job.

4.5 Conclusion

So what does the above tell us about financial risks? More specifically, what is the social construction of financial risks? This chapter had three parts, a description, a relation between description and work experience and the environment in which the different risk assessments took place.

First of all, there is a multiplicity of usages and definitions, even within the same team. The risk managers who participated in this study had multiple definitions, ranging from the mathematical aspects of a financial product to a risks are everywhere approach. The bankers would focus on the calculability of risks and the problems the organisation might encounter. The insurers on the other hand allowed for the unknown and unexpected that might affect the organisation, without seeing this idea of control. They focused less on products. Solvency II, with the focus on accuracy of risks rather than prudence, had brought the measurable risks. Nevertheless, the risk managers, defined risks beyond accurate assessments. Predefined calculations were just one part of it. Risks had thus both this calculable foresight aspect as well as the consequences the organisation might encounter.

In the risk managers' accounts, two aspects recur. First of all, assessments of risks related to investment decisions. Secondly, foreseeable problems existed. The literature either looks at the controllability of the future through risk knowledge or the uncontrollability of risks. The empirical material shows that both exist at the same time, alongside one another. On the one hand the future is relatively ill-defined in a calculation of probabilities, on the other there is a visible future of problems that need to be avoided. To take the analogy of a train crossing, some see risks as the calculated probability a train might run into a car on the train crossing, others looked at risks as the train that came towards them on the track, before the impact. This difference in visibility of time thus needs to receive more emphasis in the studies of economic risks.

But who has which definition? Depending on their work experience, the risk managers looked either at the control of a far off future or at the avoidance of a visible event. People who worked closely to financial markets would identify risks as the calculations of the products. Those in management positions had the tendency to look at the consequences for the organisation. Some thus tried to control an unforeseeable future, others tried to limit the consequences of what was foreseeable.

That leaves us with the third part of this chapter; what happens in practice with these different risk definitions? The in-depth look into the interest rate risks gave us two sides. First of all, the idea of control through a risk ascription creates negative consequences in itself. The capital requirements at Insurance Company V together with a low interest rate led to high capital cost, something seen as unwanted. In Bank F, the definition of long-term risks had directly led to problems with the cash collateral, also combined with the low interest rates. The risk assessments of an undefined far-off future thus led themselves to a consequence attribution.

Secondly, the different visions on risks live alongside one another. Even though someone might define risks in the line of an ascription or a consequence, they still work on the other aspect of the risk definition. The risk practices thus do not depend on their theoretical. Something else is going on. Risk management goes beyond the knowledge of risks.

All of this has led to an opened black box of financial market risks. The

latter has at least the following two aspects, a risk ascription and a consequence attribution. Depending on the experiences of the risk manager, they adhere to a specific definition. At the same time, in their daily practices, the risk managers work on both at the same time. But why do they do which? And who does what exactly? The next part of the thesis goes into the last question.

Part II

Working in Risk Management

In order to understand the management of financial risks multiple sub-questions matter. There are descriptive aspects of both the objects and the people, and also the reasons behind the exact mechanisms of the management of risks (why is the outcome such). In the two previous chapters, I have answered the first sub-question; the environment of the study has been described in chapter three and the question on financial risk has been answered in chapter four. The conclusions of these chapters help us venture into the second subquestion, *What do financial risk managers do in large financial institutions?*. The following two chapters will help answer that question.

In chapter three, I showed the importance of political framing. The risk numbers are calculated in a world where the focus lies on their interpretation rather than the technique. The numbers are malleable and can therefore be (up to a certain point) made into what the audience expects. They are part of a larger process of organisational requirements. But how does this work exactly? In order to answer this, I first answered the definition question. In chapter four a multitude of risk definitions amongst the actors were discussed. There is one common ground, a diptych. The risks come from somewhere and have an impact on something. The first is the ascription of risks, the attachment of a risk to an investment decision. The second is the attribution of consequences, the possible losses that come (or are foreseen to come) from such a decision.

The two aspects of the risk definition help understand the work of the risk managers. I have dedicated a chapter to work on the risk ascription and one to the activities around the consequence attribution. Both situate themselves in a division of labour, where risk managers work with other departments. The risk ascription implies a relationship with those who invest, the front office or the business department. It relates to the management of 'risk taking'. The consequence attribution has to do with multiple staff departments such as finance.

I discuss the work on the risk ascription in the next chapter, chapter five. In the chapter that follows, chapter six, I bring forward the work on the consequence attributions.

Chapter 5

Controlling the Risk Ascription

Why should we look into the work of the risk ascription? Currently, the finance and economic sociology understand financial risks as the calculability and control of an unclear future. The risk managers name this as one part of the risk. They thereby acknowledge, in their accounts, a form of calculative control. However, did their practices also follow these representations? Were the risk managers able to carry out change or limit financial market interactions? In order to answer those questions, I discuss the practices behind the numbers. Risk calculations on investment products give the risk ascription. So I describe how the risk managers calculate. Besides the creation, the reception matters. If the investors receive the risk assessments but do not act upon them, can we then still speak of control through calculations? The risk managers' work and their relationships with counterparts on the profit side should thus have our attention. While the theory assumes a form of control, the practice might not. Especially the unequal distribution of resources in the division of labour makes me wonder if the risk managers really control investments.

Before going into the question of control, I want to go into the question of intent and accuracy. Apparently, one could find a true representation of underlying, and without the risk ascription invisible, problems. The term accuracy, and its opposite inaccuracy, imply that true risk measures would exist. One could, by accepting the term, see risks as a standard for the losses that will occur. However, risks are ambiguous, as Wynne (2002) shows for environmental risks

and I mentioned for financial risks in chapter 4. They can show a possible loss from the interest rate but that does not mean that the loss is actually predicted. The negative event might also come from events not included in the assumptions behind the calculations.

Next to the question if losses will occur or not lies one of delineation. The borders between different risk types are extremely unclear. One cannot conclude that a risk measure reflects the probability of losses that could occur caused by a specific factor. We should be critical about the term accurate risk measures. They do not necessarily reflect a ‘true’ risk. At the same time, regulation, risk managers and economists use the term. I regard risk accuracy as a social construction based on economic theory and practices. In this chapter, I will thus consider accuracy as a gauge of legitimacy of a risk measure. The risk calculation should keep to the standard of what the actors involved believe is accurate.

The accuracy aspect of risks also resonates in the studies on risks of large financial organisations. Regulatory capital requirement measures receive criticism because the banks and insurance companies can create them internally. What better than to make something that has flaws, with bad data, so that the risk measures underestimate risks. Financial organisations have a profit seeking nature and could thus intentionally want to ‘sabotage’ their risk measures (Crotty, 2009; Hellwig, 2010; Engelen et al., 2012). Risk managers produce the risk measures. They could thus also prefer to calculate bad numbers, ‘sabotaging’ the numbers. The argument holds two doubtful assumptions. One, risk measures can be accurate. The empirical discussion of the previous chapter falsifies this assumption. Two, that risk managers would have want to calculate a unrepresentative risk number. In the first part of the empirical analysis, I will discuss intent.

On the other end of the spectrum lie the studies on risk control. The sociological accounting literature sees the creation and diffusion of knowledge such as risk calculations as a form of control of action. Risks are controlled through the mathematical numbers created to monitor them (Power, 2004, 2007a). The discussion there has focused on the types of assessments which are not just quantitative. Risk assessments can also be qualitative (Mikes, 2009, 2011; de Larminat, 2013). They base themselves on Foucauldian ideas of control, as elaborated by Miller

and Rose (1990) on economic governance .

A specific type of knowledge is disseminated and accepted as a standard for action. You keep to the standard given by the disseminated knowledge (Foucault, 1990). In case you do not apply the norm, you can expect disciplining measures. You do not know who will sanction you, everybody can do so (Foucault, 2012). According to Power (ibid.) and Mikes (ibid.), the mechanism of control through knowledge also holds for risk measures. By ascribing risks to investment decisions, the risk managers would create a specific type of knowledge. Those who invest would thus keep to and do not cross the boundaries of the measures.

Not only in the accounting literature are risk measures controlled by the dissemination of knowledge. The latter is also one of the starting points of European regulation of financial institutions' risks (EC, 2009, 2013). Risk management teams in insurance and banking are supposed to produce knowledge in both measurements and qualitative assessments. With this knowledge, the decisions of upper management on the risk appetite (amount of risk that they are willing to take) can be followed up upon. In order to create these assessments that theoretically would govern actions, risk management needs to be independent. Both regulations, CRD IV for banking and Solvency II for insurance, have a clause that requires them to be independent from the business department (including the front office). This way they can create the right knowledge so that management and business stay in line with the risk appetite. The two regulations thus expect a disciplining form of knowledge creation.

Control of organisational activities through knowledge has been shown in multiple instances. Take for example law-schools in the US who have collectively adapted their internal organisation to get higher in the rankings (Sauder & Espeland, 2009). Other cases of numbers governing actions are the risk measures in aviation security (Salter, 2008) and health-care statistics on risks in preventive health programs in Australia (Petersen, 2002). However, other than in the above mentioned studies, risk management's object of disciplining lies within its own organisation. The division of labour thus comes into place. Its more or less even distribution of resources can influence the control through knowledge.

The literature on risk management in financial institutions does not go into the division of labour that is at stake. The making of assessments (quantitative or

qualitative) seems enough to show a form of control (Power *ibid.*; Mikes *ibid.*; De Larminat *ibid.*). However, a financial organisation does not just consist of a risk department. As shown previously, the profit equation depends on the expected returns and the accepted risk. The front office or investment department handles the expected returns, whereas risk management takes care of the level of accepted risks (or at least their calculation). The first team has higher status than the latter (Ho, 2009). An example of this can be seen in the salary levels. In finance, earnings reflect one's relative importance (Roth, 2006). The more you earn, the better you are supposed to be. Besides, people who manage risks earn less money than those who take risks (Godechot, 2007). The salary differences show the unequal access to resources between risk managers and those who invest.

If risk managers have less status in the organisation, what does that say of their ability to control through knowledge? The fear of sanctions is an important aspect of Foucault's theory of governmentality. One expects to be watched by someone who might inflict a punishment. So, one acts as one is supposed to act (Foucault, 2012). According to the theory of control, risk managers would need an (indirect) ability to punish. For example, they would need to be able to discredit people who do not follow risk measures. Or, when an activity goes beyond the boundaries of risk assessments, they could stop an activity. In other words, to punish behaviour that breaches a norm, one requires resources.

The salary difference between the two departments indicates two different types of resources. There is the material resource and legitimacy. Both these types of resources are distributed in the formal and informal sphere of the organisation.¹

The first type of resources is the material which also relates to the work itself. Risk managers need resources to create knowledge. Multiple people with different tools and information create the assessments. Here, the organisational distribution comes in. Certain departments and people have more or less access to material objects to carry out their work. For example, departments and teams

¹The distinction between formal and informal is interesting to study, especially for more positivist purposes, but when looking at the practices it is difficult to distinguish the two and not very useful. The actors hardly seemed to make the distinction themselves between formal and informal. There is one exception, when the formal rules become a resource to push through a specific decision.

have separate budgets to carry out their tasks. The budget mainly relates to the amount of people they can hire. It also allows for computer power and the access to different types of software. Furthermore, direct access to information influences how risk managers assess risks.

In financial markets, information about market movements can make or break a profit situation. In theory, all market participants are supposed to have the same and full information. In practice this is not the case. Information relates to time. Take for example high-frequency trading (HFT), where information and knowledge affect the competitiveness of market actors (both organisations and people that work there) (Lange, 2016). Key to high-frequency trading is time. The quicker one is, the better the market information and the more one can use it (MacKenzie, Beunza, Millo, & Pardo-Guerra, 2012). Since space and materiality are related to time, the HFT actors have made big investments to make the two work for them. They have limited the amount of time for information transfers (MacKenzie, 2015; Budish, Cramton, & Shim, 2015). Materiality and space matter thus in the transfer of information of financial markets. One can also expect time and distance to impact the internal access to information.

That brings us to the the second type of resource. Legitimacy relates to Weber's definitions in *Economy and Society* (1978). It regards the ideas, acceptance of actions and objects (Deephouse & Suchman, 2008). Weber gives three types of legitimacies; charisma, tradition and legal-formal. In organisations, the distinction between the legal-formal and the traditional hardly exists. For example, is a standard of calculation such as the Black-Scholes method a legal-formal legitimacy or a traditional one? On the one hand, everybody uses it because most other actors use it as well, making it follow a traditional legitimacy. At the same time, some think that the model gives the right value, which would lead us to believe it has a formal legitimacy. Others again disagree with the truth of the model.

To avoid ambiguities, I define legitimacy as the capacity to adhere to standards, or values, that exist in a social interaction. That includes both the objective of the assessment as well as the methods used for the specific assessment. For example, certain people can follow official rules more easily than others. They can namely make the rules or define the punishment of their enforcement. They

would thus have more legitimacy. The knowledge different actors put forward also needs to follow a standard.

In finance, the standard is profit maximisation (Ho, 2009). Those who make profit in the financial sector have more legitimacy than people who do not, including risk managers. At the same time, the methods of knowledge creation have their own standards. Corporate actors, for example, have to make sure their financial data fit rating agencies' requirements to obtain a respectable rating (Ouroussoff, 2010). Similarly, specific financial models set the standard that market participants need to adhere to (MacKenzie, 2008; MacKenzie & Spears, 2014). If they do not, their values are not necessarily accepted by others in the market.

Resources such as materiality and legitimacy can influence the control through knowledge, especially within an organisation. The division of labour engenders inequality about what the different actors can do. The material is distributed unevenly within an organisation. Yet risk managers need material to create an assessment to adhere to the knowledge standard.

Similarly, someone's legitimacy can lead to others accepting the measure of control. For example, risk managers could decide (and limit) traders' bonuses on their adherence to the risk calculations. In such a hypothetical case, the risk managers would have the legitimacy to punish. Consequently, their measures would indirectly be a threat. Both legitimacy and the material can make the resources behind the acceptance of a measure of control.

Risk managers (and the calculation department in Bank F) make the numbers, other departments have to follow the risk measures. So to see if these measures control or not, I have to go into the interactions with the people who work on the profits.

The literature concludes that risk managers control the risk ascription through measurements. However, they forget about the ability to punish. To control, risk managers need resources. They need legitimacy and materials. So to find out about what the risk managers do on the risk ascription, I need to look into the measures, resources and interactions. Thus, the rest of the chapter shows both the creation of the risk ascription as well as the interaction around these assessments with other departments.

The ethnography gives insight in the production of the numbers and their usage by the different departments. First of all, I go into an empirical puzzle around the risk ascription. The main tool of the risk managers was the limit. They set a boundary on the financial market investments. Both fieldworks had these measures. They supposedly controlled the risks of investments. The limits could be breached. Following the theory of control, a limit breach would lead to punishment. However, that did not happen. A lot of the time, a limit breach would not lead to any changes to the investments.

How to understand this lack of adherence to the rules? First of all, the question of intent matters. Maybe the risk managers did not want to create legitimate numbers. Afterwards, I go into the resources of the risk managers. The literature on the division of labour in finance hints towards the resource distribution. We need to look at the resources the risk managers had, of the knowledge creation and at the time of dissemination of this knowledge. All three aspects will help understand what the work of the risk managers entailed in regards to the risk ascription.

5.1 Disciplining limits?

Both fieldwork locations used a similar tool to limit possible financial market losses. The tools were called limits. A pre-determined number related to a specific risk measure. They defined the boundary the portfolio positions on the financial markets. For example, Insurance Company V could only have a certain proportion of the total investments in German government bonds. At Bank F, the trading book on foreign exchange derivatives could not have a foreign exchange risk higher than a specific amount.

Limits depended on the portfolio value and the related risk measures. The tool is a typical form of control through knowledge of the risk ascription. The limits followed and restricted the financial investments. From a Foucauldian point of view, one expects these limits determined the risks taken on financial markets.

In the formal documents, in the written policies, the Foucauldian vision holds. The front office and the investors could not breach a limit. In the extreme case

that a breach happened, the position should return to (below) the limit again.

Policies and practice do not always align. The traders and investment department did not always reduce the exposures. A breach without punishment was more rule than exception. For example at Bank F, at least one trading book breached the limits on a daily basis.

In Insurance Company V, a limit breach did not lead to punishments. Gene and Didier (the two financial risk managers of the division) were told about limit breaches by the investment department. They would then ask risk management at Group level if the breach was authorised. Most of the time, the group did not respond. The tool that controlled the positions through knowledge did not lead to punishment.

How could such a lack of control through measurement happen? The literature gives two reasons. On the one hand, the risk managers could have the intent that it does not control. Secondly, there is the question of resources.

The first explanation lies in the creation of the tool. Risk managers might choose to hinder the implementation of the limits. They could, for example, deliberately create inaccurate measures. That way, they allow those who invest a free hand in profit maximisation. If the calculation was wrong, no one would see it as legitimate. In this explanation, the risk managers did not care about the control of risks, including the limit breaches.

Even if far-fetched, I still need to discuss the question of ill will. Maybe they wanted to calculate numbers that would be good for profit rather than a control of risks. To eliminate that option, I still need to analyse it. During the fieldwork I was able to sit next to the people who calculated and they explained their actions to me, especially in Bank F. I will first go into that data to show how the risk managers calculated things. As you might expect, the risk managers did not deliberately calculate wrong numbers. They actually tried to make sure they had the right output.

The second explanation lies in the punishment and the ability to punish. The legitimacy to punish is in itself a resource. Not just punishment but also other types of legitimacies as well as simple material resources could matter here. For example information and the exact timing of that information determine the values of exposures. If risk managers want to calculate accurate numbers they

need the right information. Resources could thus also be an explanation for the non-following up of the limits.

To understand the resource distribution, I analyse two specific moments of the risk ascription. First of all, the risk managers create an assessment. Resources, especially material ones, influence this process of creation. Secondly, the risk managers communicate their assessments, the reception of the risk ascriptions. There, resources could also matter, especially with regard to legitimacy. Can the risk managers impose their visions on the financial market investments? And if they cannot, what do they miss? But let us first go into the creation of the risk measures and the intent to create accurate numbers.

5.2 Ascribing risk measures to products

A subset of the risk managers worked directly on the calculations of the risk measures. They could be in a separate team in the same risk department or in a whole different division. At Bank F, the people who calculated the measures were part of the calculation department in the finance division. At Bank X, Y and Z they were part of the risk department as well. At Insurance Company V, the risk management division created the risk numbers.

Some of the people who handled the calculations discussed the importance of accuracy. Felix, for example, a quant who made risk models for Bank Z's investment bank. He talked about how making a market model was similar to doing academic quantitative research, like he had done during his physics PhD. One took the numbers of the market and made a model that represented this. You would represent the financial reality in the model.

Dirk at Bank Y said something similar. He saw his and his team's role as follows:

We measure [the limits for the front office], we give an independent fair measurement in quantitative tools, in financial communication or at portfolio analysis. We are not incentivised to, for example, minimise risks we are taking, or give risk limits to the front office.
Dirk, Head of Market Risk Measurements, Bank Y

At Bank Y, upper management set the risk appetite. Dirk's team only calculated risks. Other teams then used these assessments to control the front office directly. Both the calculators and the controllers in the risk management team used the risk appetite to control. According to Dirk, the best risk management came from an independent body that portrayed risks as accurately as possible.

The accounts of Felix and Dirk show risk measures as accurate rather than as changeable and ambiguous object. While Felix and Dirk said they created accurate numbers, did they also do so in practice?

Participants in the two participant observations showed me how they calculated the risk ascriptions. They did this in front of their computers. At Bank F, the number creation involved multiple departments and I could see almost every step. They calculated the numbers on a daily basis. At Insurance Company V, multiple organisations were involved and the exact calculations were not visible to the risk managers. They had a new vision on the different exposures every three months.

Creating The Risk Numbers at Bank F

At Bank F, the risk numbers were calculated by a department in the finance division. During a reorganisation, they had been moved from the risk division to the finance division. The different teams were situated on the same floor as the trading room. It was a couple of floors down from the risk department. The calculation team's rooms had more security and one needed a special badge to access the offices.

The calculation team produced risk numbers on a daily basis. One part of the team recuperated and then altered market data making it fit the systems. Another part used the data to calculate the different positions of the bank. They used internally created valuation models. The market positions were the input of the risk models. The calculations took at least a night.

The calculation department calculated the risk ascriptions in multiple steps. First of all, a team calculated the market data. Stefan and Dan did this. Then, Mathilda and a couple of colleagues took the market data and determine the values of the products. Camille, Carter and Ivan handled the last step. They

calculated the risk numbers, the Value-at-Risk calculations and the sensitivities. They needed market data and daily valuations of the products on their books. In all these steps, the people involved did their best to create accurate numbers.

Creating Market Data

First of all, a team calculated market data, making them fit the internal valuation models. Stefan and Dan were part of this team. They did their best to make data that adhered to market standards. These were the perceived ideas of what the different numbers supposed to look like in an ideal working financial market.²

In front of his computer, Stefan explained me how he worked. He went through the steps of the production process of the non-standard derivatives. He obtained specific data from an external data provider, transformed this to the right format, extrapolate. As a final step, he transformed the outcome to a data format that others could use to calculate product values. Stefan did not just extract data from markets. He also reproduced market data. He created an internal dataset that looked like a market. Stefan did his best to make the output adhere to these standards.

For example, Stefan worked on the input data for the interest rate cap derivatives. In this product, the buyer receives a pay-out when the interest rate reaches a certain value at a pre-determined points in time. A interest rate cap can for example be bought for 3 years on a 6-months Euribor, where you receive money when the 6-month Euribor exceeds 3%. The derivative was value based on the sum of small European cap options (caplets), that are similar but have just one moment of exchange, the maturity. The most important data Stefan had to obtain was the implied volatility.

Stefan and Dan (his direct colleague) would receive implied volatilities from different brokers. These data points did not cover all maturities nor all interest rate durations. For all currencies Bank F had interest rate cap derivatives in, Stefan and Dan used the delivered data to create more data points. They interpolated with either bootstrapping methods or linear interpolation. The data they extracted from the market did not directly fit the standard of the implied

²For a discussion on what that market was, see chapter 9

volatility. So Stefan and Dan checked and adjusted the data so that it would fit the standards of the implied volatility.

To check if the implied volatility followed the market standard, Stefan visualised the interpolations. He made a three dimensional curve of implied volatility, interest rates and maturities. He mainly looked at the ‘smoothness’ of the curve. The projected area could only have one local minimum. Besides, implied volatilities could not be negative and the curve was supposed to have the form of a smile (or banana) across the maturities. Stefan tried his best to make sure that these things would happen. He had different tools to change the interpolation and therefore the smoothness. He worked on the amelioration of the data. Stefan tried to make it fit into the standards of what the kind of knowledge was supposed to be.

At the time of the fieldwork the interest rates were very low. Stefan and Dan had a lot of difficulties to adapt their calculations to the new situation. A volatility could theoretically not be below zero. Stefan and Dany calculated the implied volatility with a logarithm. When the interest rate would approach zero, the logarithm would give negative values. The implied volatility curve thus had negative values on some of the currencies. Stefan thus tried with the different parameters of the model to change this but it was not possible. He openly questioned the model. Did it still follow market standards or should they implement a new model? Stefan wanted the numbers stick to the standard.

Stefan and Dan did their best to obtain the right implied volatility, following the knowledge standard. They put in the effort, recalculating and implementing new methodologies so that it would fit the bill. They did not try to manipulate the data outside of the market standards. However, they only calculated one of the steps that led to the risk measures. Camille, Carter and Ivan calculated the main risk measures regarding the investments. They produced the final risk ascriptions.

Calculating the Value-At-Risk

Camille, Carter and Ivan calculated the overall risk numbers for the bank in a separate part of the calculation team to Dan and Stefan. They used Stefan and Dan’s data, the specific portfolio positions and the sensitivities, one of the

related risk measures. With these inputs, Camille, Carter and Ivan created multiple types of Value-at-Risks (VaR). When the calculations would be finished, they would send the risk managers in the MRM department the outputs, showing an automatic comparison between the respective limits and the VaR and sensitivities. The calculation process lasted an afternoon and rotated between the team members. They saw it as a difficult and annoying task because the process was not user friendly. Even so, they tried to obtain good outcomes.

So what did they exactly calculate? They created the VaR, the maximum amount of money one expects to lose in a specific time period with a given confidence interval. The VaR determines the required capital. Bank F had a parametric VaR. The values of the sensitivities would lead almost directly to a VaR, based on a Gaussian distribution. They also had a historic VaR (HVar) and a stressed VaR. These two did not influence the regulatory capital. They helped to compare the different values. A historic VaR is based on a predetermined set of historical data points. The stressed VaR is normally based on a financially difficult period, for example the crisis, the historical on a moving period from the moment you calculate it. At Bank F had a HVaR based data of the previous year. Even though they calculated the other two, the parametric VaR was the only one that mattered for the final capital requirements. The HVar and the stressed VaR broadened the risk perspective.

On paper, the calculation process looked easy. The model itself was not that complicated. To obtain the VaR, it only needed market data, the sensitivities, correlations, a multiplication of these datasets and then a sum. The difficulty lay in getting all the data together in the right software program. The team needed three different computer programs to bring all data together. For some of the portfolios, they even had a completely separated calculation process. The programs themselves were slow and required many human manipulations. One person at a time could open the program, otherwise the computer would bug. The waiting time between the numerous steps was long and increased by the old-fashioned computer programs. Camille, Carter and Ivan thus did not have the optimal material to calculate the VaR.

Besides the time-consuming calculations, the calculators of the VaR had another problem. They had inherited the program that calculated the VaR from

a different entity. That entity did not belong to Bank F any more after one of many reorganisations. That led to multiple problems. For example, the comments in the code were still in that entity's language. None of the three VaR calculators understood it, making it difficult to improve the computer program. Camille put forward that it was not fun working on VaR. She said:

Now they have asked us to add new books, entities and activities and the program was just not build for improvement, you see? We have had to ask an external person to help us that he comes and changes the code [...] If ever we have to change the code, we are not able to this way, we do not know how to. So they asked us to change things but that means that you have to change roughly hundred different tables, you have to look at them all and then test it. And if we test we would need to ask [another entity] to help us. The VaR calculation does not have a friendly tool. So this is a bit of a downside of the VaR team. *Camille, VaR Calculator, Bank F*

Behind her computer, Camille walked me through the model itself. She continuously showed her frustration about its inefficiency. Even so, she tried to create coherent data. She would upload the market data, do another inter- and extrapolation of those data and check the outcome with that of the portfolios. She would look for possible flaws, check if all portfolio's risk measures were there and how much the data had changed since the day before. During the interview, she found data of one of the entities that lacked what she called 'incoherence'. The results of that day differed more than 10% with the day before. Camille called them asked if they could reload the data. She did not want to use the data with such incomprehensible changes for the final VaR calculation. She would then namely have too large of an unexplainable change. Camille took her time to see if the data fit expectations. She wanted a reliable result, a VaR she could explain.

Bank F also had product portfolios (called books) with a relatively complex structure. These specialised financial products did not have a market price or a recalculated market price. That made the daily construction of a VaR relatively difficult. To calculate the parametric VaR they needed the daily value changes

in the market, which they did not have. The risk management department had decided to take some short cuts. That way, they still had a VaR, which they preferred to not having one. The calculation they had chosen gave relatively conservative numbers. Camille agreed with the calculations, even though they did not give a VaR comparable to the others. The normal distribution, as used in the parametric VaR, most probably gave a lower VaR. The ascribed risk to the complex products would have been less. Camille thought of the outcome as prudent and acceptable.

Camille did two things related to intentionally obtaining risk measures of quality. First of all, she looked for incoherency in the data and outcomes. That way she could fully understand and explain the data to others. She thus tried to create output acceptable to outsiders. Secondly, when the available calculations did not give accuracy, Camille preferred to report higher risk levels on basis of conservative estimates. She did not minimise the risk measures, sometimes she did the opposite.

In the team of three, Camille and Ivan focused on producing and reporting the daily VaRs. Bank F had also hired Carter, an external consultant. His mission was to improve the VaR process. He showed me an excel file with a list of improvements to the process. The one he looked at during the interview was the alignment of the input from the different entities. For supposedly equivalent data, the entities all used different calculation methods. For example, they used different techniques for interest rate risks of bonds. At the same time, the VaR calculations treated those numbers in a similar way. Carter tried to improve the VaR output by making the calculations more coherent. He did not necessarily diminish capital requirements. He had to improve the technique. The appointment of Carter and his work on the process show that the calculation department cared about the accuracy of the risk numbers. The department actively tried to make their product, the risk ascription, adhere to the knowledge standard of risk measures.

The accounts of Camille, Carter and Ivan tell us that the VaR calculations incorporated a lot of inconsistencies but that at the same time, the three of them did their best to improve the accuracy of the technique. They had the responsibility to produce accurate risk numbers. All three of them seemed to

work towards this. Camille, Carter and Ivan worked on projects that tried to improve the processes as well as the input data. None of them actively sought out non-accurate numbers. They did the opposite and worked to obtain better numbers.

If the VaR was not accurate, the calculation team would be at fault. Take for example the people who calculated the foreign exchange rate exposures. This team of the calculation department created numbers that differed immensely from bookkeeping's. No one in the risk department, nor in the accounting department, accepted their results as true. They received negative reactions over this and their recommendations were not accepted.³

To conclude, the calculation team in Bank F thus created data with an objective of accuracy. The people who calculated did not show any intent of sabotage of the risk numbers, quite the opposite. We could thus say that the theoretical frame of control through knowledge holds for the risk ascription. The numbers were not sabotaged. However, the puzzle around the non-punishment of the limit remains.

Creating Risk Numbers at Insurance Company V

At Insurance Company V, the process of risk calculations and risk ascription relates to that in Bank F. Risk managers trying to obtain accurate data. Gene and Didier handled the limits while Martin, Brad and Vicky dealt with the calculations of the financial market risks for the capital requirement model.

There were three major differences between the risk calculations at Bank F and Insurance Company V. First of all, the period of calculation diverged. At Insurance Company V, they calculated data every quarter or every month rather than every day. Secondly, at Insurance Company V, the Group consolidated the data rather than the fieldwork participants. Third of all, and most importantly, the risk measures that the department calculated did not affect the limits. The investment department delivered the investment characteristics. The limits related to ratings, who they invested in and the amount of investments. The

³See the transcript of the meeting on the foreign exchange rate exposure, chapter 3 section 3

risk measures produced by the risk department created the regulatory capital requirements. The latter did not influence the limits.

The financial risk managers had little to do with the determination of the limits. Gene and Didier received a list of limits from the Group. They then transferred the limits to an excel file. The latter contained a list of things that should be looked at, the limits were one those things they had to follow-up upon. Credit ratings and asset classes determined the height of a limit. For example, the Group had said that the maximum total investment on AA European corporate bonds was 1.5 €million. Gene and Didier would then compare the amount of money Insurance Company V had invested in that category with the limit. The data on exposure came directly from the investment department, who would generally also flag a limit breach themselves. Gene and Didier wrote down the limit breaches and send an email to the Group to request if they allowed for the breach. They thus did not have any influence on the quality of the process around the limits. They did neither sabotage nor try to improve the risk ascription in this sense.

Even though they had little influence on the limits or the exposures, Gene and Didier did try to influence the creation of the data on the exposures. Didier explained to me that a big part of his work was to obtain data that best represented the portfolio. He asked a lot of questions to see what would show the real nature of the financial assets Insurance Company V had. For example, he wanted to know how to account for the derivatives where Insurance Company V received cash collateral payments. The cash collateral influenced many accounting entries and investment ratios. For example, did this money belong to the general liquidity account or a separate account one? And how did they make sure the cash collateral stayed with Insurance Company V and was not reinvested? Also, the firm used liquidity ratios to understand what they could spend. For such a liquidity ratio, could they count the cash collateral? Didier said that they probably could but at the same time, the amounts of cash were not very stable. The derivative values could change easily, including related cash collateral. Didier tried to represent the investments and related risks precisely. He thus tried to obtain the ‘right’ numbers.

On the other side of the team, a group of people dealt with the risk calcula-

tions. Martin, Vicky and Brad did not handle the limits. However, their attitude to the risk assessments resembled Gene and Didier's. The team of three handled data from both the risk management and the investment department. They transformed the data for the next step in the capital calculations. Sometimes, they would also carry out ad hoc studies requested by the Group or by other departments.

Before coming to Insurance Company V, Martin had worked in asset management. Now, he calculated one of the main inputs of the regulatory capital model, the stochastic rates of return. He took the time to walk me through his work. Martin did not really have to calculate. He transferred data from one computer program to another. He made sure the process went well. Martin would make sure that from one program to another, the data remained coherent. So most of his work covered the examination of the data. He put forward many data controls to make sure he had the right in- and outputs. For example, he wanted to know if the internal data exactly corresponded to the investment department's data. He also wondered if the the final output made sense. With each calculation step he tried to find possible errors. That way, he obtained what he saw as the right numbers.

At Insurance Company V, I did not encounter a voluntary misrepresentation of the risk ascription. The risk managers put effort in the data quality. They had little influence over the investments or their measures of control. However, there where they did have something to say, they looked for a coherence and accuracy in the data.

All in all, those who calculated the risks measures related to the financial investments tried to obtain accurate data. They thus tried to accurately ascribe risks to the financial market activities. The risk managers thus did not intend to calculate wrong numbers.

At the same time, the limits breaches happened. In neither of the fieldwork locations did the risk managers discipline the breaches. Another explanation for the lack of control is needed. That brings us to the second aspect of the explanation, the question of resources. In order to punish, one needs resources and an acceptance by others of your measure of control. Control through knowledge goes together with certain resources. That is where the next part becomes

important, the resources around the risk ascriptions.

5.3 What Control?

In order to understand the control through knowledge or lack of it, I distinguish two points in which a resource distribution takes place; the making and the reception of the risk numbers.

First of all, before the knowledge comes, the risk managers need legitimate material. The calculations and their output have to follow a standard accepted by others within the organisation. Amongst others, the risk managers require the right data input, the right methodology and enough computer power.

Secondly, when they communicate the risk assessments, the risk managers need resources. They have to be able to convince people in the front office to follow the measures. The two resources at reception are the legitimacy and the formal decision making power of the risk managers.

Harald worked at Bank X where he lead the risk measurement team (the calculation department at Bank F). He opened up to me in an interview about the difficulties he had in his work. He wanted to have accurate numbers and influence the actions of the front office. However, he could not. Harald explained to me that, in order to calculate the right risk measures, one needed to know where the changes in the portfolio would come from. He could not just take stress tests or risk indicators. To know the risks related to the investments, he had to identify, measure and control all market inputs. He needed comprehensive data so know what happened.

You can see here the same need for accuracy as expressed in the previous section. Even though Harald wanted to create accurate numbers, he could not. He did not have access to the same data and tools as the front office. The traders had their specific tools and their own information. He asked his superiors for the same tools as the traders. They denied his requests. Harald therefore found it difficult to create the right risk calculations. The different level of access between front office and risk measurement made it difficult to calculate the right risk ascription.

While he did not have the same data as the front office, Harald and his team

still had to show them the risk measures. The front office was not always happy about the assessments. Especially when they showed a high risk, the front office would try to delegitimise the assessments. Since Harald did not have the exact numbers as the traders, the latter could change the subject. To paraphrase him, in cases where the exposure was very big, the traders would say, “no it is not as large [your data is wrong]”. The traders would accuse the risk managers of having the wrong data. The input to their risk model would thus not be the right one. The meeting would turn into a discussions on technicalities rather than the risk exposure itself. The control aspect of the risk measures would be lost. Since the traders directly traded on the financial markets and valued the products themselves, they had the right knowledge. Harald’s team did not have that information. They would thus lose the argument discussion, letting the traders continue their investments. Harald’s risk ascription related to a probability of losses he deemed too high. However, he could not enforce his recommendations. He did not have the right information when creating the risk ascription. He could not make a decision himself about the financial market exposure either. Harald lacked the resources in the risk ascription.

The example of Harald’s difficulties in the implementation of risk assessments shows two things. First of all, he did not have the right information to have (in his view) accurate risk assessments. He did not get the material to do so. At the moment of creation he lacked resources. Secondly, the traders had more legitimacy than the risk managers in the discussion about the risk ascription. The traders views carried more importance than the risk managers since they could shift the argument. Harald did not have the resources at the moment of reception either.

Let us thus explore these two aspects further. First of all, there is the material for the knowledge production. Information about financial market investments is crucial at the moment of the creation. Secondly, there is the reception of the knowledge. By looking into the practices in the fieldwork I will explore how these resources were distributed amongst the different actors within the organisation.

5.3.1 Creating Knowledge: Information Needs

With the help of information and calculative materials, risk managers assessed risks. The quality of the materials either lead to accurate or inaccurate risk numbers. First of all, there is the information about the valuations of the exposure they put into the calculations. Secondly, the calculation techniques require computer power. In Bank F, both the information and the computer material lacked. In Insurance Company V, the risk managers lacked the information about the investments. The distance between the market transactions and the risk managers directly influenced the quality of information they got.

The importance of information relates to the material aspects of financial markets, exacerbated by the make-up of financial organisations. As studies on High-Frequency Trading show, the distance to the marketplace determines the accuracy of the information one receives (Borch, Hansen, & Lange, 2015). The same holds for the data input for the risk managers. The further they are from the trade, the less accurate the information. The risk managers have one other handicap to obtaining accurate information, they fall into an organisational division of labour with a separation between risk and profit. Regulation even states that risk management should be independent from the business units, ie. those who interact on the financial markets. The different organisations have implemented these rules and thereby distanced the risk managers from the people who invested in financial markets. Formal and informal information flows thus have to travel across multiple departments, or even between multiple organisations. The distance and time the information has to overcome between trade and final risk assessment makes it less accurate.

In insurance, asset managers carry out the daily transactions. They are a separate legal structure from the insurance company. Consequently, the risk managers receive little information about the daily changes of the portfolio. The formal channels do not exist and no one will tell them over lunch or in the hallways what happens in a specific market. They simply do not cross the people who trade. Bank F's risk managers were a bit closer to the traders. At least the two shared the same legal entity and even the same building. However, their offices occupied separate floors. The human distance that came from the

organisational separation lead to a lag in information. Consequently, the risk managers had difficulties to create accurate risk assessments. The first step to understand the resources of the creation of the risk assessment is an analysis of the information flows behind them. The second step is the investigation into the material.

Bank F's distance between risk and profit

At Bank F, the risk managers had to go through the calculation department to obtain information on the investments' risk exposures. They already had difficulties to obtain knowledge from the calculation department, let alone from the front office directly. The risk department supposedly carried out the control of knowledge with the help of risk measurements of the portfolio. However, they relied on the calculation team to give them the risk ascriptions of the investments. For example, the risk department was responsible for the limits and the related risk measures. However, it was the calculation team that carried out the measurements. They stood between the risk managers and the front office. Thus, to obtain information about the accuracy of risk assessments, the risk managers had to make two organisational steps.

The calculative steps caused a lack of knowledge about Bank F's portfolio in the risk department. The risk managers hardly saw the people of the front office. Their main interlocutor on the risk ascription was the calculation team. So let's first go into that relationship. Most meetings also took place with the calculation team. Very few existed between the front office and the risk managers. The calculation and risk department worked together to get risk numbers out. Yet they had an extremely strained relationship which created a difficult situation for the risk managers. They needed the right input to assess the risks but could not always get it from the calculation team.

Previously, the calculation and risk department had been one team. Regulatory pressure had led to the split. They had created a team handling the risk control (the risk department) and one calculating risks (the calculation department). The risk department had to control the measures and create the methodologies, the calculation team had to implement them. At the same time,

the risk management team did not see much of the information about the financial market exposures. They namely did not have their hands on the exact execution of the calculations. The calculation department kept the knowledge to themselves.

Risk management tried to implement new methodologies and to keep up to date about the different risk positions of the bank. However, the calculation team blocked the risk department's access to the exact data. One of the cases where they deprived the risk managers of information was for the new VaR methodology. Michael and his team handled the risk calculations of the different financial market products in the Market Risk Management department (MRM). They believed the VaR techniques used by Camille and her colleagues did not optimally measure the risks. So they wanted to change the calculations. To do so, they, first, needed to study the best way to create such a new VaR technique. In order to do that, they needed the existing data for testing purposes. However, the calculation team had not given the underlying data. And even though Michael and his team had the documentation, it was not enough. They needed the data. Thus, Michael and his team were blocked and could not improve the measures.

The calculation team also calculated the risk measures. The specific calculation changes the way a number comes out. A different outcome can lie in a very small parameter or a specific choice for an optimisation algorithm. None of this has to be clarified in policy documents. Since the calculation team kept the lid on the exact calculations, the risk managers could not replicate the risk measures exactly. They had to trust the calculation team's output. With that also came the first interpretations of the data. For example, if a risk measure had changed between two days, did that come from bad data, a change in the algorithm or because the portfolio itself had received a shock? The answers could only come from the calculation department.

Mathilda calculated the daily derivative exposures in the calculation department. She was one of the few who capable to do so. She had written down the process to be able to communicate them to whomever needed to know about them. That gave the risk managers access to the general description of the calculations. However, she also carried out a lot of software manipulations. These were so small that they did not appear in the manuals, while they had significant

effects on the outcome of the calculations. The risk managers could not see these actions since they were part of the informal process.

I sat next to Mathilda when she calculated the exposures. At one point in the process, she went into the computer's task manager, the frame that shows all the computer's activities. She clicked on one of these activities, turning it off. The task had a trivial name, one of many one finds in the task manager. Just by looking at the name, you could not imagine the importance of Mathilda's action. Having the process open on the computer completely changed the exposures. This step was just one part of Mathilda's daily activities. The risk managers might want to check if they had received accurate numbers or know where changes in the results came from. In order to fully understand Mathilda's risk numbers, they would need the very specific knowledge of turning off the task manager's process. However, the risk managers did not know this. People in the calculation department did, also since they sat next to one another, they helped one another. This example shows that the separation of the two departments led to a decline in the informal knowledge exchange.

The calculation department thus created a boundary between the risk management department and the financial markets. The risk managers lacked access to the exact information about exposures and calculations. This knowledge gap made that the risk managers had difficulties to create risk assessments, suggest new methodologies or challenge outcomes. They could not assess the risk ascriptions. Thus, they did not receive the resources to create the right knowledge from the calculation department.

Direct Interactions With The Front Office

The risk managers also had some contacts with the front office. They had opportunities to get information directly from the horse's mouth. They met in meetings but they did not receive any reports or databases from the front office. The calculation department did the latter. The meetings took place periodically and they allowed for an oral exchange of information. Written minutes did exist and would be sent after the meeting.

During the fieldwork, I took part in the meeting lowest in the hierarchy, the weekly market committee (WMC). Non-management and lower managers

from different departments would meet to talk about the changes of the financial market products. The front office also took part in the WMC. During these meetings, the risk managers mainly listened and received information from the front office.

At the WMC, the weekly market transactions and changes were the main topics of discussions. The front office talked and others generally listened. The risk managers heard what the front office encountered on the financial markets. Michael was the head of the team controlling the risk measurements in MRM. He told me, after a meeting in which he had not said a word, about the WMC's value to him. Namely, you could only find specific information about the financial markets in this meeting. If you wanted to know about the portfolio and the daily market interactions, the WMC was the place to be. Traders discussed what they experienced in their books. To Michael, if one wanted to know the risks about the investments, one had to also know the changes the former encountered.

During one WMC, two traders showed problems on the documentation of a specific property asset. One of the subsidiaries had previously owned the property. However, the subsidiary had closed down and Bank F had taken over its portfolio. The IT systems of Bank F had included the property and its characteristics to the portfolio. Traders could thus see the asset on their computer screens. The client fulfilled its interest payments so nothing seemed wrong. However, the two traders of the long-term asset desk had put forward a small problem. The papers that stated the property was theirs could not be found. The traders said, jokingly, that the mail services had lost the package. The whole table at the WMC laughed at the situation. It all seemed unrealistic, the surreal had become possible. All non-tangible evidence existed. the tangible did not. Bank F did not have an immediate loss either. The client still paid. However, there was now a risk that the income flow would stop. Would Bank F have to show evidence they owned the property, they would not be able to. This would directly cause financial losses. Information like this would find itself in a euphemistic tone in the written minutes. You had to be at the meeting to know about such an event. If the risk managers would not know about this kind of information, they could not ascribe the accurate risks to the portfolio.

The transfer of information about things that went wrong and new invest-

ments limited itself to oral interactions. Besides the formal meetings, such as the WMC, the risk managers also had informal exchanges. Risk managers with more informal contacts outside their department had more information and thus more ability to have accurate risk assessments than others. They limited their distance to the market by circumventing the organisational boundaries. The contacts could be with the calculation department but also with the front office or the finance department.

Take Gerard, the colleague I shared an office with. Gerard had a great ability to obtain informal knowledge. He had previously worked in the finance department and made quite a lot of friends there. He got his information from his former colleagues. At the same time, Gerard went outside on a regular basis to smoke. There, he would meet people from other teams. He learned about the difficulties in calculations and the changes to the strategy. He could therefore flag his boss, Valery, about what he saw as the upcoming difficulties for the bank.

Michael encountered the opposite situation. Even though his colleagues perceived him as very intelligent, he lacked information. He did not have many informal contacts outside of his team. He might hear things in meetings. Besides that, he was outside of the loop. Gerard would know about new developments relatively quickly. He talked to other departments on an informal basis multiple times a day. Michael and his team were isolated, from people and developments. Informal contacts thus limited the distance to market operations, increasing the attainment of information.

At Bank F, the risk managers did not receive the information of the financial market exposures through formal channels. They lacked the contact with the front office and missed information. The calculation department did not help them either. Consequently, their risk assessments did not reflect the situation encountered by the front office. They could not accurately ascribe risks because they simply did not know the exact changes to the portfolio.

The risk managers at Bank F did not have the resources to create risks that followed the knowledge standards. They lacked the information.

Insurers' Risk Management's Distance to the Market

In Insurance Company V, the risk department was further removed from the actual investments than in Bank F. An asset management company carried out their financial transactions, creating extra distance between the risk managers supposedly controlling the financial market risks and those actually making the investments. This led to a situation where the people who had to control the investments did not have any knowledge about the exact positions.

Otto explained the relationship between insurer and asset manager clearly to me. He worked on the financial strategy at the asset management company of Insurance Company D, a large European insurer similar in size to Insurance Company V. The asset manager carried out the direct market investments. The insurance company explained its investment preference, leaving the transactions to the asset manager. The latter were the financial market experts, the insurers just another client. At the same time, the asset managers did not have direct responsibility for investment losses. In case they would occur, the insurer would directly encounter the losses on their balance sheet. The asset manager would only see a problem in the relationship with their client. The insurance company thus carried the risks directly without immediate information of the changes in the exposure. The insurance companies delegated the direct market interactions to the asset managers.

This distance to the financial market was continuously reiterated by insurance interviewees. Even though they had financial risks, they saw them from a general and global point of view. Lucius, the head of the Association of Actuaries, explained that insurance companies looked at other insurance companies. They did not look at banks. He told me that risks were their core business, yet they would always diversify them. The financial market was only one of the many risks insurers dealt with. The focus lay on the insurance products and not on the financial markets. He said this while acknowledging that most of insurance companies' assets were invested in financial markets.

The distance affected the ascription of risks. At Insurance Company V, the risk managers hardly had any information about changes to the portfolio. Consequently, they had almost no direct control through knowledge. There was namely

no information on direct market changes and thus no risk assessment to make. The investment department handled the interaction with the asset managers. They would communicate to Gene and Didier what they thought necessary. The two risk managers had nothing to say about the risk measures of exposures, nor did they see the more short term changes in the market. They did something else. They wrote everything down. If the investment department asked for a limit breach, Gene and Didier would write it down. They would also send an email to the head office with a request and write that down too. In case the head office answered, they would write that down as well. Gene and Didier logged their activities.

Record keeping in itself looks like a normal activity, especially in a bureaucratic organisation. Didier and Gene explained their work in an administrative fashion. Whatever happened, they made sure they kept a record. The rest of the department did not log their activities. They described their work through calculations and data handling. Gene and Didier were the only ones supposed to control the risk ascription of Insurance Company V's investments. They did not have their hands on the calculations of risks or the portfolio. They would have monthly or quarterly data sent to them by the investment department, including the risk ratings attached to the products. They looked at the data for limit breaches, in the administrative fashion described above.

Both Gene and Didier were aware of their responsibility for the risk ascription but just did not have the required information. To be able to show that they did their work anyhow, they followed the rules by the letter. They implemented the guidelines sent to them by the Group. By keeping records, they proved that they did the job they had been assigned. In case something would go wrong, their administration would show that the problem was not their fault.

The two financial risk managers at Insurance Company V were too far away from the information. Whatever came on their path, they focused on making sure their own actions would not lead to danger for themselves. They thus dealt with the responsibility by writing their actions down rather than making risk assessments.

The distance between the risk managers and the final investments was too large to even have relevant information. While the risk managers at Bank F

encountered difficulties to obtain information about changes of the exposure and markets, for the risk managers at Insurance Company V having information was almost impossible. The risk managers at Bank F still had the possibility to talk (informally) to the front office. At Insurance Company V, they could not. Where the first descended several floors in the elevator to go to the front, the latter's information came from a different company. The information had to go through too many layers to ascribe risks to investments.

The risk managers in the two organisations had a different distance to the financial markets and with that different access to the markets. The further one was in the chain of information from the markets, the less information one had. One thing did have in common was the lack of information to create accurate risk numbers. They did not have the information to create risk assessments on the exact changes in the financial markets.

Calculation Power

So how about the second resource of the making of the risk ascription, the possibility to calculate? As one can imagine, the risk managers at Insurance Company V did not calculate a risk ascription and thus, by definition, did not have the resources. They did not control the risks taken by those who invested. In Bank F, the strained relationships between the calculation department and the risk management department made it difficult for the risk managers to accept the risk measures. Both departments however lacked resources. Especially the calculation department did not have enough material to create numbers reflecting the financial market positions.

Trevor was the head of the teams in the calculation department who calculated the financial market exposures. When I interviewed him, he told me that, in the six years he worked for Bank F, he had never produced a right number. Investments in computer hardware and software completely lacked. Whenever the calculation department asked for technologies they deemed more apt, management turned them away. They had to make do. Most of the times, they worked with the standard Microsoft tools of their computers, such as Excel and Access. Calculating the relatively complex values with these computer programs

was possible but not optimal.

While management had denied the requests of the calculation department for better material, the traders on the other side of the trading room did have specialised tools. They had their own software programs that helped them better calculate the market exposures. The calculation department did not have access to those. The internal resource distribution thus skewed towards the front office rather than to the risk calculations.

The calculation department and the risk managers continuously encountered difficulties to calculate risks at Bank F. They just did not have enough resources for computer systems or people that would calculate the numbers the risk managers wanted. For example, it took them more than three years to implement a new interest rate standard. When they thought they had finally done so, the computer systems broke down. Makeshift solutions held the risk calculations together. For years, they had not had any investments in the techniques. The calculation department used what they had to create risk numbers. However, they did not have much. Especially, they had less than the front office, those the risk measures supposedly controlled.

So what can we conclude about the distribution of resources when making the risk ascriptions? Neither the risk managers at Bank F nor Insurance Company V had the information or the calculation power to make accurate risk ascriptions. Harald had explained a lack of resources in making the numbers at Bank X. The participant observation gave similar findings. The risk managers just did not have the right methods to calculate an acceptable figure.

Furthermore, the fieldwork shows that the further away the risk managers were from the financial market interactions, the less information they could use for the control of financial investments through knowledge. I can thus partially answer the empirical puzzle of the limit breaches. The risk managers' and calculation department's knowledge creation lacked the material resources to create accurate knowledge of the financial market interactions. The measures of the risks themselves did not keep to the standards the different participants saw as acceptable. So how about the reception of the numbers? Maybe the risk managers had resources there.

5.3.2 The Reception of Risk Ascriptions

So why did a breach of a limit not lead to a cut in a financial market position? In other words, why did the violation of a standard of risk control not lead to punishment? The intentions of the people who calculated the measures do not explain the lack of punishment. The lack of resources in the creation of the risk measures helps partially understand the empirical puzzle of the limits. However, we still have the moment of reception of the risk ascriptions. One can imagine that risk management has the power to make decisions or the legitimacy to have their assessments accepted. This was not the case. In both locations, the risk managers did not have resources related to the reception of risk ascriptions. Let me show you how the interactions went between the risk managers and the front office. First I will discuss the Weekly Market Committees at Bank F. Then, I will shortly go into Insurance Company Vs risk managers' lack of interactions with the investors.

The Weekly Market Committee at Bank F

As said above, for most risk managers in the MRM department, direct interactions with the front office were rare. Some meetings did exist in which an exchange could happen, including the Weekly Market Committee (WMC). In this meeting, the risk managers could obtain otherwise unavailable market information. However, the risk managers did generally not express their risk assessments in this meeting. They did not have the legitimacy to put forward their risk ascriptions to the front office.

The risk managers needed the meeting for the information but their presence seemed less crucial for the other participants. The front office had a very active role in the WMC. They would take the floor most of the time, generally talking about upcoming transactions and new projects. The risk managers, if they would talk at all, would ask questions for clarifications. The front office seemed to lack interest into the risk management's visions.

Not only did I see a lack of the front office interest in the risk assessments at the WMC. I also noticed it in meetings the risk managers held themselves. Maybe one or two people from the front office would show up. They would

have an extremely passive attitude, hardly saying anything. Their stance was so passive it seemed they were only present to show they adhered to a formal expectation. The risk managers' visions on their investments did not seem to interest the front office operators a lot.

The WMC happened after lunch. Even though I generally arrived early, one person always arrived before me. She sat in the same place, at the centre of the table. Even though that centrality might tell us something about her importance, she hardly uttered a word during the meetings. She did write down every transaction discussed in the meeting. I found out later that she was part of the compliance function. This team held the responsibility for making sure that the transactions kept to the official financial market rules. I was amazed by her silence. At the same time, the risk people present would not say much either. Sometimes one or two would step in a conversation to ask more about the specifics. Or they might ask if a specific action was really necessary. Let me walk you through two of these episodes. The first is an exceptional cases where the risk managers (including calculations) did speak out. The second event is a standard case, where the risk managers did not express their professional opinion. Both show the legitimacy of the risk managers.

First of all, there was the exceptional episode where Trevor spoke up. The risk policies fell within the confines of the risk department. During one of the meetings, a set of front office operators asked how they should use the policies. Trevor opposed their vision on the implementation of the rules. Trevor was the head of calculations team that handled the derivatives portfolio.

The front office worked on the acquisition of a financial product not alike one they had on the books at that time. Previously, Bank F had owned the product but it had not had one on its books for a couple of years. It had thus also been several years previous that the computer systems had last dealt with these products.

In one of the meetings, the new product came on the table again. Two people from the front office expressed their concerns about the logistics behind the new product. How were they going to account for the product in the right way? They expressed their concerns over the computer systems' ability to execute the new transactions. Due to the time that had passed after the last sale of the

product, they thought it might bug. That led the front office people to hesitantly ask; is this a new product? Bank F had some history with the product but that was a long time ago, so did they have to see it as a new product or not? Classifying it as a new had consequences. The rules namely stated that all new products had to pass through a New Product Committee (NPC). This committee included risk and calculation department representatives, as well as some front office people. In a meeting, they would scrutinize the new product to see if it would fit the standards of the bank. The new product classification would mean another hurdle for the implementation.

In the hesitation of the question, the front office operators showed their preference. They did not want the extra work that the NPC would bring them. It was then that Trevor spoke out, relatively fiercely. He said ‘Yes it would have to go through the New Product Committee’. The front office lightly opposed Trevor’s opinion. After a short discussion, they accepted that the product was new and the process would have to include a passage through the NPC.

Trevor’s expression was in line with a formal legitimacy established within Bank F. Guidelines, made by the risk department, existed that the front office should follow. The risk management department made those guidelines. Trevor, as head of one of the calculation team and former risk manager, directly related to risk management. Therefore, he was the right person to put forward that the guidelines should be followed. The guidelines were part of his perimeter. Trevor could thus set the boundary where he did. He had the legitimacy to tell the front office they should keep to the internal policies.

At the same time, the topic had already been brought up by the front office. Trevor did not bring up a new subject. In other words, he did not stir a pot already stirred by the front office itself. In that sense, Trevor did not hold the guidelines in front of the front office’s faces. By bringing up the question themselves, the front office people also knew that the NPC existed and that they probably had to go through it, even though they preferred not to.

That Trevor spoke up in this case resembled what he told me during his interview. He would not remain silent. Previously, his bosses had told him to ‘shut up’ when he had seen things he did not agree with. The crisis and consequent events for Bank F had made him realize that he would not keep his

opinions about the different risks to himself anymore. In the case of the new product, Trevor spoke out. However, this was the only WMC I was present at where he did. He had the legitimacy to object to the way the front office used the guidelines, especially since they had brought up the subject not him. That legitimacy was rare. It was even the only time during the participant observation that I saw a risk manager speak out against the front office.

Most of the times, the risk managers did not counter the front office's argument. The following is an example of the the standard state of affairs. It shows the lack of legitimacy for risk managers assessments on the investments.

In my last month at Bank F, the finance department and front office changed the way in which attracted liquidity. The financing structure would substantially change. Nicholas, trader, lead the project. Gerald, risk manager, did not agree with the way he wanted to do this. Instead of telling Nicholas this, Gerald told the other risk managers.

In one of the WMCs, Nicholas presented the new financing structure. He was the head of the trading desk that dealt with the short term liquidity. Bank F's existence depended on Nicholas doing his job well. The defaults had happened due to a lack of liquidity. The liquidity desk made sure that Bank F had enough. During the meeting, Nicholas took his time to explain the different transactions and key moments in the upcoming months. He talked of a transaction of a couple of millions here and a couple of million there. Local entities would transfer bonds between one another to increase available collateral, and together with their issuers, they would restructure a couple of large loans. On a couple of very specific days, Nicholas had to obtain large sums of cash from the market. Some foreign exchange rate derivatives were also part of the deal so they could obtain funding in those currencies. Nicholas presented the last two things as easy steps.

Gerard took part in the meeting. He listened attentively to Nicholas' explanations. Before joining the risk department, Gerard had worked in the finance department, especially on financing and liquidity and had a legitimate expertise. After the meeting, Gerard expressed his doubts about the change in the financing structure. He did not bring up any criticisms during the meeting. Only when the meeting ended and Gerard and I stood in the elevator together, he raised his concerns. First he talked to me when we were on our way back to our offices. He

thought Nicholas had been a bit overly confident in the ability of the firm to find financing. The amount of money needed at the specific dates was a lot to find, according to Gerard. An inability to do so could mean another bankruptcy.

In Gerard's eyes, Nicholas played with fire. Gerard also questioned a very specific analysis of Nicholas, namely on the ability to sell the foreign exchange rate derivatives. Nicholas had said that it might be difficult to sell these products. According to Gerard, the derivatives were one of the most liquid assets in the financial markets. Nicholas had thus assessed that Bank F encountered difficulties to obtain one of the easiest products to buy. Therefore, Gerard concluded that the organisation found itself in a difficult liquidity situation again. Other banks did not seem so eager to assume a liability with Bank F, even for one of the most traded products in the market.

Thus, Gerard ascribed two risks to the new investment plan. One, they needed so much liquidity if the transactions did not go as planned, they would find themselves in default again. Secondly, the difficulty to sell derivatives indicated that other banks did not want to trade with Bank F, also leading to a possibility of default. Gerard later reiterated his preoccupations to our boss, Valery. He thus made a risk assessment on actions related to the investments. He deemed the assessments important enough to tell his boss about his pre-occupations.

The risk ascription thus mattered to Gerard. Yet, he remained quiet during the meeting. Nor did he talk about them in subsequent meetings where we discussed the follow-ups of the financing situation. Gerard did not tell his counterpart in the front office that he thought the plan had too high risks. Gerard as a risk manager did not have the ability to oppose the investment plans directly in the WMC, to the traders who had made the plan.

That Gerard did not speak out during the meeting was not rare. It reflected a normal state of affairs. The risk managers, or the calculation department for that matter, did not have the legitimacy to show their object to the front office's plans in the WMC. They could discuss their assessments between risk managers. However, they did not have the resources to do so towards the front office directly. Of course, exceptions existed. Questioning the front office's interpretation on the formal rules was one of those exceptions. The risk managers did not have the legitimacy to express their assessments about the front office's investments.

Generally, the risk managers in Bank F did not have the resources at the reception of the risk ascription.

No Communication In Insurance Between Risk and Investments

The situation at Insurance Company V was even clearer regarding the reception of the risk ascription. The contacts hardly existed. There was no reception. The financial market risk managers did not have contacts with the people who invested. The contacts with the investment department limited themselves to the technicalities of counting. Thus the risk managers did not have resources at all to impose their assessments.

At the time of the fieldwork, Gene and Didier neither distributed knowledge nor had direct resources of decisions on investments. The financial risk managers in Insurance Company V did not have a seat at the table where they could convince people. They had no formal legitimacy. Nor were their assessments of risks distributed widely or looked at on a regular basis. They thus did not have a value legitimacy either.

In Insurance Company V, the contrast between financial risk control and insurance risk control was striking. The people working on the life insurance risks were relatively close to the people who made and sold life products. They even discussed the profitability of new products together. Tony, boss of Didier and Gene, focussed on the life insurance risks. He knew little of the financial risks. He wanted to look at the profitability of the financial products as well. However, that was more a wish than a project.

Where the financial risk managers did not talk about the risks related to the investments, the life risk managers in Insurance Company V were relatively close to those who sold the products. The first just did not have the legitimacy to say anything about the financial market investments. They followed the policies that the Group sent them. Didier and Gene made sure they wrote down all their (in)action. Their risk ascriptions did not affect the investments themselves.

To conclude, neither in Bank F nor in Insurance Company did the risk managers have the resources to have their risk assessments received well by those who invested. In Bank F, formal rules existed that established the risk managers as a

conversation partner. However, they did not have decision power nor legitimacy to change the front office's investment decisions. Risk assessments were not explicitly put forward to the front office. In Insurance Company V, the discussion did not exist at all. The financial market risk managers there had less formal legitimacy than at Bank F. They had no other types of resources with regard to the reception of their risk assessments. All in all, the risk managers did not have the resources to turn their assessments into front office actions.

5.3.3 So what happened with the limits?

Let us go back to the empirical puzzle of the limits. They existed and the risk measures of the financial market portfolios breached. A breach did not lead to punishment or cutting back the portfolio. The theory that risk managers create a form of knowledge that controls actions thus does not hold. Something else happened. As described above, multiple resources lacked. When calculating the numbers, both information and calculation capacity lacked. In the communication of the risk assessments, the legitimacy and decision making power lacked. However, the above described situations do not directly mention the limits.

At Insurance Company V, the limit breaches were part of an undefined relationship between the Group and the local company. Whilst the local risk managers, Gene and Didier, told the Group that a limit had been breached, the latter had to say if the position had to be cut. Gene and Didier however recounted that most of the time, the Group did just not respond to their flags. The general consensus seemed to be that the Group had other pressing tasks. Another way of putting it would be that they were not interested in the limit breaches. The Group was higher in the hierarchy. Their (in)action remained unquestioned. Gene and Didier thus wrote events down rather than control the financial market investments. They did not have the information, the decision making power or the legitimacy of norms to change the follow-up on the numbers. They completely lacked the resources to have their measures be a form of control.

At Bank F, Valery explained to me why the limits were not directly followed up. She gave me multiple reasons, sometimes methodological and sometimes

economical. At Bank F, they found multiple reasons to not act based on their device of control. For example, one of the portfolios had a constant limit breach because the valuation and risk methodology was incorrect. The risk managers worked on the calculations. The methodology improvement was just one of the things on their list. The improvement of the methodology did not have the priority, resulting in limit breaches. Valery's explanation shows that the risk department simply did not have the resources to generate acceptable measures. They lacked people and calculation power to have a measure that would control actions.

Then Valery gave me a profit-focused argument for the lack of action after a limit breach. At the time, Bank F did not buy new products. They kept to the products they had. Any breaches of risk limits came from changes in the valuations of these products. Higher risk measures meant a low value of the portfolio. Selling financial products in a bad market would result in a cash flow loss. If the bank would wait and see whether the market would go up again might mean they would never have to take the loss. Thus, risk management did not press on cutting positions even though the risk measures indicated they should. The people at Bank F expected the markets to go back up again accompanying an improvement of risk measures.

Two of the risk department's resource deficiencies come forward in Valery's reasoning that limits can be surpassed. First of all, she indicates a lack of legitimacy of risk management's tools. Why do they exist if they are useless when breached? The standard set by the risk measure was less important than the norm for possible future profits. The risk assessments did not carry enough legitimacy to counter an argument for future profit. That brings me to the second resource deficiency, a material one. Other measures could be found that would consider future accounting losses. The risk managers did not have these techniques and could not implement them either. They lacked the material. Compared to the front office counterparts, the risk managers missed both legitimacy and material resources in the profit-focused argument.

5.4 Conclusion: Lacking resources to control through knowledge

The work of the risk managers on the risk ascription did not show control over the investments. The analysis looked at two forms of control, through knowledge and over resources. The former was supposed to be part of a formal organisational set-up, whereby risk management would produce risk assessments that exerted control over actions by showing a knowledge standards. However, the risk managers did not have the control over resources to implement control through knowledge. They neither had the legitimacy or the material resources.

Risk managers themselves wanted to produce and have accurate risk numbers that would change the behaviour of the people that invested. However, the resource distribution in the division of labour did not allow for this.

First of all, the risk managers did not have enough material resources. The organisations did not give the risk managers (or risk calculators) the budget to calculate accepted risk measures.

Secondly, there is the distance to market interactions. The regulation and organisational set-up elongated the risk managers from the market transactions. In doing so, the information did not flow to the risk managers in a timely manner. Boundaries of teams or different firms made it impossible to have the exact market information. The latter was necessary so that other in the organisation could accept the risk assessments. The material importance of speed in financial markets made the distance even more of a problem. The further away the risk managers were from the investments themselves, the less accurate the information was on which they based their risk assessments. The risk managers did not have enough material resources in the form of information, computer power or budget to perform legitimate assessments.

That leaves the reception of the risk assessments by those it is supposed to control. In interactions with the front office, the risk managers could have had the capacity to impose their visions. Either they did not have any interactions at all (as was the case in Insurance Company V) or they did not have the legitimacy to say something. In some occasions, the risk managers had a formal legitimacy. Generally, however, their role as risk managers did not give them legitimacy to

express their assessments. The risk managers could not decide either. They did not have the formal resources to punish. All in all, risk management made assessments about the risk ascription the people who made investments did not listen to.

Consequently, the argument that risks are controlled through knowledge needs serious adjustment. Resources matter in the division of labour of the financial firm and therefore also in the control through knowledge. In the risk ascription, the risk managers did not have resources needed to exercise control. They did not have the right material when making the assessments and they did not have the legitimacy when communicating them. Their risk assessments were moot. They did not matter as forms of control through knowledge of the people that carried out the investments. Thus, the risk managers did not control the financial investments on the possible future losses.

This thesis started with a paradox. On the one hand there was the direct relationship between risk and profit, cornerstone of economic decision making. On the other hand, there was a division of labour in banking and insurance with some responsible for risks, others for profit. Two separate departments incorporate the economic relation of expected return. This contradiction between direct association and separation affects the control over the organisation's financial market risks. This chapter showed the effects of the division of labour. Since the risk managers were far away from the markets, they did not have the right information. Besides that, they did not have the right material nor the legitimacy to have traders follow the risk measures. So what did the risk managers do then? That is where the second aspect of the risk measures comes in, the consequence attribution.

Chapter 6

Managing Financial Consequences

The risk managers saw both risk ascription and consequence attribution as risks. Consequently, their work concerned both. In the previous chapter I have shown that risk managers do not have enough resources to control the ascription of the risks. That leaves the second aspect of the risk definition, the consequence attribution, to understand the risk managers' work.

Actors and norms outside the risk manager's organisation create negative consequences. In general, the risk managers can prevent the problems from inside happening due to the malleability of financial objects. As shown in chapter three, the risk assessments depended on the expectations of what the numbers were supposed to look like. The risk managers framed the risks such that they fulfilled their managers' expectations. The numbers were thus malleable and could be changed based on these expectations.

In chapter four, the consequence attribution directly related to the avoidance of negative events. The risk managers tried to fend off possible financial losses for the organisation. They thus had a clear political frame to which they fit their consequence attribution. They could adapt their technical frame such that the outcome did not cause any of these financial losses. If the consequences would come from the inside, the malleability of the financial object would allow the risk managers to change the value such that it would not become a loss. However, the risk managers had to handle more difficulties than this internal one.

The organisations the risk managers worked for did not operate on their own.

The firms existed among other firms, with a need for outside funding and regulatory approval. They had to deal with these outside forces that could heavily damage the organisation. If the risk managers would have had all freedom to do whatever they could, the malleability of the risk assessments would allow for a continuous ability to avoid negative consequences. However, the risk managers could not change the numbers at their will since outsiders enforced certain boundaries.

Outside pressure on an organisation's actions is a key theme within organisational studies. Two of this literature's main theories focus on the pressure from the outside, one by studying institutions, the other by investigating the resource distribution between organisations. The first is neo-institutionalism, the second resource dependency theory. Together, the two theories complement one another to understand the survival of organisations (Sherer & Lee, 2002).

Within neo-institutionalism, organisations try to adhere more or less to an outside institution (DiMaggio & Powell, 1991; Scott, 2008). Institutions in this case are normative standards that exert (indirect) pressure to organisations. In the case of financial organisations' viability, the norm is the shareholder value paradigm. The second literature has a more actor based approach, resource dependency theory. Organisations are interdependent on one and another. The distribution of resources determines the organisation's actions (Pfeffer & Salancik, 1978). In this framework, financial organisations find themselves mainly threatened by regulators.

Scholars within the neo-institutional framework have looked at the forms in which organisations adapt to their normative environment. The perspective is about the sets of norms organisations act towards. The firm can apply, change or deny them in one form or the other (Scott, 2008). Regarding financial health of an organisation, accounting standards give the knowledge standard organisations adhere to (Carruthers, 1995). Accounting goes beyond bookkeeping, it is also about the value represented to the shareholders. Shareholder value has become one of the main forms of governance of firms (Godfrey, Merrill, & Hansen, 2009).

Other than the US, the European Union is not stronghold of shareholder value. The EUs different political economies lead to other economic standards (Rhodes & Apeldoorn, 1998; Williams, 2000). However, shareholder value does

have influence, especially in finance. The financial sector is the main propagator of the shareholder value norm (Ho, 2009; Ouroussoff, 2010). Besides finance and shareholder value's direct link, financial firms do not limit themselves to national borders. Thus, we can expect the risk managers had to keep up the shareholder value standard.

Not only can shareholders make life difficult for a financial organisation, so can a regulator. They have direct resources to punish an organisation. They can fine, retract the license and damage a financial organisation's reputation. Resource-dependency theory helps explain part of the puzzle in this case. This theory looks at the material and actor based aspects of an organisation's environment, the distribution of 'haves'. Actors are identifiable and have direct influence over the organisation. Legitimacy, financial and legal resources are all part of the relationships between organisations (Hillman, Shropshire, & Cannella, 2007; Davis & Cobb, 2010). Interdependency happens on multiple sides, one organisation depends on the other's survival. In case of such a multiple dependency, the organisations maintain one another alive.

In the case of financial institutions, multiple dependencies can be identified. As shown in chapter 3¹, these organisations depend on funding from other organisations, on their clients for new business and on different labour markets for the people that work in the organisation. At the same time, they also heavily depend on multiple state actors who allow banks and insurance companies to carry out the business they do.² Regulators give the permits and, in the case of banking, the monetary ability to be a financial organisation. They can also give considerable reputational and financial damage with their assessments and fines. Thus, not only do regulators give the basic premise for the organisations to exist, they can also bring it substantive harm.

While the two organisational theories help understand outsider pressures, they give less information about how people on the inside of these organisations react to it. Only a limited amount of organisation studies' researchers has looked at the daily interactions of the actors in and outside the organisation (Hasselbladh & Kallinikos, 2000; Hallett & Ventresca, 2006; Davis & Cobb, 2010). When the

¹See section 3.3.2

²See section 3.1 for an explanation of the different constraints posed by regulators

scholars in these fields did look at the local interactions, they have lacked interest in the local distribution and usage of resources (Bergeron & Castel, 2016).

Here, the risk managers' work on the consequence attribution comes in. The outsiders have the resources to create negative consequences for them. Risk managers try to avoid these problems. They do so in the adherence to a knowledge standard and by managing resource dependencies. The two most present pressures came from shareholders and regulators. The risk managers knew outsiders could attack the organisation. They tried to keep up the organisational barriers from the inside. With that, the risk managers protected the organisation from shareholder and regulatory pressures.

The outsider pressure even became the risk managers' internal bargaining chip. They did not have the resources to enforce a control on the risk ascription but they did have the outsiders' pressure. Thus, the risk managers could use these threats from the outside to implement their risk assessments in other departments.

In this chapter, I discuss the work of the risk managers on the consequence attribution. First of all, I look into their work relationships. The network data shows that the risk managers mainly worked amongst themselves and with the finance department. They hardly had contacts with the front office or people outside the organisation. The risk managers tried to keep up the fortress from the inside. They did so, first of all, together with the finance department. They tried to fend off financial instability and shareholder dissatisfaction. Secondly, the risk managers had their own outsider to take care of. Namely, they worked for the regulator. Regulatory agencies could exercise direct pressure on the organisation. Even though the regulator comes last in this chapter's discussion, they were the most present in the risk managers' work.

6.1 Risk managers' contacts

To know more about the work of the risk managers, let's take a step back. Before going into the representation of their work, I can show the contacts of the risk managers which give can give insight in their activities. I use the name generators for the contacts. In the questionnaires, I asked the participants who they worked

with and who they asked for advice. This gave me two types of ego networks of the respondents that I have collated for each fieldwork. The main outcome of these networks is that the risk managers either worked amongst themselves or with the finance department. They also had most cooperative ties with the finance departments and between themselves.

The work ties represent the interactions of the activities that the people carried out. The advice ties show the ties of trust. The help question thus depicts explicitly cooperation, something the work question remains ambiguous about. The work and help networks differ and show the risk managers' lack of cooperation with some departments, most notably the calculation department at Bank F.

All ties are directed. When a node has an out-degree, the actor filled in the questionnaire. When a node only shows in-degrees, it means the actor was named by a respondent.

Figure 6.1 shows the aggregated ego-networks of MRM at Bank F of the work ties, 6.2 the help ties. The colour gives the department. The blue dots are the risk managers, red the calculators, green the business department (front office, sales) and black the finance department. The amounts of sides to a node show the hierarchical position of a person. A triangle means someone without managerial power, a square a manager of a team and a pentagon the head of the department.

The networks of the insurance company's risk management division can be found in figures 6.3 and 6.4. The figures of the networks represent the same hierarchical positions. The colours are different. Black is the risk management division, red the finance division, blue the business departments (insurance products and investment department), green external parties and light blue other departments in the organisation.

The name generators the risk managers filled in shows an internal focus. Only one person (a manager) filled in a contact that was external to Bank F. They did so in the help network and the node is classified under other (see table 6.5). In Insurance Company V, there were two types of external contacts in the name generator. First of all, a large part of the team was consultants who carried out core work of the department. Secondly, some people who worked

Method Parenthesis 2 *Background of Ego Networks* During the two fieldworks, I handed out name generators to the participants. They received an excel file with questions about the people they worked with and those they asked for help. The participants had to fill the names in themselves. The objective of the name generators was to know about the informants' contacts through their own eyes. The name generators thus give a description of the relationships in the field beyond my, the ethnographer's, viewpoint.

The networks that come out of the name generator give the outflows of those who filled in the questionnaires. Only people in risk management filled in the questionnaires. And there, not everyone filled in the questionnaires. At the same time, they mention people that worked in other departments. The networks thus only show the ties of the respondents, not necessarily the people they were in contact with.

The choice of the two name generator questions comes from the descriptive need that the name generator fulfils. Who do the risk managers work with and who do they ask for help? I do not have the intention to capture a social system with the networks. That would go against the social constructivist approach of the research. Nevertheless, the ego-networks lie as close as possible to the work environment of the risk managers and are analysed as such.

A full network analysis would include more measures to understand the network itself. However, in this case, the network and a possible structure that it would represent are not of interest. The network gives a complementary view on the work that the risk managers did by showing who they were in contact with.

Work Network Bank F

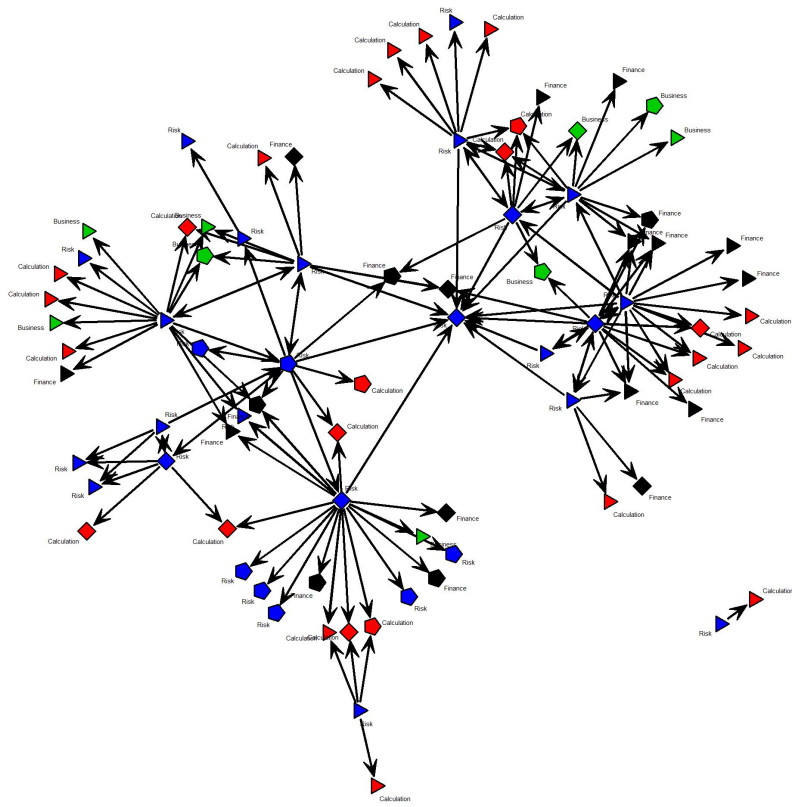


Figure 6.1: Bank F Work Network

Help Network Bank F

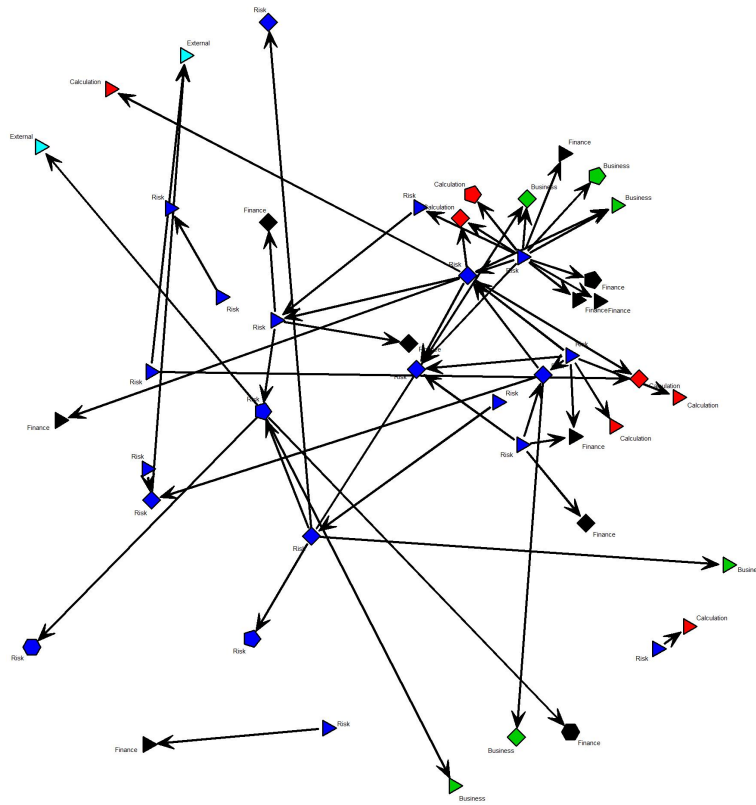


Figure 6.2: Bank F Help Network

Work Network Insurance Company V

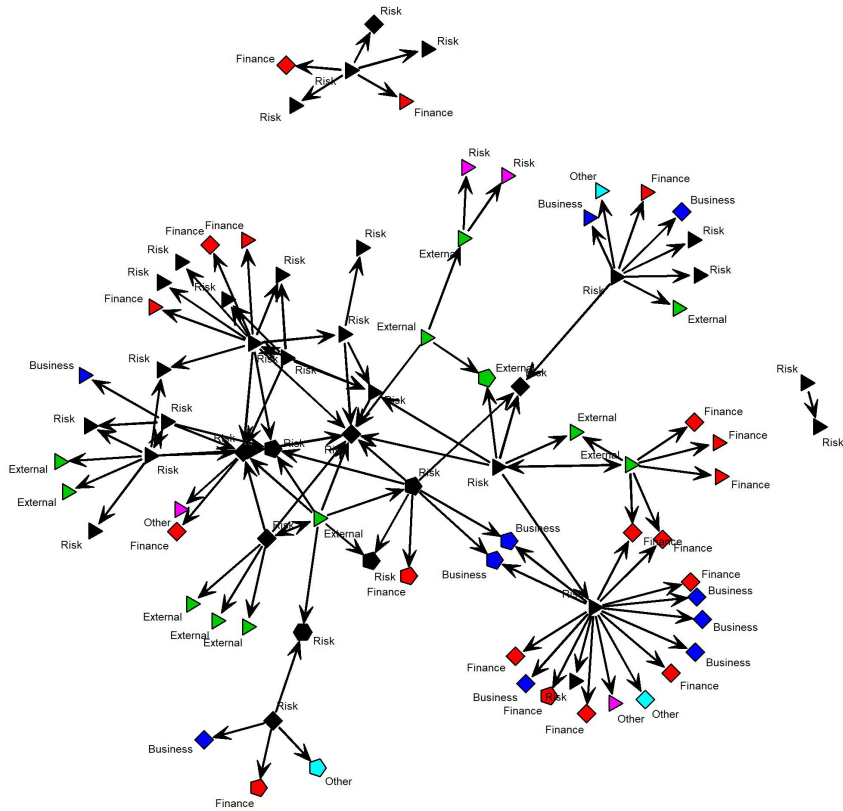


Figure 6.3: Insurance Company V - Work Network

Help Network Insurance Company V

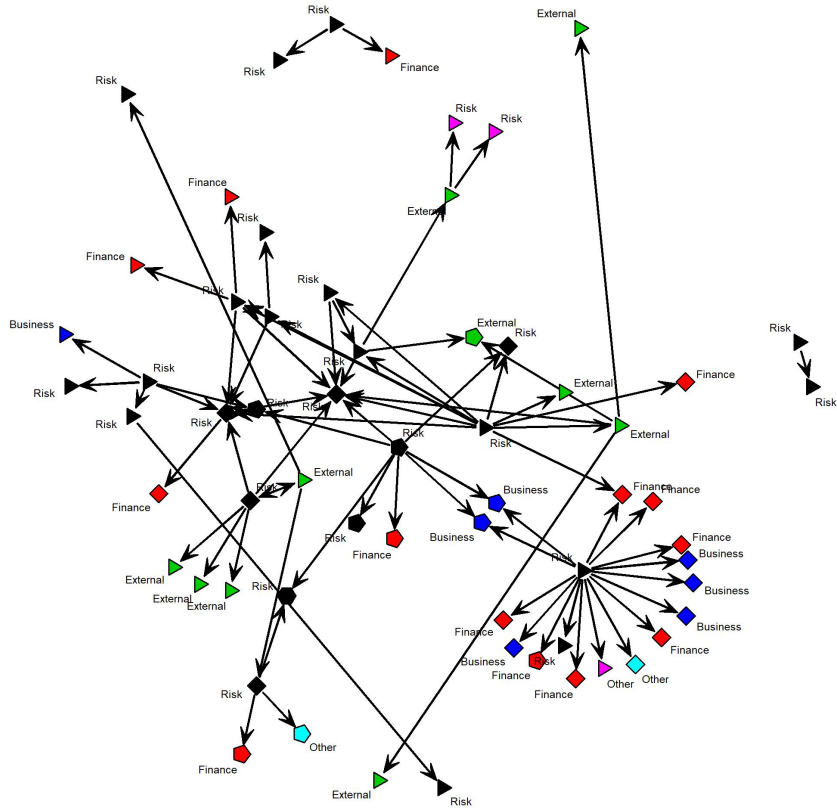


Figure 6.4: Insurance Company V - Help Network

on Insurance Company V's reinsurance (part of the risk department) worked together with outside re-insurers. These did not handle the risk management of financial assets or financial well-being of the organisation. The people who worked on these risks worked with people on the inside.

In both locations and for both questions, the main interlocutors were their risk management colleagues (see tables of figures 6.5 and 6.6). Second to that were people in the finance department. Except for the work network of Bank F, who worked second to most with the calculations department. The risk managers in both locations had least work and advice contacts with the business departments and front office.

Bank F	Risk Mgt	Finance Dept.	Calculation Team	Front Office (Business)	Other
Work Contacts	54	31	39	13	0
Help Contacts	21	12	9	8	3

Figure 6.5: Bank F Risk Managers' Contacts Per Department

Insurance Company V	Risk Dept.	Finance Dept.	External	Business (including investment and insurance product divisions)	Other	Risk Everyone
Work Contacts	60	21	13	12	3	4
Help Contacts	38	15	11	9	2	3

Figure 6.6: Insurance Company V's Risk Managers' Contacts Per Department

Lets first go into the different aggregated ego-networks themselves per company. In the bank networks, two different groups are visible. One group works on the different financial market portfolios, the other on the balance sheet. When we look at the amount of contacts per department, we can see that the risk managers mainly work with the finance department and the calculation team (see table of figure 6.5). They hardly work with the people in the front office that are supposedly taking the risks. The help network shows the same lack of contacts with the front office. There are even more cooperative contacts with the finance department than the calculation team. Thus, the finance department was more a trustworthy partner than the calculation department.

The data from Insurance Company V show a broader network than for bank F. The reason behind this lies in the questionnaire's respondents. Not only the small team of the financial and life risk models had filled in the name generator, a sample of the whole risk division had, including the consultants who worked for the risk department. There are more connections in total than in Bank F (see table in figure 6.6). The second department that the risk managers have contact with is the finance department, not the departments that sell or buy financial products and insurance products (business department). The network seems more evenly distributed than in Bank F, which also resembled the floor where contacts were quite easily made between the different groups (see figure 6.4 (insurance) and 6.2 (bank) for a comparison on the two help networks).

Why this weight of contacts with the finance department? To answer this question we need to go back to the definition of financial risk. The overall vision of financial risks of the participants related to decisions on financial markets and the consequences they might have. Would risk managers focus on this first aspect of risk, the decision making, we would expect a lot of contacts between them and the front office or business departments. That is namely where the financial market actions are carried out. The risk managers do not have many relationships with the business department. The weight of the internal departmental relations lies with the finance department. It is thus the second aspect of the risk definition that mattered in the work of the risk managers.

In neither of the networks, those working on interactions with financial markets (or other business decisions) have an important role. They are not in the

help networks, nor in the work networks. Risk managers thus hardly work with those who make the first decisions on the financial market interactions. That leaves us with the second aspect of the risk definition, the attribution of consequences. The main contacts the risk managers had were either with themselves (and the calculation department for Bank F) and the finance department.

Holding The Fort

The contacts in the risk department and with the finance department explain the risk managers' tasks. On the one hand, there was internal work just for the risk department (including the calculation department at Bank F). On the other, their output mattered for the finance department. The regulator and shareholders created work for the risk managers. They worked amongst themselves to handle the regulatory pressure and with the finance department to manage the shareholders.

Before starting my day at Bank F, I walked from my bus stop to a large shiny skyscraper. Behind the reflecting windows on the top floors of the building, the risk managers carried out their work. I had my last moments of outside contact on the walk between the bus stop and the tower. Once inside, the outside would be shut off. Even the cellphone service inside the skyscraper was patchy. These anonymous, large towers are the places that the world wide financial transactions take place in. They illustrate financial firms' closed from the rest of the world. The towers are strongholds where one needs the right badge to enter. Every fortress needs its defences, knights to mount the walls. In entering the tower, I would become one of those people who held the fort that was Bank F.

Insurance Company V resembled Bentham's panopticum³, difficult to penetrate and impossible to leave. The offices situated themselves around a courtyard. Getting in and out of the building was difficult. You had to pass through barriers and pass multiple other offices. The managers could see one another working across the courtyard. From their offices, they could also see their subordinates taking their breaks on the courtyard. Just as inmates in a prison, the risk managers would go out there for a walk, to stretch our legs and walk in a

³See Foucault (2012)

circle.

The architecture illustrates the protective nature of the risk managers' work. They kept up the internal boundaries to save the organisation from external (financial) threats. They did not have contacts with clients, hardly went to outside meetings or conferences. They would enter the building in the morning and only leave at the end of the day, having only had contact with insiders. The risk managers mounted the battlements of the fortress to protect it from outside attacks.

Take the example of the response to one of the the ECB's stress tests. In one of the first weeks as an intern at Bank F, Valery walked around the hallways in a stressed manner but without a purpose. She stepped into my office to explain her troubles. A couple of weeks earlier, her team had send the final data for one of the ECB's stress tests. However, the ECB needed more information. The data delivered on the bond portfolio had not been on the 'benchmark' (the standard of the ECB) and the regulator wanted to know why. The deadline was very short and only Lydia could figure out an explanation. She worked on the bond portfolio and was the only one with the knowledge and access to the information systems.

While Valery walked around the hallway without much purpose, Lydia worked hard behind her computer to get the data and explications ready. Valery made the importance of her work explicit to me. If the regulator deemed the stress test failed, even very little, the bankers at Bank F had to request the shareholders for extra money. Not only that, the shareholders' reputation could be impacted. The regulator (ECB) and the shareholders were to be kept happy.

In the stress test exercise, two outsiders' impression mattered for the risk managers. Both had the ability to the organisation. There was the regulator, who the risk managers answered to. Then there was the shareholder who, indirectly, made the risk managers to act in a specific way. The shareholder relates to the work of the finance department. The two outsiders can affect one another. However, they are separate actors with their own threats. This leads to different types of work for the risk managers as well.

On the one hand there is the regulator. They can impose direct costs for the organisation. They can request for higher capital amounts on the balance

sheet, limit certain market activities and demand for data and reports. The regulatory capital requirements have direct financial consequences. Capital can not be invested like other funds, leading to less capital revenue than normal balance sheet assets. The regulatory request pose indirect costs. They can either limit possible profits by a limit to the activity or increase costs related to employee effort. Someone needs to write the report or deliver the data, they need to be paid. The work of the risk managers internally related to the regulatory pressure.

Secondly, the shareholder can pressure the organisation. This outsider relates to the financial status of the organisation. Generally, shareholders are an invisible force. Especially when a firm is quoted on a stock market, the shareholders can be anonymous. The anonymous shareholders happened at Insurance Company V. Bank F had an exceptional situation since multiple European states were their shareholders. The risk managers could thus name them. However, even when they do this, they could not touch them or have a direct personal relation with them.⁴

In both organisations, the finance department had the main responsibility for the organisations representation to the shareholders. At the same time, the shareholders (and the related shareholder value) were part of the risk managers' realm of protection. It directly relates to their responsibility to the negative consequences. The risk managers had to prevent negative events from happening, including financial losses. A financial loss affects the value of the firm and thus the shareholder value. The risk managers worked together with the finance department to prevent the losses from happening.

Both regulator and shareholder value relate to an outside threat to organisation. The regulator can directly threaten the organisation by imposing financial and legal sanctions. The regulator thus has a control of resources. The second threat of the shareholder value is indirect but as real. If the organisation does not adhere to the knowledge standard of shareholder value, it can lose investments and credits. Even though the impact is not directly known, non-adherence implies a loss of viability.

⁴The state is in itself already a vague entity with its multitudes of instances, offices and peoples.

The financial losses relate to outsiders who could threaten the organisation. Therefore, it makes sense to compare risk managers to guardians of the fort. They had to keep away threats to the business. The following section goes into the work with the finance department and thus the threat to the shareholder value. Afterwards, I discuss the work in the risk department on the regulator.

6.2 Risk For The Shareholder

The shareholders had a quiet presence in the risk managers work. The work on loss avoidance, capital diminishing or financial restructuring led to results that theoretically impacted shareholder value. Financial results and shareholders would sometimes be explicit in an argument. At other moment, the financial stability was part of common understanding. The risk managers worked on maintaining financial stability and tried to avoid negative impact to the shareholder value. They did so with the help of the finance department.

Importance of Shareholders

The second week of my internship at Insurance Company V I was thrown into a meeting between a set of consultants, the finance and risk departments. The regulator required a test of the new internal model through their prescribed exercise called the Profit and Loss Attribution (PLA). The consultants had been hired by the head office and coordinate the project. In order to carry out the calculations, they needed both the financial and risk team. The risk team held responsibility for the PLA but was mostly in charge of the data collection. The consultants calculated the final output. In order to do so, they required relatively specific financial and data. Only the finance department had this latest data. The meeting was supposed to establish the path to follow to obtain said data.

Before the meeting started, Diane, who worked in the non-life division on the internal model, asked Ewan, her life model counterpart and locally in charge of the exercise, if he was ready for the negotiations with finance. Diane: ‘Are you ready for the confrontation?’ Ewan took it relaxed, he would let the consultants lead the meeting.

The consultants shortly introduced the PLA and then went into the list of

numbers that they needed from the different participants. The meeting turned relatively chaotic since it was the first time most of the attendants saw what was required of them. They talked through each other, discussing internally between people from their own team what the numbers were. The list of required numbers continued, the calm chaos as well.

When the clock showed the end of the meeting and those from the finance department had promised they would try to give the numbers. The head of the team of consultants added something resembling a motivational phrase: 'Lets get the best numbers so we can have a lower capital amount for Insurance Company V'. He emphasized the capital's cost aspect. Higher capital meant more costs which would not be good for the insurance company or the shareholders.

The Profit and Loss Attribution at Insurance Company V was a typical case of the risk manager's activities in both fieldwork locations. The risk department and finance department mutually depended on one another. Confrontations between the two would never be far out of sight. At the same time the finance department was risk management's most cooperative partner. Finance created the data that represented the viability of the organisation. Risk management had to make sure that this data avoided failure of the organisation.

The financial viability of the organisation related to the shareholder value. As the head of the consultant team had put forward, the cost of capital should be low. He implied they all worked for the shareholders and wanted to give them a good balance sheet.

Not only was the shareholder value the motivation to have an internally calculated capital requirement model, internal communications also focused on the importance of shareholders. A month into the fieldwork at Insurance Company V, the CEO presented the annual results to the shareholders. This event was diffused throughout the organisation. Ewan studied the information. He called the meeting the main event of the year. The internal internet (intranet) also emphasized the shareholder meeting. Every time one opened their browsers on an internal computer, the event would show up on the homepage. The intranet illustrated the importance of the shareholders, as if they should be at the top of every employees' mind. The shareholders mattered.

A similar event at Bank F happened. When the CEO gave a presentation

about the financial results, everybody was expected to call into the meeting by phone. That way they could listen to what he had to say about the financial viability. The risk managers were expected to be present at the presentation itself. The financial results were key moments in internal life in these organisations.

Risk Management and Finance Division Relationship

The shareholder value was key to the relationships between finance and risk management departments. To avoid ‘unhappy’ shareholders, the two relied on one another. The calculations the risk department carried out helped the finance department improve its representation of the financial situation. The risk managers thereby, indirectly, helped fend off possibly unhappy shareholders or a deviance from the financial norm.

Alice, the head of the life and financial risk modelling team at Insurance Company V, put forward her relations with her counterparts in finance in terms of work pressure. They were always cooperative with one another but both sides already had too much on their plate. If they had discussions, they might concern the question of who would carry out the work. Both sides would try to make the other do it.

During the PLA, the resource competition and shared objective became clear. While the finance department had accepted to deliver the numbers in the initial meeting, they did not give them on time. They had avoided working on the project. Only the intervention of the head office (the higher authority) led them to deliver the data to us. The exercise namely meant extra work for them, which the people in the finance department did not feel like.

The importance of the PLA came from the regulatory acceptance of the internal model. The outcome would show that the internal model was a good one. It could therefore be used for the capital determination, leading to the lower capital cost. Even though the latter was contestable and depended on the market circumstances, the head office wanted the model to be implemented. Not doing so would mean that it would be the only large insurance company that would not have one. That would diminish its reputation, disadvantaging Insurance Company V’s position as a worthwhile investment in comparison to its competitors.

Not only did the two departments at Insurance Company V depend on each other's data in the PLA. The modelling of key data for both departments was done with the same tools. The provisions had to be calculated by the finance department with the same computer programs as part of the regulatory capital calculation. The former make up a large part of the liabilities side of the balance sheet and are an estimation of what is owned to the insurance customers. At the same time, most of the data for the risk models in Insurance Company V came from the finance department. Where the finance department was thus dependent on them for some of their models, the risk managers depended on finance for the input.

Take for example the calculation of the capital requirements. This was a multi-step production of data. At the start of the process, characteristics of the insurance contracts were needed as well as financial exposures. At the end, the amount of capital the company needed came out, thereby also structuring the finance department's work. The finance department's people namely created the balance sheet that would fit those requirements. They needed the risk managers for the regulatory requirements and models, the risk managers needed the finance department's input.

Insurance Companies V's risk managers' difficult relationship with the finance department, both friendly and conflictual, was similar to the one found in Bank F between risk and finance. They needed each another. While the finance department worked on the right financial standards, risk management helped to avoid foreseeable negative consequences. However, at Insurance Company V, the data production caused a lot of conflicts. Finance needed risk management's agreement on certain operations but also the assessments of the calculations. Besides that, risk management seemed to be able to help the finance department when things went bad on the financial side.

An example of risk managers' helping out Insurance Company V's finance department happened in the midst of the implementation of the new capital requirement model. The regulators allowed them to reclassify the pension liabilities into a (possibly) less costly heavy regime. Since pension funds did not fall under the new Solvency II regulation, Insurance Company V could reclassify its pension liabilities under their rules. These rules required less capital than the

Solvency II ones.

Kristjan was an experienced actuary and responsible for the calculation of the regulatory capital with the standard formula. He and a consultant spend multiple weeks to calculate the effects of this change of regime to the balance sheet.

They presented the (provisional) results during the weekly Friday meeting on the capital model. Normally these were relatively quiet, with seven or eight people present. The meeting that Kristjan presented his results, the room was almost too small. Many from the finance department passed by, to see what the outcome would be of the shift of the pension fund liabilities. How much would the required capital amount be diminished, that was the question on the attendees' minds. Not just anyone came by. The head of the finance division and some of the managers that worked just under him were present, people who had not been present before. The regulatory regime change of the pension fund liabilities mattered enough to the finance department that the highest ranks had to hear about it. The change helped with the lowering of the capital amounts, good for the finance department.

MRM's Team Cohesion and Purpose

Not only in Insurance Company V did the finance and risk management department depend on one another. In Bank F, the two also worked together, with some people more focused on them than others. The MRM department at Bank F was divided into two groups, those who worked on the liquidity and balance sheet (LBS) and those who worked on the risks of the market portfolio (MPR). The first looked at the risks for the bank as a whole, the latter focussed on the individual investments. The distribution of the relationships these two groups had between themselves and with the rest of the organisation helps understand their work and that of the department as a whole. It emphasises the role of the risk department as one who avoided financial problems since only the LBS people seemed to have cooperative relationships with a larger set of people in Bank F.

The LBS team risks was in contact with the finance department and the people who calculated the balance sheet exposures on a regular basis. They interpreted these contacts as relatively cooperative. Besides, the team itself was

coherent and worked with one another.

A couple of doors down the hallway there were the two teams of the FMP. They did not have cooperative relationships with their counterparts in the calculation department. The team was incoherent, with relatively little contacts between themselves.

Take for example the help network of the two different groups of the MRM department⁵. Their cooperative networks are completely different. The LBS' teams had help contacts with one another as well with the finance department, their direct counterparts. This is visible in the graph of the LBS network (see 6.7). Except for one person, they share cooperative contacts and are in contact with one another. Even though only one of the LBS respondents has reciprocal help ties (one asks the other for help but not vice-versa), they do have people in common that they would ask for help (except for one). Besides that, the ten LBS respondents ask the finance department seven times for help, the business people four times and the calculation department six times. The cooperative ties are thus not only spread out across the team, they are also spread out across the different departments, with the finance people as main support.

The contacts of the respondents of the LBS team thus show that they worked together with the finance department. They helped one another to keep to the expected financial standards. The people in the LBS team had something to offer in the division of labour. They could help the finance department to avoid problems with the shareholders.

The MPR network does not have similar cooperative ties, neither with outsiders or with one another (see 6.8). In these two teams, only one person names a fellow respondent as a help-contact, but this is not reciprocal. There are two people that are in-between two MPR respondents. One is the head of the MRM department. The second is 'everyone' (coded as external). Both respondents mentioned that they would ask 'everyone' for help. The generality of this response puts into doubt the strength of the cooperation. By not naming anyone in specific they show an openness to ask for help but no clear person who can actually help them in their work.

The MPR ego-networks thus show that the people in the team did not co-

⁵The head of the MRM has been left out of the sample since she was part of both teams

operate with their counterparts. They had to control the transactions, the risk ascriptions. As shown in the previous chapter, they did not have the resources to do so. This also leads to a lack of cooperative contacts.

The name generator data shows two different pictures for the two different teams. On the one hand there is the LBS team that is relatively coherent and has cooperative ties with their counterparts (see 6.7). Then there is the MPR team where they do not have cooperative ties between themselves nor with others (see 6.8). The biggest difference between the two groups in the MRM department is their objective. The first had to guard the financial stability of the organisation, the second the investments and their related risk assessments. The differences in the two networks indicate that maintaining the financial stability within the organisation was relatively a relatively acceptable objective, other than the risk control of the investments.

LBS' and MPRs differences were also visible during the fieldwork. The people in the LBS team had to work with the finance department to maintain financial stability which went relatively smooth. On the other hand, the MRM teams were in continuous conflict with their interlocutors, with whom they had to share the limited resources in the control of the risks of the financial market products.

For example, Michael, head of the team that looked at the risks of the derivatives, and Trevor, head of the calculations on the market portfolios, were known to shout at each other during meetings. But Michael and Trevor worked on the risk ascription, without control over the choices of the different investment. They had a very limited amount of possibilities to avoid risk ascriptions and had to share these opportunities between the two of them. This led to an overemphasis of their differences and to resource hoarding on the side of the calculation teams.

On the other hand, Niklas, head of the two teams that made up the LBS group, had made a conscious effort to have a good relationship with finance department. During an interview, he recounted how there had hardly been reporting on risks or a legitimacy of the risk team when he became head of the liquidity and balance sheet team. There had even been organisational charts where LBS had been forgotten. He had been able over time to convince his interlocutors in finance that having a guard in their midst can be important. By helping them avoid errors in reporting, for example, he had been able to show his utility. His

Help Network LBS

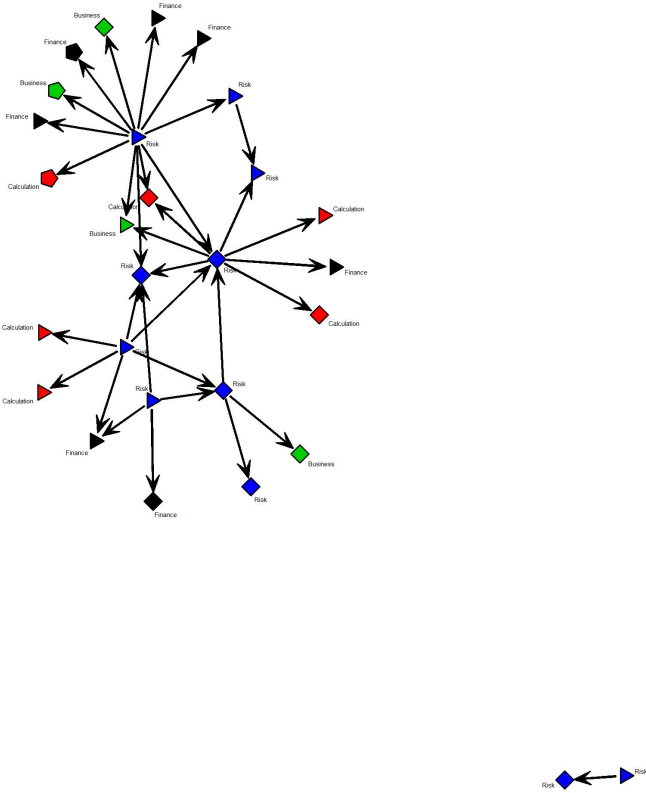


Figure 6.7: LBS' help ego networks at Bank F

Help Network MPR

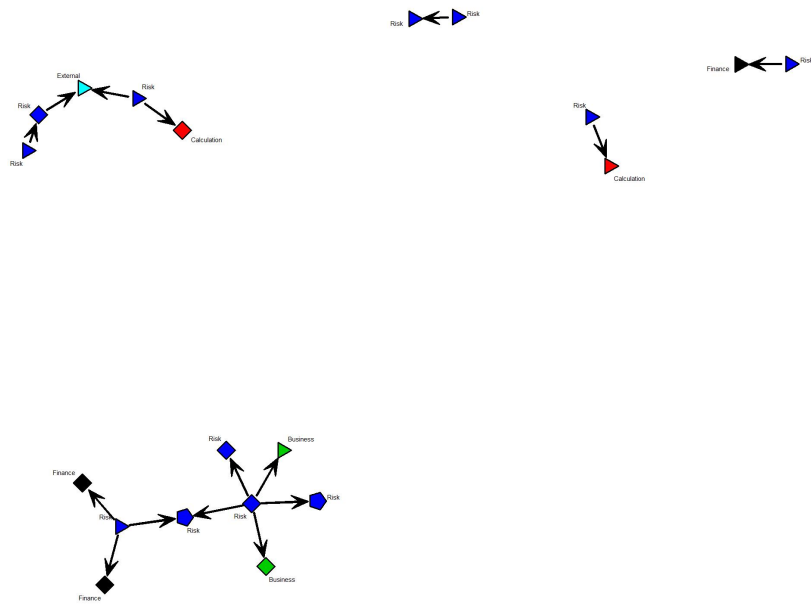


Figure 6.8: MPR's help ego networks at Bank F

objective was not an economic one where risks were taken and profits made, it was an assessment of the viability of the balance sheet. LBS' counterparts in the finance department had a similar objective as Niklas. They did not have a profit objective, they were supposed to do what was economically correct.

In a meeting on the foreign exchange position at Bank F, the common ground between the finance and risk department was visible.⁶ The amounts of foreign currencies on the books were discussed in this monthly gathering. There, decisions were made about large scale operations to either buy or sell a foreign currency to eliminate the positions. Here, members of the MRM team and two parts of the finance department had to decide together if a transaction could happen. The liquidity calculation team, the accountants, and those who were supposed to manage a neutral position, treasury, were present of the finance department. The liquidity calculation team had presented numbers that were completely different from those known by the accounting department.

The manager of the LBS team, Niklas, did not want to accept the figures as presented by liquidity calculation. They were not plausible, they had, in his vision, been calculated without substance and knowledge. At certain times, the meeting became a shouting match between Niklas and the head of liquidity calculations on the accuracy of the numbers. Without Niklas' agreement on the figures, the transactions suggested by the liquidity calculations team could not be carried out.

The head of treasury was on Niklas' side and did not make an effort to defend her colleagues from the other side of the finance department. She showed her disagreement with those who calculated the positions and mostly went along with what Niklas' said. They had the same objective, to make sure that the numbers were clear. That way they could minimise the risk on the position by partially liquidating the position. If the numbers were wrong and finance acted upon this, the stability of the organisation could be brought into danger. There were already huge liquidity problems with one foreign currency. They continuously had to obtain this specific currency from the market, threatening the bank's viability. Would the currency not be sold any longer to Bank F, they could not fulfil their payments, which could lead to another bankruptcy. Thus, Niklas the

⁶See chapter 3, section 3 for the exact transcripts of the meeting

risk manager and the head of treasury were in the same boat. If the numbers would be wrong and transactions would be based on wrong numbers, it would bring the organisation into financial trouble which they both wanted to avoid.

At the same time, some of risk managements' actions on the MPR side of the department could hurt the financial stability. For example, Pete's team had implemented a new risk valuation of the bonds.⁷ During lunch he said that this would diminish the value on the asset side of the balance sheet. Lalitha, who I had replaced during her pregnancy leave, had just returned. She reacted negatively, less asset value was a bad thing. It brought the value of the organisation in danger. Pete showed less concern. He also worked on a regulatory required risk tool, the Credit Valuation adjustment for derivatives (CVA). His new methodology for the CVA would balance out the value change of the bond portfolio. He did not care as much about the bonds, since the overall values would not bring in danger the financial situation.

The pension fund liabilities, the bond calculations, the foreign exchange rate meeting and the PLA all show the risk managers' will to adhere to the 'right' financial results. Their work coincided with the finance department's tasks. They worked on the financial situation of the organisation. This could be by an improvement of the capital ratio or by listening to (visible) shareholders, amongst others. The two departments worked relatively easily with one another because they could use one another. The financial situation and the shareholders that it related to were the daily priorities of the risk managers. However, their work also related to another outsider, the regulator.

6.3 Risk and the Regulator

In the risk managers' work, the financial results related a lot of the times to another outsider, the regulator. They could, similarly to the shareholders, threaten the organisation's existence. The regulators had direct interactions with the risk department which could be hostile. Risk managers had to make sure they were the least hostile possible. The risk management departments were designed to

⁷For more detailed explanation of the bond valuations, see chapter 8 section 2

handle these pressures. Besides the design, the risk managers worked continuously on the regulatory pressure.

Lets go back to the contacts the different risk managers they had. The weight of the contacts lay with the risk management department itself. The financial contacts can be understood through the financial figures, the business contacts by the work on the risk ascription and the external contacts in the insurance company are the consultants who worked in their offices. What do the contacts within the department than mean? Of course, people work with direct colleagues. At the same time, the weight of the contacts indicates the risk managers had their own specific tasks. These related to the requests the regulators put forward to the organisation.

The regulators controlled the stability of the financial organisations. In the EU, these are either part of separate public institutions or central bankers, organised on a national and European level. These regulators had to maintain the stability of the financial system by controlling the different financial organisations. The implementation of CRD IV and Solvency II is part of this, as well as stress test exercises or the 2014's Asset Quality Review (carried out by the ECB). Compliance regulation as requested by market authorities (national and European) would only sideways impact the risk managers. The risk managers' work mainly focused on the regulatory drive for financial stability.

The regulators determined the framework in which the risk managers had to operate. Take some of the answers to the question 'what is the role of the regulator in your work?' in the risk questionnaire. Some mentioned the projects that had occupied people's work such as the Asset Quality Review, Stress Tests at Bank F, the capital model at Insurance Company V. Others described the standards the regulators set in the risk calculations or how they had the main priority in their work. All in all, they had to honour the demands of the regulators.

The regulators could directly punish the organisation. They had the power to ask for all these reports and make have the organisation pay extra capital. In extremus, they could even withhold the bank and insurance company's license to operate. Capital was expensive for the balance sheet, the demands of risk reports and measures cost time and effort to create and the power over the license could mean the direct death of an organisation. The regulators thus had a direct

resource control over the financial organisations.

In order to understand the risk managers' relationship to this outside actor, I will look at two aspects. First of all, there is the formal design of the risk management departments. This namely related directly to a regulatory purpose. Then, let's look at the work of the risk managers with the regulators themselves. This was not just about a hostile outsider but also about working together with the regulator.

Designed for the Regulators

The organisation of work in the different risk management departments incorporated the regulatory pressure. The banks and insurance companies had a specific office for regulatory affairs. In all the banks and insurance companies I encountered, this office was part of the risk management department. This was the case at Bank F and Insurance Company V but also at Bank Z and Bank X. The people who had the tasks to talk to the regulator were risk managers, even though they did not handle risks as such. They had the specific tasks to diminish regulatory hostility.

Yvonne, head of regulatory affairs at Bank X, had explicitly stated during the interview that she had to try to negotiate with the regulator. She had to diminish the impact of the different regulatory ideas. At the same time, she both helped the front office use the regulation to their advantage and tried to make them stick to the regulatory rules. By sitting in working groups of the Basel committee and continuously discussing with them, Yvonne and her team made sure the regulator's hostility remained limited.

The risk management departments managed the implementation of the regulatory requests. Take the implementation of the Solvency II requirements at Insurance Company V. The person who coordinated this as a project manager, Nathalie, sat in the same large open space as myself and the people in the life risk department. She collected the different files the regulator requested. They came from different departments but mainly the risk one. The CRO was very involved in the regulatory situation. She was part of industry-wide organised working groups on the subject of Solvency II. Besides this outside role, she was

the official head of the internal weekly meeting on the progress of the Solvency II implementation. The risk department thus had the official responsibility to make sure the regulatory requests were implemented.

The regulators put continuous pressure on the risk managers. In insurance, what they called the risk based approach in regulation, and therefore the risk department's work, was relatively new. It had started in the mid-2000s. During this process, rules and request changed all the time. It made it almost an endless process. Insurance Company V seemed to be in constant negotiation with the regulators in different EU countries. The risk managers on the floor had to implement the changes to the model that the negotiations brought.

The model was supposed to be implemented a couple of months after I left Insurance Company V. Where one would might think that that would create less work for the risk managers, they were actually hiring. During a presentation of the Human Resources department, the three HR women even pointed out that they were the only part of the company to grow in employees. They did not expect the risk managers' work and the related regulatory pressure to stop after the implementation of the model.

During the two years I was in the field, a continuous stream of regulatory requests had hit the European banking world. Every couple of months, participants discussed a new topic. There was the introduction of the SIFI (systemic important financial institutions) standards, the asset quality review, the fundamental review of the trading book came up, multiple stress tests, the Net Stable Funding Ratio (NSFR), new capital requirements and the Liquidity Coverage Ratio (LCR). The amount of people that had to work for such a request could vary. Three to four people would take care of the LCR whereas a stress test required most of the employees to do their bit. Besides large projects such as these, Bank F also had to deal with the regular process of reports, calculations and discussions with the regulators.

The risk managers felt this pressure in the work they carried out. At Bank F, Valery estimated that roughly 80% of her department's work was on regulatory issues. The MRM department did not have a direct regulatory purpose. Their name was the market risk management department. However, their work related unceasingly to the regulator.

At Insurance Company V, more than half of the people in the risk management division worked for the regulator. It contained three different departments. One was a mix of multiple risks, of which at least half of the people had a regulatory purpose. Different groups of people managed the regulatory required operational risks, the validation of the model and the data quality of the model input. Besides this department, there were the Life and Financial Risk department and the Non-Life department. Teams responsible for the regulatory model made up half of these departments. Besides that, in the other half⁸, people still worked for the regulator. They had to understand the impact of the new regulations and explain this in presentations, policies and reports both to the regulator and the rest of the organisation. During the fieldwork Bank F and Insurance Company V, the risk managers worked for the regulator most of the time.

The risk management department seemed designed for the regulator. Two events in the fieldwork locations made it explicit. First of all, at Bank F there was a discussion about the utility of one of the MRM colleagues. Secondly, after the fieldwork, Insurance Company Vs restructured its risk department to focus it on the regulator.

Every month, Valery and her calculation counterparts had conference calls with the MRM departments in the subsidiaries. Most of the times, the discussion was about the different technical implementations and the changes in the portfolio. However, in one of the subsidiaries, the technicalities were handled at Bank F. There was a risk manager there, Sylvie, as well as a front office. The monthly conference call with that office was about small technicalities that non-management dealt with yet there were only managers in the room. After one of these calls, Trevor asked Valery why they Sylvie still worked there. She seemed very bored and with relatively little responsibilities. Valery explained to Trevor that she need Sylvie to physically be present. If the local regulator would knock on the door of the entity, they had to be able to see a risk managers. So even though Sylvie had little daily work, she had to be present, just in case the regulator might come on a surprise visit.

At Insurance Company V, the risk division became a place that only dealt with regulatory requests. A couple of months after I left, the risk department

⁸Gene and Didier were part of this team in the Life and Financial Risk department

went through a complete reshuffle. The people who dealt with the regulatory model stayed in the risk department. Those who worked with the product teams went to a new department, the technical department. The risk division became the regulatory office. This was confirmed by the head of the consultants who worked on the life model side. I met him roughly a year after the fieldwork. He said that the risk departments were there for the regulator.

The risk departments were designed to ensure that the regulators' requests were answered. The regulators could bring costly events to the financial organisations. These foreseeable negative consequences were put on the plates of the risk managers. At the same time, the design does not show how the risk managers handled this pressure. In order to know that, we need to go deeper into the work related to the regulator.

Working for the regulator

While the regulator could be hostile, they were generally relatively friendly. They needed the risk managers since they lacked the knowledge of local specificities and practices. Secondly, the risk managers used the regulator to pressure the other departments. In internal negotiations, the risk managers had the regulators possible repercussions as a resource.

Who was in direct contact with the regulator? In Bank F, it was only those higher up in the hierarchy. Those in non-management positions would have to deliver the analyses for the regulator but did not have any direct interactions with them. In the insurance company, it was a designated person and management who emailed with the regulators, Nathalie. However, most people joined meetings with them, whenever their topics touched the regulatory requests.

These interactions looked relatively friendly. Whilst the regulator could be felt like a hostile outsider, the contact between the two did not exemplify this. Only the internal communications showed the negativity that might come. The regulators were not a friend but they were not an enemy either. Never in my time in the field did the regulator give the impression of a police person. The risk managers explained their situation to the regulator, who was supposed to take this into account. The regulator had requests, the risk managers implemented

them.

At the same time, the risk managers tried to convince the regulator that the organisation had local specificities. They had the knowledge of the practicalities which they could use to their advantage. The knowledge difference between the two worked in the risk managers' advantage, who tried to convince the other side that their solution was the best, given the local constraints.

Bank F and the Regulator

When I was at Bank F, Valery had gone to meetings with the supervisory board of multiple regulatory instances, led by the ECB. She would return and recount how the new head of the board was sympathetic and understanding. She recounted that she had put them in front of the facts as she saw them at Bank F, giving the regulators little room for negotiation. She saw her task not just as a spokesperson for the regulator in the organisation. Others in the risk department were like that, according to her, most notably the head of the team that looked at the capital adequacy in the organisation. Her team, on the other hand, also represented the practicalities of the market and calculations. Their actions had to remain grounded in the economic reality of the organisation, which meant the financial objectives. Therefore, even though they worked for 80% for the regulator, they could not only focus on writing policies the regulator might like. They had to stand in between the regulator and the rest of the organisation.

The non-managers at Bank F worked on the reporting, data production and control related to the regulator. Michael's team's main occupation were the VaR calculations, part of the regulatory requirements at the time of the fieldwork. They had to see if they were calculated the right way, without having access to the underlying data. They also received the limit breaches, which they did not follow up upon generally. Many reports that went through their hands were created on a periodical basis because the regulator needed them. Besides that, they looked at new regulatory requests. For example, in Pete's team they implemented the credit, debit and funding valuation adjustment of the derivative portfolio. Michael's team worked mainly for the regulator, of which they were aware. They looked at the regulatory required risk measures such as the VaR.

On the other side of the hallway, in the LBS teams, they also worked on the

regulatory request. They followed the finance department's data but also had to implement the NSFR and LCR. This meant reading up on what others did and what the regulator expected, what was possible within the bank and how to handle the different types of assets that fell under the ratio. Especially determining which assets would fall under which regime took them time.⁹ In the end, they really started working on the implementation in November, and were still working on it in the end of December. The work on both sides of the MRM, in both the recurring tasks as well as ad-hoc tasks, was about the regulatory pressure.

Insurance Company V and the Regulator

In Insurance Company V, the regulator had more human presence than in Bank F. Almost everybody had been in direct contact with the regulator, from those in operational risk to the people working on the products. They had either been in meetings or given presentations of a specific subject at hand. Even I, an intern, had been in meetings with the regulators. The general attitude towards the regulator seemed to be one of openness, sharing both knowledge as well as difficulties in the process.

An example of the open attitude the risk managers had to the regulator was that they shared their lack of knowledge. The Group controlled most of the internal capital model, letting the local team know very little. The local risk managers never hid that they did not know what was exactly going on to the regulator, since the Group had calculated the final numbers.

The regulator focused their attention on technical and theoretical aspects of risk calculations. They also looked at specific flow processes. The risk managers all explained to these to a more or lesser extent in powerpoint presentations and written answers. The regulators however did not go into details about the exact process and practical aspects of managing risks.

The implementation of the new capital model depended on the approval of the different national regulators. Participants talked about the 'approval' rather than

⁹This relates to MacKenzie's (2009) argument on finitism in accounting. The rules can seem relatively easy but applying that to a limited set of real world assets is much more tricky (MacKenzie, 2009).

model evaluation process, as if it could not be refused. However, the regulator was not an easy conversation partner and requested more information than they first thought was needed. Furthermore, they were very critical about multiple aspects of the mathematical model. They namely differed in method from their counterparts in the sector.

A non-approval of the capital model would have led to multiple negative consequences. First of all, this could lead to a damaged reputation, especially compared to other insurance companies. It could thus jeopardize potential investments in the organisation. This relates to the mythical shareholders. In their investment choices, the expectancy would be that they would look into the more 'advanced' insurance companies. Those who did have their capital model approved would most probably receive positive shareholder attention.

Secondly, a non-approval of the model could lead to higher capital cost and accounting difficulties. Similarly, this would lead to a non-adherence to the financial ideal of maximising shareholder value. The balance sheet structure would lead to less of the latter rather than more. The regulator thus had the resources to punish the organisation not just in a regulatory setting. Their punishment could lead to a non-adherence to the institutional financial standards.

The regulator was therefore an external actor of importance that the risk department was responsible for. Resources of other departments would be freed in order to make sure the risk department would manage to avoid negative regulatory consequences. The Profit and Loss Attribution was an ideal example of risk manager usage of the regulatory pressure within the organisation. In the PLA, the financial department was the main provider of figures. The test had to be presented to the joint council of national regulators who were all in the capacity to not accept the model. The test was able to show that the model worked well. This was a complicated feat, especially for a model build by completely different calculations in multiple entities.

The local finance department had a moratorium on the distribution of the required figures until the publication of the annual results. As said earlier in this chapter (section 6.2), the finance department did not deliver the results until the Group put pressure on them. The cost of a non-approval were too high and so the finance department cooperated in the end. We calculated the PLA and showed

proven model.¹⁰ We presented these results to the regulators in a meeting inside Insurance Company V.

Regulatory Meeting Insurance Company V

I was able to sit in the meeting where the national regulators were presented with the PLA exercise. There, the risk managers did not show any of the difficulties but presented a story that the regulators seemed to want to hear. This was roughly the following: The PLA tested our model and we learned something from it but it also showed that our model worked. The room was relatively deep but not very wide and looked into the courtyard. It was filled with a long but not very wide rectangular table. On the side with the windows, Insurance Company V's risk managers had taken place. Three regulators sat on the opposite long side of the table. They were all young white males in expensive costumes. They were younger, whiter, more male and in more expensive clothes than the risk managers.

The meeting focussed on the non-life and related financial side of the PLA. After a previous topic had been finished and the participants reshuffled, the head of the non-life risk department introduced the PLA exercise. He expressed rather declamatory an introduction to the test, how it had made them think better about the model. Afterwards, the different risk managers, with whom I had worked on the exercise, presented their respective parts of the PLA. They went into the separate risk factors and how they had predicted the yearly outcomes. Each risk factor had a balance sheet change attached to it, with the probability of its occurrence. In the end, there were the changes between the different balance sheets that the PLA did not account for. These were presented within the internally accepted norm of ten percent.

The three regulators all took turns in asking questions about the process and the different risk factors. They wanted to know about the unallocated and how other entities had done. They did not ask any questions about the methodology of the PLA or the input to the PLA. Nor did they pose questions about norms set internally. They only raised one critical note with the interest rate risk factor. There, balance sheet changes fell within one of the tails of the probability

¹⁰See chapter 7, section 2 for a detailed description of the whole PLA calculations

distribution. The regulators urged the risk managers to tell this to the group. Besides that, the three regulators on the opposite side of the table seemed convinced. The changes over the year were explainable by the PLA. This led to the conclusion that the model must work.

None of the risk managers had ever expressed the idea that the model worked. They explained the capital calculations as a monstrous mathematical concoction rather than a true risk assessment.¹¹ However, they did not contradict the regulators. The model was supposed to work for all the reasons described above, so the risk managers kept that line of communication.

In this meeting, the risk managers fed the regulators the information that told the acceptable story. The former had much more information about the exercise that could have told something else. The regulators needed the information from the risk managers to make their opinion of the model. Whilst the latter used the flexibility of the accounting data to make the PLA work, the former could only see the risk calculations that were presented to them. Where one side depended on the other for the approval of the model, the other side depended on them to deliver the information to make that decision. There was an interdependency.

This also led to relative cooperative relationship between the regulators and risk managers. Alice had explained to me that she preferred openness to the regulator. That way they could help one another. Her attitude towards the regulators was not uncontested. Brad, who worked for her, preferred to say as little as possible. However, both their ultimate boss, Patricia, the CRO, talked about the regulator as a cooperative partner but one to whom one could not air one's dirty laundry.

While the regulators' presence in meetings brought stress to the department, they also laughed about it. Three women even came back giggling from a meeting with them, making jokes about how handsome one of the regulators had been. The regulator was thus an outsider who could do bad things but the relationship was cooperative rather than hostile.

¹¹The only person I encountered during the fieldwork who believed in the accuracy of risk models in insurance had been Drew. His vision on risks is described in Chapter 4

Using the Regulator as an Internal Resource

A couple of months after the fieldwork at Insurance Company V had finished, I met up with Valery of Bank F to tell her about the advancements. I told her that, if I wanted to push the argument of the role of the risk department, one could say that idealtypically risk management is there to please the regulator, thereby not bothering too much the people carrying out the transactions. Valery responded quite shocked, and said: 'No, but that is not fair'. And it was indeed not fair to the efforts they made. If fairness meant that people did their best to manage risk, I had never seen any evidence to prove the opposite.¹²

One way to manage risks, however, is to be there for the regulator, showing that one implements regulation. Not only to the outside but also to the inside the regulator is useful. It is a very convincing argument in the negotiation over which actions are the right ones. Having pointed this out to Valery, she confirmed.

Valery added that they had just had a project on the acquisition of a product to help with the foreign exchange liquidity position. However, from a risk point of view this would only bring about more problems and so they had tried to stop it. But the risk arguments had not been heard. Only when they put forward that the regulator would not accept the structure of the project, they had prevented the purchase of the product.

The regulator indirectly gave the risk managers internal resources. Their outside pressure could threaten the validity of internal operations. If they said that things had to be changed, then they would be. The regulators could accept or reject certain internal calculations (like the internal capital model that was in the process) and created thereby an unknown for the risk teams. For example, it was the regulator that had decided that bond valuations had to be changed in Bank F, creating possible difficulties of the values of those bonds as well as extra work for the risk department.

The regulator could become part of the risk managers' internal negotiations with the business departments. Yvonne of Bank X used this external actor in her interactions with the front office. She was in charge of both lobbying the regulator and implementing regulation internally. Her knowledge of the regulation helped

¹²See section 5.3

her convince management and front office to avoid certain risks. She was able to say, ‘if you do that you can go to jail’. According to her, this argument convinced them. She thought her advice was generally listened to. The regulators’ external pressure gave her an internal resource.

Yvonne’s threat of jail is an internal translation of the external regulatory pressure. The regulator could personally impact those responsible for the transactions. Yvonne and the other risk managers were the internal mouthpiece of this external pressure. It helped them carry out their work as guardians of the fort. Yvonne had for example represented her job as a daily combat to keep Bank X from falling down due to dangerous market activities.

The problems that came from the different activities seemed to be risk management’s force and weakness at the same time. The regulator could give pressure on the financial organisations. It was up to risk management to counter these consequences. They had the ability to change the outcomes of a regulatory process. Besides that, they could also avoid financial problems, sometimes provoked by the regulator. This is where the work of risk management came in. They used their knowledge to help avoid losses.

The risk managers’ work kept the regulator away from the other divisions such as the front office (Bank F) or the investment division (Insurance Company V). By putting people like Yvonne in contact with the regulator, the front office is able to carry out its business.

Risk management in Bank F and Insurance Company V made similarly sure that they produced numbers and responded to the regulatory demands. Thereby, they do not bother as much the people that handle the products themselves. The ego-networks confirm this. Risk managers hardly worked with the people that handled the products. They thus did not focus on the communications of the regulatory requests to the people who handled the products. The buck partially stopped with the risk managers.

6.4 Conclusion

The analysis in the chapter above shows that the risk managers work on the consequence attribution. The negative consequences mainly come from two outside

pressures, a financial one and a regulatory one. The risk managers had to guard their financial organisation by avoiding extreme losses or regulatory punishment.

The risk managers' knowledge of the investments and portfolio made them useful for the finance department. The two shared resources to make sure the financial results would not bring trouble to the organisation. Financial difficulties could come from liquidity problems but also through the different types of accounting calculations. Avoiding financial losses relates to a shareholder who could not be embarrassed. The outside had expectations of financial standards. These could not be brought into danger and the risk managers helped in that process.

The risk managers' focus lay on the regulator. The departments were designed to answer them. The regulator could fine or request for higher capital cost. They could directly punish the organisations. The risk managers' work continuously related to the regulator, from the risk reportings to their ad-hoc requests. The regulators seemed to continuously need something new from them.

These external pressure came in useful for the risk managers' situation internally. The regulator gave them some internal legitimacy. They could use the regulator to pressure their colleagues in other departments to act.

Lets go back to the two-sided risk definition. To use the analogy of the boat, one can calculate the possibility it will sink and plug the leaks so that it will not. The risk managers had to find the different financial leaks and plug them, rather than build an 'anti-leak' organisation. Insurance Company V's and Bank F's risk managers show that they are the ones that try to hold the fort. They maintained the stability of the organisation by fending of both financial and regulatory problems. They did this when negative consequences were already palpable. The details of this process will be discussed in the next chapter.

Part III

Making the Risks With Internal and External Constraints

Knowing that risk managers focused on the consequence attribution, why did they handle them as such? In the following three chapters, I will answer this question. By discussing several risk assessments in-depth, cause and effect become clear. Within a multitude of restrictions, the risk managers create outputs that avoid negative events, keeping the organisation alive.

Within the studies of organisations, the survival of organisations has been a focal point. Take the main American organisational theories from the 1970s. Meyer and Rowan's (1977) institutionalism, Pfeffer and Salancik's (1978) resource dependency theory and Hannan and Freeman's (1977) organisational ecologies have all tried to understand how a multitude of firms stay alive. They do so by looking at the outside of the organisation, how they adopt to outside rules (institutions), independencies (resources) and groups of firms evolve (ecologies). However, none of them takes the internal situation seriously, as Crozier and Friedberg (1977) suggest. It is on the inside of the organisation, in the offices and on the computer networks, that people keep these organisation alive.

And how do people in finance do so? The ethnographic viewpoint is essential to answering this question. The actions of the people on the inside help us understand the mechanisms behind a organisation's behaviour. The same way that Roy (1952) and Burawoy (1979) went in to understand work relationships in a production process, the inside can tell us about the production of the organisation's health. Ethnography thus helps understand this key question in organisation studies: Why do organisations stay alive?

Risk management takes a substantial role in the protection of financial organisations. They work on the internal effort behind the survival of financial organisations. In my fieldwork, the risk managers tried to relieve the pressure from regulators and shareholders. To succeed, they had different risk tools, accounting rules and policy documents at their disposal. With these tools, the risk managers communicated directly or indirectly to the outside about the state of the organisation. Let the tools and knowledge just be one of the main topics of the social studies of finance.

Models, screens, distance and knowledge practices make the interactions on financial markets (Knorr Cetina & Bruegger, 2002; MacKenzie, 2008; MacKenzie et al., 2012). However, there are also organisational aspect that have been

explored in this literature. Most notable is the manner in which knowledge is exchanged on the trading floor (Stark & Beunza, 2009). The organisational set-up changed the way people handled knowledge about financial markets. The inside of the organisation thus matters when looking at financial markets, including their risk management.

Multiple scholars have looked at knowledge standards in financial organisations (Zuckerman, 2000; Wansleben, 2012; François & Frezal, 2018). Knowledge standards have also received much attention in organisation studies. The cognitive turn, where organisations follow to a more or lesser extent a institutions, opened up multiple new roads of research (DiMaggio & Powell, 1991; Scott, 2008). Organisations do not just have rationality, they choose to follow and resemble others to stay alive. The scope of neo-institutionalism has gone from a study of the organisational behaviour to more micro based approaches. An example is the push for inhabited institutionalism (Hallett & Ventresca, 2006; Hallett, 2010).

While they look into the theories of adherence to organisational knowledge standards, neo-institutional scholars forget the importance of resources. As Bergeron and Castel (2016) argue, organisations also have their own questions of resources and hierarchies that current institutionalism does not consider. Within and between organisations, the different actors can monopolise and contest resources. As shown in the previous chapter, outsider's resources can change the risk managers' activities.

Two variables thus matter to understand financial market risk management, knowledge and resources. In order to bring the two together, I use the metaphor of the body and four different stages; illness, robustness, disease and health. With that, I combine the inside/outside resources with the knowledge standard. The four different bodies depict a representation of the organisation by the internal or external actors.

The risk managers deal with a conjunction of knowledge and organisational resources, internally and externally. They create knowledge for and about their organisation. Their output, consequently, helps to avoid the possible negative consequences the external actor might give to the organisation. And if we want to know how the risk managers avoid negative consequences, the internal and ex-

ternal situation matter. By identifying the different bodies, I bring the literature on organisations and the social studies of finance literature together.

The different bodies relate to the work of Mol (2002). She shows how diseases of people become illnesses in the medical world. She distinguishes the body of illness from the body of disease. The former is the problem that the person lives, the latter the vision and diagnosis of the doctor in its medical world. The illness is the ill a person feels in their body. Mol gives examples of people that feel pain in their back when they walk down the stairs, or a difficulty when bending the knee. The medical doctor, on the other hand, diagnoses, and thereby discovers the disease. Mol calls this the body multiple. A multitude of bodies exist, depending on those who look at them. Doctors, with their medical knowledge, construct and identify a disease in the body. That construction differs from the one put forward by the patient, who feels their illness.

Mol (*ibid.*) links the patient's body and the medical body to an ontological difference. The philosophy of being relates to the experience within the human body. Organisations' sense of consciousness, on the other hand, is contestable. They incorporate collective action, not individual being. Consequently, the ontological aspect is not well defined. However, underneath I explain why the different forms of the body are relevant. They become a metaphor for the establishment of different forms of knowledge of this collective entity that is the organisation.

An important aspect of a body is its wholeness, it is an entity. The skin embraces the different processes within and allows for a porous border. Most of what is on the inside has to stay on the inside, within the skin. Similarly, most of what is on the outside does not enter. The skin protects the internal processes from attacks by pathogens. Outside processes thus affect the inside as inside processes affect the outside. A powerful immune system fends off an outside attack of a virus. On the other hand, if the virus has more strength, the body has a disease.

Transposing diseases from the body to collective action follows a long tradition within sociology (Schinkel, 2008). Especially positivist sociology has its foundations within this medicalisation. The founding father, Auguste Comte (1852), defined the study of societies as a tool for solving society's problems.

Sociology would cure society, just as a medical doctor cures the human body. What one should cure is a normative question, be it an eradication of the poor, redistribution of wealth or a control over revolutions.

Even in our modern societies, the body metaphor can help understand collective action such as national societies but also organisations. Take the example Schinkel (*ibid.*) gives on the policy debate on integration in The Netherlands. Policy advisers and sociologists worked together on the adaptation of migrants and their families to Dutch society. Yet years after the first arrivals, their children and grandchildren (born in The Netherlands) still hold the migrant label. The 2000s saw a multitude of policies focusing on descendants of migrants' 'integration' in Dutch society.

First of all, these policies implied that the migrants and their children did not belong to Dutch society although they held Dutch passports and birth certificates. Secondly, integration policies show that the 'other' needs to adapt, not Dutch society. With these two aspects, Dutch society becomes an entity that needs to be protected from the 'bad' migrant influences. To cure society from its problems, the integration policies show that the state needs to make sure the migrants change. The latter would be the pathogens that make the disease of Dutch society.

The outset of this research is a constructivist one, denouncing the normative aspects of positivism. Why then use this social body terminology? Even though the researcher might not denounce diseases of the social group studied, the participants can. Normative frames exist with regard to the things and people that do or do not belong to society. And if society can have a disease, so can smaller form of collective action. Organisations are similar social entities, smaller in scale than a national society. Organisations also operate within a normative frame about their well-being. Regulators, shareholders, risk managers or people in the finance department do see a 'good' or a 'bad' organisation.

An organisation can be in a bad financial state, have damage to reputation or even stop existing. Just as the medicalised body of Mol (*ibid.*), it has an inside and an outside knowledge. Employees, consultants or friends of employees can have an internal vision on the organisation. Regulators and shareholders have an outsiders' knowledge of the organisation. This leads to the existence of an

organisation as multiple entities for a multitude of people.

Looking at it from an individual point of view, you can see people cross the boundaries between in- and outside of the organisation relatively easily. For example, a regulator resigns and starts to work as a risk manager at a bank. The boundaries between the in- and outside are thus relatively fluid.

Even so, the organisation still exists as an entity. It has its own legal status. Also, not everybody can enter. Constraints exist on who decides on what kind of state the organisation is in. The actors who can do so, in and outside, also have their own resources with which they can change the knowledge situation of the entity of the organisation.

In addition to representing participants' normative viewpoint of the organisation, the body terminology brings together knowledge and resources. The state of the body includes an assessment of the organisation as well as the forces that will make the entity go under. Not only does a good or bad knowledge of the organisation exist in- and outside. Actors with resources, both internal and external, can decide if it is good or bad knowledge. The body captures both knowledge and resources that exist on the in- and outside. The resources of the different actors involved on both sides of the boundary make the well-being of the body. The (lack of) resources can also hurt the organisation, the entity. Thus, the organisational body is not just the representation of a good or bad in- or outside vision. Actors look at the entity. When they look, the way they use their resources determines an organisation's state.

The risk managers see a body of illness. They do not have the (internal) resources to turn this inside knowledge away from illness into a robust organisation. The risk managers encounter the body of illness when they look at the data or different aspects of the portfolios. If they had the resources, they could change the portfolios with a high chance of possible losses into a robust financial situation but they do not. Besides, negative internal events are broader than the portfolio values. Alongside this, there is the internal chaos of knowledge, computer programs and human relationships. To give an example, Camille's difficulties in calculation the VaR¹³ were part of the body of illness. The problems the risk managers see, both in a far and visible future are part of the illness they

¹³see chapter 5, section 2

encounter.

The two other bodies, health and disease, are visible and created by outsiders. Even though boundaries of organisations are porous (Friedberg, 1997), they do exist. Especially when taking the organisation as an economic actor in itself, it has its own economic and regulatory representation. These can be a financial communication as well as direct interactions with the regulators or shareholders. Outsiders can assess and then interpret those representations. Amongst others, annual reports, quarterly balance sheets and profit and loss accounts, the regulatory requirements are part of the body of health and the body of disease.¹⁴

The body of health is the outside representation of a good working organisation. The knowledge thus needs to please the people who interpret it. Examples of the body of health are the regulator that approves of a financial risk assessments or increased shareholder value on the financial statements. These numbers represent the organisation to the outsiders, who interpret them as a good-working organisation. Within academic fields of economics and finance, these representations have been studied extensively, especially the optimal capital structure of an organisation (Myers, 1984; Graham & Leary, 2011).

The body of disease happens on the same level as the body of health. It is about outsiders interpreting the state of the organisation. However, as the name implies, the body of disease is a vision of an organisation that does not do very well. In this situation, outsiders such as shareholders, regulators and other market participants determine that the organisation in question does not adhere to the standard of health. Multiple diseases exist. The most extreme situation is default and anything that might lead to default. In this study, the risk managers did not want to have a body of disease. They actively tried to avoid such a difficult situation. However, they themselves could not decide upon the classification. Some outsiders had the resources to declare the disease.

Invoking of bodies of illness, health and disease might remind one of the medical profession that treats an disease and then creates a body of health. Risk managers were neither patient nor medical doctor. They made the step from a body of illness to a body of health. They did not fix the disease, they changed

¹⁴For a historical explanation of the balance sheet as a communicative object, see Carruthers and Espeland (1991)

the representations that made the body of health. As shown in chapter five, they do not have the resources to change the causes of the illness, the risk ascription.

The risk managers do have the possibility to avoid consequences. They can do so by changing investment strategies but also by changing the representation to the outsiders who declare the body of health. They mainly change risk calculations and accounting categories.

Statistics and mathematical methods used inside financial organisations are not beyond ambiguity (Didier, 2007). The output is framed in both a technical and a political sense ¹⁵. By doing so, the risk managers try to give a healthy or acceptable representation of (part of) the organisation. Statistics leaves by definition room for interpretation. One talks about chances and therefore possibilities, not known events. One can never be certain in a probability calculation.

Accounting contains a similar ability to mold to one's expectations. As MacKenzie (2009) notes, the categorisation of expenses into bookkeeping categories is ambiguous and depends on the specific moment in which the choice is made. This leaves the door open to discretionary choices of the people who make the accounting figure.

Does that mean that the risk managers can do anything to avoid a body of disease? No, they do have to take into account certain boundaries. Powerful outsiders and their knowledge standards constrained the risk managers. If regulators are not happy with the risk calculations, they can punish the company. The risk managers cannot do much to counter their punishment. If the counterparties do not accept the insurance company's money, the latter cannot make investments on financial markets. These outsiders have the power over the resources that the organisation needs to survive. The question is if the outsiders will act. Will they punish or pull their resources from the organisation with the help of certain knowledge? If such a negative step happens, the outsider declares the body of disease.

Besides that, knowledge standards exist within the organisation of how to calculate. This is the technical framing described in chapter three as well as different types of institutions such as professional standards actuaries might have. For example, in numerical calculations one and one are never supposed to make

¹⁵as described in the introduction of chapter 3

four. These standards exist and risk managers followed them. At the same time, they allowed for a lot of flexibility. And in the fieldwork, I hardly encountered the limits of the technical frame.

I want to make a note here with regard to professional standards. Actuaries and bankers have their own vision of what it means to be part of their group. That includes methods of calculations and evaluations (Spears, 2014; Avrahaempour, 2015). When a risk manager's work did not reflect the professional standards, the person in question might encounter problems. The professions are thus (a set of) outsiders that can hurt the different actors inside the organisation. However, in this case, the professions did not have many resources. Besides that, professional norms have their own malleability. Consequently, in certain situations, the risk managers might have to choose between the professional standards and the organisation.

This section brings together the knowledge studied in chapter three and four with the description of the activities in chapter five and six. In chapter seven, the first of the section on the output of the risk managers, I discuss the risk managers' output in a healthy organisation, Insurance Company V, focusing on the transfer from body of illness to body of health. In chapter eight, I will do the same but for an organisation that is continuously failing, Bank F. This brings the third body forward, the body of disease. In the last chapter, chapter nine, of this sections, I will go back to the thesis' original puzzle, the relation between market and risks. There I will show how the market is used to obtain a body of health.

Chapter 7

Creating the Body of Health

To understand the risk managers' output, let me start with Insurance Company V. The organisation made a profit. They tried to stay alive and competitive with other Insurance Companies. The risk managers avoided negative consequences coming mainly from the regulator. They prevented the downfall of the organisation by creating a body of health. They made assessments that represented the good state of the organisations to outsiders.

Inside the organisation, the risk managers saw the difficulties that came to the organisation. This body of illness was an assemblage of internal assessments about both the attribution of consequences, negative events and the risk ascription. The risk managers at Insurance Company V used the resources at their disposal to give outsiders a vision of the organisation they might like. They thereby created a body of health out of the illness they saw.

In these firms, the body of disease only happens in the case of a negative event. They default, get their licenses suspended or see an extreme descent in their shareholder value. Even though the body of disease can exist, it does not capture the work of the risk managers at Insurance Company V, or non-defaulted financial organisations in general. Risk managers do not want to create negative events. They avoid them, trying to prevent diseases arriving at organisation. They work on the creation of a healthy situation, to prevent outsider pressure. Even though the outsiders sometimes see difficulties, the risk managers try to present a positive image. Thus, the risk managers' focus lies on the good representation

of the organisation.

As with the outside threats and the consequence attribution, the two outsiders that matter here are the shareholders and the regulators. The shareholders relate to a relatively invisible group of anonymous investors. The financial results of the company would influence the shareholders' visions on the value of their investments.

The regulators are more directly involved with the company. They can ask for one-off studies as well as the implementation of official periodical reporting. In the extreme case, they can fine or take away the organisation's insurance license. Both main outsiders thus have the resources to harm the organisation.

In this chapter, I discuss the transition from body of illness to body of health at Insurance Company V in three parts. These each have a different level of detail. Since I did not have type of access to the different topics, I cannot give the same type of information. Yet, all three show that the risk managers obtain a body of health. First of all, I discuss work for the shareholders. By reclassifying assets and liabilities, the risk managers managed to create a representation of the organisation that the shareholders could accept as healthy. They themselves had encountered a body of illness in the financial statements, a possible insolvency of one of the accounting entities. Afterwards, I will discuss the body of health the risk managers created for the regulators. I will go into two episodes in-depth, first of all the Profit and Loss Attribution, followed by the answers risk managers have to give to a regulator. In these cases, the statistics and accounting categorisations help convince the regulator that the model is right. Even though risk managers internally expressed their doubts about the model, the external representation had to be right.

7.1 Reclassifying Assets and Liabilities for Gains in Capital

The risk managers worked in a situation with a multitude of technical possibilities and different organisational pressures. They did this both for the regulators and the shareholders. The following two examples show how some risk managers used

the accounting measures to work towards a body of health that would please the shareholders. The first is relatively short and discusses how Brad was brought in to find equity. The second is the question of the pension fund liabilities. The latter has already been partially discussed in chapter 4 and 6.

In both cases, the shareholders' resources are implicit. Their power was a normal one that everybody supposedly knew about. The capital amounts of the organisation were the main object that could trigger a negative reaction from the shareholders. The risk managers expected that higher capital amounts would not please the shareholders. More capital needs and therefore less return on capital per share would show an organisation not worth investing in. In that case, the organisation would have a disease. So, the risk managers tried to fit their inside knowledge into what they thought the shareholders wanted to see. They worked to optimise the capital amounts for the shareholders.

Asset Reclassification

Some of the non-life entities encountered financial difficulties and one especially lacked capital. Internal data showed that the entity was insolvent and could theoretically go bankrupt. This, of course, was a body of illness that could not turn into a body of disease. If the shareholders would know about this, they would have a loss on their investments. So how could the risk managers avoid this lack of capital? They could find it somewhere else, either by rearranging the balance sheet or by getting it from another accounting entity.

Patricia, CRO of Insurance Company V, had asked Brad to look at the capital structure of the specific accounting entity. Could he find a way out of this equity problem? Brad spent a couple of weeks on the issue. He tried to find a way to improve the equity amount with the accounting categories. He went through the different asset types to see if they could be eligible as capital. He used the accounting possibilities to reclassify assets and make the entity solvable again.

I did not see much of a problem. Why did Brad have to do this work? Other accounting entities were solvent. The finance department could transfer equity from a stable to the ill entity. Ewan corrected me. He pointed out the internal constraints that existed with the insolvency of this one entity. The equity could not just come from somewhere, who would pay it? That would mean a loss for

another accounting entity, were it within Insurance Company V or the Group. In the end, the body of health would be in danger. An insolvency would mean a loss for the shareholders. To make sure that these powerful actors saw a healthy company, the solution to the problem had to come from within. And so Brad looked for assets that could be reclassified as equity. He found them and created capital for this non-life accounting entity. He made sure that it remained solvent. Thereby he did exactly what Patricia expected of him, he presented the shareholders a picture that they would most likely accept as a healthy vision.

Interest Rate Reclassifications

When I was at Insurance Company V, Brad's reclassification of the assets was not the only time they tried to manage the impact on the shareholders. The risk managers also reclassified assets to decrease the cost of capital. They plied both assets and liabilities into a mold. There, the capital amounts would fit the ideas of shareholder expectations.

In chapter four section four, I discussed the different interest rate definitions in Insurance Company V. One of the aspects was the low interest rate at the time of the fieldwork. This led to high capital requirements on the pension liabilities. Insurance Company V had a large portfolio of long-term life insurances. One of the life insurance products were the pension funds. The discounted cash flow used for the liabilities calculations used this interest rate (see formula 4.7). The lower the interest rate were and the further away the insurance payments, the higher the liabilities. Consequently, the calculated risks increased and with that, the regulatory required capital. The shareholders' costs would go up as well.

Luckily for Insurance Company V, the regulators allowed an exception to the internal model calculations. They could categorise the pension liabilities under Solvency I (SI) rather than Solvency II (SII). The risk managers believed the reclassification could lower their capital requirements. A small group of risk managers and people from the finance department worked on the reclassifications. They repeated some of the liabilities' and the standard capital requirement calculations including the exemption, wanting to see how much capital they could save.

The designated team found the different liabilities that would fall under the

pension fund rules, made models that excluded these categories and ran the different regressions without the pension funds. That way they calculated the standard capital requirements without the pension fund liabilities. They added the two capital amounts, the pension funds under SI and the rest under SII, to obtain the final capital amount.

Not only did they classify the pure pension funds into the exempted category, they also took multiple strands of other long-term liabilities in their reclassification. During a meeting on the topic, Kristjan explained that not all of them necessarily classified as pension funds. If the regulator would allow for a larger definition, Kristjan and his colleagues could add the other long-term liabilities to the group of pension funds. They had calculated that especially those other long-term liabilities diminished the capital requirements. The risk managers thus hoped the regulator would accept they used the broader definition. In this case, the body of illness was the possible cost of the pension fund liabilities, the transition the reclassification and the body of health a successful decrease in capital requirements.

In chapter six, the meeting of the results to this reclassification was discussed. The three risk managers who had worked on the reclassification presented their results, showing a diminished capital need. They did this for the standard capital model, which required less complicated calculations than the internal capital requirement model. Contrary to the latter, the standard model could be calculated by three people at Insurance Company V. The final calculations, and therefore the final capital requirement changes, would come from Alice's team and a calculation at Group level. However, the standard model was the basis of the internal model calculations and indicated the results on the internal model level.

Kristjan, the head of the small group who calculated the change in capital cost, was secretive about his methods. He kept it between the people who worked on the assessment, only sharing the results with the rest of us. This was outside of the ordinary within the risk management department since he did not allow for anyone else to check the mathematics behind his results.

Even though we did not know if the calculations were right, we accepted the results. Alice had protested a bit to her boss and Kristjan. However, she was not

Kristjan's direct boss, that was Patricia. So she did not have the resources to make Kristjan share his calculations. What mattered most was the outcome of the reclassification. Changing the different long-term liabilities to SI would lead to lower capital requirements. The risk managers had obtained their objective diminishing the cost of capital. With that, they pleased the shareholders.

The reclassification shows that the risk managers used the rules to diminish the capital amounts. They wanted a better body of health from the shareholders. Internally, the risk managers and the finance division saw high capital requirements from this specific type of pension funds. They had the possibility to change this, even go beyond the small definition of pension funds and decrease the capital requirements further. They did so, thereby creating lower cost for the shareholders in the end. Brad's search for equity is similar, even though based on a reclassification of the asset categories. With these actions, Brad led the company to solvency, creating from a body of illness a body of health for the shareholders. The accounting entity had value again. In both cases, the risk managers made sure the representation to the shareholders of the organisation would be a healthy one.

The shareholders however were not the main outsider the risk managers showed a good picture to. The risk managers in Insurance Company V worked on the implementation of the new capital requirement model. They thus worked on assessments that directly considered the regulators. The latter had resources that could directly damage the organisation. Consequently, the risk managers had to make sure they were happy about the representation of the organisation. The following two cases go directly into how the risk managers made a body of health and presented this to the regulator. The first is the case of the Profit and Loss Attribution (PLA), the second the answers to questions of the regulators.

7.2 The Profit and Loss Attribution

The profit and loss attribution (PLA) is a perfect example of the transition between body of illness and body of health. The risk managers needed to show the regulator that they had control over the regulatory capital requirements model. In principle, the PLA tested this model. In practice, it did anything but.

Input numbers were not standardised, the calculations were unclear and there was not enough calculation power to fully test the model. The risk managers had to come up with a way to make it work. They had to prove the capital requirement model through the PLA. They did so, by using the ambiguities of the different figures, accounting and statistics, used in the test.

The basic ingredients of the exercise are the changes between the most recent balance sheet (t) and the one of the year before ($t-1$). With the difference on risk exposures, restatements and the final balance sheet, the PLA tested the model. It compared the model outputs on the different risk exposures with the realised changes of the balance sheet. If the calculated risks explained most of the changes of the overall balance sheet, the model would work well. However, as with most calculations, the output of the PLA depends on the input. Since the input was malleable, the final result of the exercise was as well.

Not only was there a question of the final explanation of the balance sheet changes. The realised risk factors would also be compared to the respective calculated probability distributions. This was to see if they were relatively normal. For example, Insurance Company V had traded with other financial institutions. These trades had a counterparty risk attached to them. The model calculated the possible losses from that counterparty risk. In the year of the PLA, the counterparty had gone out of business, leading to financial losses for Insurance Company V. Those realised losses were then compared with the probability distribution of the expected losses from the counterparty risk. If the losses had a small chance to occur, once every 200 years for example, the model estimated this risk factor badly. If the probability was closer to one in two or three, the risk factor was well estimated. This close-up of the risk factors was called the after-analysis.

With these two tests of the capital requirement model, the PLA supposedly tested the capital requirement model and its risk factors. It could thereby give a proof of health to the regulators. The exercise itself was more difficult than initially thought. The organisational set-up and the input data created complications.

Multiple people took part in the creation of the PLA. There were four consultants. Wade, Leonard and Nasim had explained the first steps of the process.

Francesco was the fourth consultant who handled most technical aspects. In Insurance Company V's risk department, Ewan, Diane and myself worked on the local aspects. Ewan was part of the life model team and Diane worked on the non-life model side. Alice and Patricia made the hierarchy above us. Alice was the head of the life model team, Patricia the head of the risk management division. Another important actor was Casimir. He led the accounting department in Insurance Company V.

Making the PLA

It all started with the arrival of three consultants from a high-end strategy consulting firm. These outsiders in expensive suits came to tell us the procedure of the PLA and had been hired by the Group. They had come to give us our tasks locally. We were five from the risk division, two from the non-life department and three (including myself) from the life risk side. The three consultants had prepared the meeting, standing besides the projector to start the presentation. They looked differently from the risk managers. First of all, they were all well dressed, with better fitting suits than the risk managers' jackets. Secondly, they looked tired, as if they had gone out the night before. In their expensive clothes with baggy eyes, they resembled the upper class male students who lived by the motto 'work hard, play hard'. The consultants also had a clear hierarchy. Wade was the boss. He gave the general talk. For the more technical aspects, Leonard, the second consultant, took the floor. Nasim was the third consultant, the youngest and lowest in the hierarchy. He hardly uttered a word.

These three consultants explained the workings of the PLA and what they wanted from us. They needed all types of data, accounting data but also risk exposures. We needed to do some calculations, be it relatively little. The PLA had two measures of the failure of the model. First of all, Leonard told us, the unallocated amount could have a specific margin of error. He said that the unexplained capital amount could not exceed 5% of the total amount of the changes. This 5% was arbitrary. Intuitively it was not too much and it left a margin of error to the risk managers. At the same time, the relatively low 5% could convince the regulators of the rightness of the risk calculations.

Besides this, there were the risk factors themselves. The PLA compared them

to a given probability function. The consultants told us that the risk factor could not fall into an extreme interval. They could, for example, not land between the 99% and 100% boundaries of probability, implying that the calculated numbers would occur once every hundred years. To find a risk factor so rare indicated a bad calculation of the model. The risk factors needed to have a normal occurrence, once every two or three years.

Leonard explained that the PLA would be wrong on one point, the sovereign debt risk. The Group had designed the SII model before the European sovereign debt crisis broke out. Previously, sovereigns did not have a credit risk attached to them. The Euro crisis changed that belief. The problems of Greece, Spain and other European countries had installed the idea that they could bankrupt. Consequently, investments in sovereigns theoretically needed a calculation of their risk of default. The regulators knew that the model did not take the sovereign debt risk into account. Leonard and his fellow consultants thus expected that the PLA results would not show a completely correct picture.

Why already show a possible flaw before the exercise even started? With the sovereign debt risk, the consultants already gave the argument for the flaws of the PLA. Most in- and outsiders knew that the model did not calculate this risk, including the regulators. Of course, the PLA might show that the model was not right. The sovereign debt risk was acceptable error.

Besides providing a useful explanation for a bad PLA result, the sovereign debt risk did something else. Together with the margin of error, the consultants used it to say that we would perform the PLA correctly. Namely, perfect numbers could raise suspicion with the regulators. No one ever got a perfect outcome and this thus might indicate a mismanagement of the calculation. The unallocated could be 5%, the risk factors could not be too extreme and the sovereign bond risks were not taken into account. The consultant set out the goodness of the model even before the PLA started. The results with the small flaws would show the regulator what we thought they wanted to see. In exchange for that message, they would hopefully approve the model for us.

Collecting the Right Data

Before we could start with the PLA, we had to obtain the right data. The

risk managers of Insurance Company V had to deliver some input, just as the other local entities and the Group. In the first meetings, the three consultants explained which data they needed when. They wanted the data preferably sooner than later, with the first deadline a couple of weeks later. The risk managers coordinated the PLA but only a small proportion of the data came from them. They needed the finance division to step in. The day after this, a meeting was held together with the finance department. This meeting is described in the previous chapter. The consultants emphasised the importance of low capital requirements, the finance division agreed to deliver the data.

Leonard continuously emphasized how important it was to obtain the data. We could also give them approximations. As long as we had some numbers, the consultants were happy. The consultants also offered their help with approximating. They just wanted to receive the data. Their focus on the delivery of the numbers shows the emphasis on the final outcome of the process. Their priority lay with the final results rather than the methodology of the process. In the first meetings, we spent very little time on questions of how to calculate. They wanted to show the regulators a model that worked well, not just a test of the model on its own. They thus tried to obtain the body of health the regulators could give.

So which data did we need to obtain these preferred results? The implementation of Solvency II had created multiple balance sheets that existed alongside another. Insurance Company V had a local, called social, balance sheet and one on 'market values'. We needed the latter for the PLA. The market value balance sheet supposedly showed the values as the market would give them, including the liabilities. The asset values were, generally, taken directly from financial market data providers (such as Bloomberg or Reuters). The finance and investment divisions gave the asset values to the risk managers.

The value of the liabilities required more calculations. A market as such did not exist for them. So the risk managers and people in the finance division had to create numbers that fit the idea of the market. The liabilities calculations answered the following question; how much would we need to pay someone else to take over our liabilities? Thus, they projected what they thought the insurance company had to pay their insured in the future. The risk calculations then used

these liability projections. The PLA required both of them as input.

So, we collected the main balance sheet items first. We needed them for the risk calculations as well. The start and finish of the exercise were the total amounts of capital of the company in year (t-1) and year (t). The difference between two years in this capital amount had to be explained with the PLA, the explanandum. The height of the capital amounts directly influenced the PLA results. The documents did not clearly define the accounting category of capital. That meant that we had leeway here of what we would add to and leave out of the capital.

The lack of definition was not the only aspect allowing for malleability in the capital amount. In the previous year, year (t-1), Insurance Company V had started with Solvency II. This had led to a completely new balance sheet and a restatement of the previous' years balance sheet. The transition between SI and SII had led to the restatement. The accounting representation was relatively malleable not directly representing either one.

Besides the main balance sheet items that came from the SII market value balance sheet, there were the different data points of the realised risks over the last year. This went from the exposure on asset risks such as interest rates, counterparties and equity to the realised cost on the different insurance contracts. Insurance Company V, as local entity, had to give some of the locally available data. For example, we had to find the changes to the life insurance liabilities, both in new business as well as the end of previously decided upon contracts. Some of this data came from the risk division. Other data, we had to ask the finance division to deliver.

With the help of the capital requirement model, the different realised risks would explain the changes in total capital between year (t-1) and year (t). If everything went as it should, the model calculations of the risk factors would roughly show the change in capital.

Between Group Pressure and Finance's Hesitance to Deliver Data

Before we could proof the veracity of the model, we needed the input data. And there, the trouble started. For weeks we waited on the finance division to deliver us the basic data of the market value balance sheet. It just did not

come. The finance division gave one reason, as long as they had not validated the balance sheet data of that year (t), the numbers would not leave their offices.

Ewan had the responsibility to get the data from the finance division to the consultants. He took the former's word for what it was. He did not spend his days negotiating or lobbying with them to receive the data earlier. So we waited for a set of numbers that did not come. Even after a couple of weeks, the consultants started to show their annoyance. They needed the input for the model. They sent emails to Ewan, reminding him about his responsibilities and engagements. Ewan felt attacked and guilty, as if he had not done a good job. He was the one responsible for the delivery of the data. And the data was not there.

He was able to convince the consultants as well as the head office that it was not his fault the data had not arrived. The finance division just did not respond. To get things in order, the consultants had scheduled a conference call. So two weeks after the deadline, Diane, Ewan and me talked to the three consultants over the phone. We renegotiated and re-established the time line of the PLA.

The discussion concentrated around the delivery of which data when. The consultants repeated the question; when will you at Insurance Company V give us the numbers and reports? The consultants had set-up a list of requests. Locally, no one really wanted to accept their demands. They wanted too much too soon. No one discussed the exact data, what they would look like or the method behind the data collection. The focus lay on the numbers. Besides that, the consultants reiterated the two aspects of the model that could be wrong. Here, they stated an unexplained 5% and restated the sovereign debt risk as a possible risk factor that went beyond the expected. The whole conference call was about the creation of acceptable knowledge for the regulator.

When Leonard restated the point on the sovereign debt risk, Ewan and Diane, on my side of the phone, muted their microphone. The consultants could not hear them anymore. Ewan asked Diane, outside of the consultants' earshot, 'But we do calculate those risks now, don't we?', to which Diane responded 'yes'. She then added that the methods might not be right. The body of health that Leonard wanted to establish was not necessarily the body of illness that Ewan and Diane saw. The latter two did not see the sovereign debt risks. Leonard wanted

to show the regulator the difficulties of calculation in exactly that category.

Neither Ewan nor Diane objected to Leonard's insistence on the sovereign debt risk. Why? If they had wanted to have a model that exactly showed the risks as they existed on the inside, they might have said something. In that sense, they would have wanted to create a good model, as a part of the organisation's robust body. However, the two did not have the resources to follow this objective. Between the different actors involved, consultants, risk managers, (invisible) regulators and shareholders, one had more to say than the other.

First of all, the two risk managers worked in the local risk department but also for the Group. The latter was the final decider. So, since the consultants worked for the group, Diane and Ewan had to respond to their requests. Not only did the consultants have the resources of the group, their opinions had more legitimacy. They had a higher status than the risk managers. For example, they were paid better, wore better suits and worked more hours. Besides that, the company they worked for had a prestigious name. Leonard's vision of how to create the results of the PLA was thus more important than Diane and Ewan's doubts.

Besides the aspect of the informal resources, the outside resources mattered as well in Diane's short moment of hesitation. She did not continue on the topic because the consultants had a regulatory argument. We tried to create a PLA where the regulator would see the model worked. In the priorities, concerns over the internally established robustness of the calculations came second. The regulator could refuse Insurance Company V the use of an internal model. If we would show them a PLA that proved the model was wrong, we gave them a reason to not accept the model. Thus, we had to try our best to convince the regulator to allow the model, to declare the body of health. The regulator knew of the lack of sovereign debt risk in the model. Leonard and his colleagues' argument included the regulator's expectation. Diane and Ewan did not bring the outsider to the table in their objections. Leonard had the outside resources on his side and could thus argue the sovereign debt risk was not calculated.

In the end, we did receive data from the finance department. They had filled in our Excel templates. We did not know if they had given us the right data or

not. However, that did not matter as much. We could now run the capital requirement model and see if it explained the changes in the balance sheet amounts.

An Exceptional Meeting on Data Quality

The data quality did not keep Diane or Ewan awake. There was one exception. On the non-life side, with Diane, the head of the Group wanted to check the figures. As the boss of their boss he had the resources for the request. He had to sign off for the data. Consequently, we depended on him. And here, something exceptional happened. The head of the non-life risks in the Group wanted to discuss the methods behind the data collection. In my nine months of fieldwork and the year of collecting interviews, I had never seen anything like this meeting. This man actually cared about the robustness of the calculations rather than just the results. He cared so much, he even shouted it over the phone.

In this conference call about the non-life input for the PLA, the head of the non-life division at Group level wanted to know exactly how which number was calculated. He did not understand where some of the non-life liabilities came from. Diane and her colleagues had taken local specificities into account. He shouted over the telephone that he could not agree with the data. In two hours, the local non-life risk managers tried to explain that the numbers were right. They could explain them. For a long time, the head at group level did not agree. I saw my direct colleagues sweating, not really knowing what to do. They could not just create new numbers out of nowhere either.

After two hours where the head of the non-life risks at Group level shouted and the risk managers locally feared and tried to convince him, he extended a hand and compromised. As long as the local people at Insurance Company V could explain the numbers, he would not create extra problems. He said ‘as long as you can explain it to your regulator’. This the non-life managers could.

The meeting with the non-life head was exceptional. A manager who cared enough about the quality of the data to shout at people in another entity, that did not happen often. Even in this case however, the quest for the internal robustness of the calculation was less important than the argument to the regulator. The person at the Group had formal resources. He could stop the data he disagreed with from entering the model. He did not do this. The regulator was more

important than his opinion on the quality of the numbers. As long as Diane and her colleagues could convince their regulator that the numbers were right, he accepted the situation. The outside pressure, or its elimination, had the highest priority in the construction of the PLA.

To put it in terms of the organisation as a body, the non-life head at Group saw a body of illness. He wanted to have a robust body of the non-life risk knowledge. Even though he had the resources to request this, the regulators' mattered more. As long as the regulators did not see a body of disease, he accepted what he saw as a body of illness. Diane and her colleagues had to make sure they could convince the regulators that their data portrayed a healthy organisation.

Establishing The Unallocated Capital

Finally, we had life, non-life and financial risk data and could run the model. This happened at the Group. If the numbers were right, we would easily extract the data, plug it into the PLA tool and write a report. That would have meant a week's work without too much trouble. Things went otherwise.

When we got the output of the model and plugged it into the PLA tool, we had a problem. The unallocated capital exceeded the 5% limit of the consultants. For some accounting entities, more than 20% of the capital changes remained unexplained by the model. One accounting entity even had an unallocated above 70%. The PLA did not show the results we wanted. We had hoped to convey something else to the regulator.

Consequently, we had a problem on our hands. If we would give these results to the regulators, we would show them a model that did not calculate the risks well. We thus had a body of illness that could turn in a diseased one. We could not accept that result. The consultants did not agree with it, the local head of the risk division did not agree nor did the final boss, the head of the risk division at group level. We had to do something that changed the unallocated capital in the PLA.

But how could we create acceptable figures, numbers that showed a working model? Two variables changed the outcome of the PLA. On the one hand, we had the risk numbers coming out of the model, explaining the change in capital over two years. On the other hand, we had the main balance sheet data. The

latter were the starting points of the exercise, the different capital amounts at year (t-1) and year (t). We thus had two variables we could change to obtain the results we needed.

The risks had already been calculated in the model. Having the a second calculation of the risk model Group level was almost impossible. The difficulty did not come from a constraint in the methodology. The constraint was material. The capital requirement model at the Group needed a lot of computational power for each calculation. The different projects that needed that computational power had time slots. In a slot, one could calculate ones regulatory required capital. The next time slot for the PLA would be after the deadline of the exercise. We could thus not recalculate the model results.

That left us with the second variable, the basic balance sheet data. The amount of capital of the first year and the second year created the changes in capital and therefore also the unexplained capital amounts in the PLA. Just after we had received the bad news of the high unallocated amounts, the consultants changed the expectations of the outcome. They told us that we could have an unexplained difference between the capital amounts of 10%. The margin of error remained a reasonable. We could still explain a 10% error to outsiders. But we did not have a PLA that left less than 10% of the capital changes unexplained. We had more than 20%, even 70%.

I was sceptical that we could actually get to the 10%. It seemed difficult. Patricia, CRO of Insurance Company V, said something to me on the side, after a meeting on the need to get to the 10%. She said ‘they will get there. They always do’. With they, she meant her team, the consultants, the lower levels of the finance department. They calculated and would be able to make those calculations as one would expect, within the 10%. She would receive the results she needed.

How to get the unexplained down to 10%? The recalculating the capital amounts was difficult given the operational constraints. We did have the second variable, the balance sheet figures. Since the PLA’s objective was to explain the changes in capital, if we could touch the capital amounts, we could also change the amount left unexplained. Here, we were lucky. We found out the data the finance department had given us were approximations.

The Group CROs Interference

The finance division's reluctance about the data, helped us in the local risk division. The CRO at Group level was not happy about the results of the PLA. Nor did he like the timing of the results, which were delivered much later than initially agreed upon. As the local risk division, we reported to him. He was our final boss. If he would think that we had caused his dissatisfaction, he might have punished us. He could have tried to fire our boss, talk people from our department down in meetings and generally show that we were not worth his time and therefore not someone else's time either. He had the resources to create an unpleasant working situation for us.

Nevertheless, we convinced the Group CRO it was not our fault. Ewan had repeated often enough that the finance division had caused our problems. The rest now also believed it, including the consultants. With them, we had convinced the CRO that the finance department had given us the wrong data. We had numbers on balance sheet categories such as deferred taxes, the subordinated debt and the different restatements related to the SII changes. However, they had possibly been taken into account in the wrong way. At least we knew that the way it had been taken into account did not create a good PLA. The Group CRO could have scolded us but did not. He scolded the local finance division. He identified the problem in the balance sheet items. Since the Group CRO was our boss, we had to follow his directions and use different financial data.

The Group CRO put his weight on the local finance division to deliver us the right data. This got the people in finance moving. The head of the accounting department, Casimir, had sidelined us up to that moment. Previously, we had solely communicated with one of his subordinates. A junior in his team had communicated some figures, always indicating them as provisional. With the Group pressure, Casimir had finally found the time to talk to us about the PLA.

The Meeting of the Billions

To discuss the final PLA data, we had blocked a full day in an empty office next to the risk managers' open space. I sat there with three consultants, Leonard, Nassim and a new one, Francesco. He had made the PLA template.

In the office, we were supposed to meet Casimir. The meeting had started with Alice and her counterpart for life liabilities in the finance department present. Casimir had not yet joined. Nonetheless, we noticed that the basic accounting numbers could change the outcome. The capital amounts of the two different years had a discrepancy of more than a billion euros. The middle managers in the room thought this was odd. We thus needed Casimir's expertise for the capital amounts.

Only after Patricia, the local CRO, passed by and pressured Casimir to come, the man showed up. Once he was there, the PLA started to work. For more than two hours, we discussed the accounting numbers. Casimir contacted his subordinates on a regular basis to ask for specific results and restatements. The accounting entity with the more than 70% unexpected had priority. During those two hours, the unexpected went down to 3%. We got the result we wanted. We used the lack of certainty of the accounting figures to get the PLA to proof the model.

Even before Casimir had joined, the two middle managers had left. In this relatively small office, I remained behind with the three consultants as the only representative of the local risk department. The consultants had taken over the PLA to make sure the outcomes would be right. They had done the same to the office, making it their own, with cans of coca-cola and bags of chips lying around. When entering the room, a funny smell came to me, as if I had returned to the badly kept student residence of my undergraduate studies. The three consultants had brought their own laptops, Thinkpads, with a red dot in the middle of the keyboard that functioned as a mouse. Their material flexibility and adaptability resembled our search for the right answer. The office was like a hothouse, warm and smelly, where we all worked as hard as possible to get the unallocated down.

Casimir started with a question about the treatment of the taxes in a part of the capital amount. His new interpretation led to a decline in the capital difference between the two years by one billion. This was a good first step, the unallocated capital amount declined. However, we still had an unexplained capital amount above the 10%. We needed more changes to get what the result we needed.

The next step was the life insurance liabilities. Even though the risks were

known, their total still influenced the capital amount. Namely, some contracts had ended between the two years. They did not relate to the risk measures but did change the final capital amounts. We also had to take into account taxes, which made the capital difference between the two years decline even further. A fourth adjustment to the capital amounts came from the restatement. Previously, we had not taken into account the right restatement data. So the billions flew around. With each step the difference in capital between (t-1) and (t) went down.

One of the last things we looked at was the ownership structure and the related valuations. Insurance Company V was, on paper, a multitude of accounting entities. They all had more or less ownership over one another with related dividend payments. Casimir explained that we had to adjust the participations of the accounting entity and the dividend payouts in the two years. Even more billions flew around the table. Casimir had given us an unallocated capital ratio close to 0%.

Of course, a margin of error this small could be interpreted suspiciously by the regulators. Perfection hardly ever happens. Here, we were lucky again. Casimir said that we needed to add a 'wedge' to the (t-1) capital amount. He did not explain why. He just told us that we needed to add an amount. So we did and the unallocated went up again. We recalculated the unallocated capital again and we found it below the pre-defined 10%. We had succeeded.

The meeting of the billions, as I would call it later, did not end the PLA exercise. Casimir's input was still provisional. We needed to finalise the data the next day. We needed to make sure that the numbers gave the right PLA outcome. The Group even contacted us just after the meeting. They told us that we needed to be certain about the accounting numbers. They also reiterated that the capital requirement model could not be wrong. Thus, the Group implied we should deliver the right PLA data. We knew what that meant, we had heard it repeatedly from the different consultants and the group.

Our superiors had instructed us to make sure the new accounting numbers showed an unallocated below 10%. Ewan, our boss Alice, the consultants and myself wanted to make sure we responded positively to their demands. The six of us met up in the same office again. The room had become even more of a

consultant hothouse, with their affairs and empty food packaging lying around the room. We needed to talk about the final numbers of all accounting entities. There, we discussed the implications of the numbers of the day before.

During this second meeting, Casimir walked in unexpectedly. He gave a number and said; that is the final number for the capital of (t-1) for the accounting entity discussed yesterday. He left directly afterwards, the rest of us guessing where the final capital number came from. It meant that the unallocated went to 8%, still an acceptable margin of error. We had done it, we had created the numbers that were expected of us.

The consultants and I had asked the accounting department multiple times to give us the underlying proof. We could not just trust Casimir on face-value, we needed reassurance. In other words, we wanted to know that there were no official problems with Casimir's figures. We thought Casimir or his subordinates would send an excel file with the calculation. A pdf file with some sub-categories of the final numbers had also sufficed. The file had to resemble something 'serious', standardised. Numbers should be in different columns and a long row of names that indicated the origin of these numbers. Other than a screenshot or an email, pdf and excel files gave the impression of a standardised process. A pdf file could be the printed result of a bookkeeping program, an excel or csv file would be the data format of that program. That was what I had normally received in these organisations. An excel or pdf file would have adhered to the material standards of the organisation.

Of course, we had Casimir's word. He had told us that the accounting standards were kept. He was also the head of the accounting department. He had the legitimacy to talk about the different numbers. However, since the numbers changed a lot, we needed to be a bit more certain. We needed to be sure that we were dealing with numbers that followed official accounting rules. Casimir's word was not convincing enough. We also had to give a justification ourselves to the Group.

A couple of weeks after the meeting of the billions, I received an email. In it, I found attachments of the underlying numbers. We had needed the documents earlier. We were so dependent on the finance department that we were already happy to have received the emails. To our surprise, the mail attachments were

screen shots, photo files. They showed a list of numbers in an ordered fashion with handwritten notes on them. Some of the PLAs data entries came from the ordered parts, others from the hand written notes. These were far from the standardised pdf or excel files we had expected. With Leonard, I discussed the value of the screen shots. Neither of us liked it. The screenshots did not follow the standards of knowledge either of us had preferred.

Even though we did not like the underpinning of the accounting numbers, we could not refuse it. If we would not do so, we would have no certainty about the accounting data at all. Besides that, their screen shots gave us the PLA we wanted. We had to show that the capital requirement worked well so that the regulator would approve it. The PLA with the screen shot numbers gave us that result. The standards of knowledge production were less important. Obtaining a body of health had priority.

With the work on the accounting numbers came an end to the PLA locally. Ewan, Diane and me only had to finish a written document about the exercise. The document was already standardised, we just had to fill in the blanks. The consultants on the other hand, still had a lot of work to do. They had to bring the final figures together, write reports and make powerpoint presentations for the regulatory controls. Once in a while, they would come back to me to ask for the final numbers.

The Risk Factors

The PLAs decreased unallocated capital did not completely establish a proof of the regulatory model. We had a second variable that showed the validity. We had probabilities that the risks we calculated would occur. The risks had to fall in an acceptable part of the probability interval, one that occurred relatively often. The consultants had pointed out one exception, the sovereign debt risks. This was the flaw we could tell the regulators about.

We explained the risk factors after the calculation of the PLA. Leonard the consultant had repeated multiple times, the numbers had to look right. The priority was thus the visual, not necessarily the underlying rationale. Looking right meant that the risk factor value was not rare, that one could expect it to happen once every two years. However, when the results showed a risk factor

that would happen once every hundred years, we had a problem. This would namely indicate the model did not calculate the item right. We could not give that message to the regulators, they might question the body of health.

So we started to look at the different risk factors and their related point in the given probability distribution. We found multiple realised risks that fell into an unlikely probability interval. Let me give the example of two of these risks, the interest rate risks or the counterparty risks. The model had calculated a capital change of these two factors that would rarely occur. The PLA however told us that we would find such realised risks once every twenty years for one and once every hundred years for the other. Those were probabilities that were events that were too rare. We did not go through a specifically rough economic period either. The rarity of the risk factors thus meant that the model did not take them well into account.

On the other hand, the calculated sovereign debt risk was a relatively normal one. The model's calculation of the realised risk fell within a probability interval of once every four years. The PLA results at Insurance Company V did thus not show a problem with the one risk the consultants had said was a problem.

Thus, our PLA did not show a problem in the sovereign bond risk calculations. It did on the interest rate risk. Yet the consultants continued to focus on the sovereign bond risks. Just before we had the meeting of the billions, they had created an approximate model for the sovereign bond risks. At the time, it explained part of the extreme amount of unexplained capital. They had based the calculations on expected changes to the capital requirements model.

In the meeting of the billions, the cost of the sovereign bond risks to the capital helped explain part of the unallocated capital. However, the consultants did that before Casimir stepped in. Casimir had significantly diminished the unexplained capital with the new data on taxes, unwounded life liabilities and the participations. After the meeting, the approximate calculation of the sovereign bond risks did not serve a purpose anymore. The consultants put the effects of the sovereign debt risk back into a drawer.

We still had the realised interest rate risk that fell into a probability interval of an extremely rare occurrence. However, we did not discuss this further. We could argue that the interest rate situation was indeed very rare. At the time,

the interest rates were very low. So, we could say we had an exceptional situation on our hands. However, the low interest rates had already lasted for a couple of years and was not so exceptional anymore. Also, we did not expect the interest rates to go up any time soon. The argument for the rarity of the situation was thus one amongst others. We used the argument because it helped obtain the goal we wanted to obtain. We wanted to show the model worked well. So we said that the interest rate calculations were correct and indeed portrayed a rare moment in time.

As final output, we had to deliver two different products. We needed to write a set of documents for all accounting entities. Besides that, we had to present the PLA to the regulators, orally. I filled out the different documents for Insurance Company V. The documents went to the different regulators and presented the state of the model. The consultants had created standardised forms. The only thing I needed to do was to copy paste the information from an excel tool, which I then needed to explain in words as well. For example, the excel file said that we had x-amount in capital in year (t-1) and y in year (t). I would then fill those numbers into the tables in the form. Then, I would write in words that the capital had changed by x-y between the two years.

Once I came to the risk factors, I did not know what I had to write down in the reports. Should I write that the sovereign debt risk calculations needed improvement or the interest risk rate? Or did I have to write that both were problematic or neither? And should I use the approximations that the consultants had made on the sovereign debt risk? I called Leonard. At that time in the process, he had become the central person. He knew everything about the different choices we had made during the PLA process. So he also had the final information about what we had to put in these documents and what we had to leave out.

Over the phone, Leonard told me that I should not include the approximate calculations of the sovereign bond risks. These computations did not diminished the unallocated for all accounting entities in the different countries. Where Insurance Company V had seen a decrease in the unallocated, other local entities had seen an increase. The small model of the sovereign debt risks was thus out of bounds. However, Leonard told me that I should discuss the lack of sovereign

debt risks in the model. The argument that the model did not calculate the sovereign debt risk still held. The interest rate risks, on the other hand, should not get too much attention in the analysis. The risk factor check was thereby in line with the group and its analysis showed a model that worked with one exception. We re-established the flaw we knew of in advance and we proved the rest of the capital models calculations right.

Not only the documents mattered. The consultants' focus lay on the direct, oral, communications to the regulator. The most important presentation was for a group of European regulators at Group level. Just before this presentation, I talked to Leonard again on the phone. He asked me for some specifications about the final accounting numbers. The consultants themselves could not present, the people working for the Group did this. However, Leonard, Nassim and Francesco had made the powerpoint presentation, or deck. They had spent all night preparing them.

The consultants had made sure that powerpoint presentation of the PLA showed the regulators that the model worked. The different unallocated capital amounts from the local entities and the group was relatively small. The margin of error was below the 10% for all of them. Besides that, they had looked at the risk factors. There, the sovereign bond risk had come forward, just as Leonard had told us at the beginning of the exercise. Here as well, Leonard had reiterated the importance of this one risk factor. He left aside others that could be seen as questionable. The consultants thus gave the regulators the knowledge of a good capital requirement model. The calculations of the PLA proved that the model described the risks well, except for one point of improvement. The regulators had thus been presented with a model that worked.

The Profit and Loss Analysis as a Body of Health

The detailed explanation of the Profit and Loss analysis shows a messy process, with a multitude of people, a multitude of interests and a multitude of ideas. Even so, the outcome of the process looked strikingly similar to the ones discussed in the beginning. At the start of the exercise, the consultants had told the risk managers at Insurance Company V that the unallocated had to be around 5%. They had also told us that the sovereign debt risks was something

the capital model did not take into account well. The final outcome of the PLA was an unallocated of below 10%, with only the sovereign debt risks as a problematically calculated risk. With these results, the PLA proved the model right with some shortcomings. Some critique on the capital requirement model was needed to show that the exercise had been taken seriously.

The start and the end of the PLA showed clarity. In the beginning we had to prove the model, in the end we did. The process, on the other hand, was one of murkiness. The capital model's outcomes of the realised risks had shown, in certain cases, an unallocated far above 10%. The risk managers thus encountered clearly a body of illness. They saw a capital requirement model that did not work. They saw a bad, ill, calculation, both on the side of the model as well as on the side of the PLA.

Contrary to what one might expect, the risk managers' priority did not lie with getting the calculation right. The illness itself did not require treatment. What mattered, was that the regulators did not see the difficulties. If they would see them, they could stop the approval of the capital requirement model. That would mean a very bad reputation for the organisation as well as an increased cost of capital. The regulator had the resources to make life difficult for Insurance Company V by attributing a disease.

The risk managers had done their best to communicate a healthy organisation. They tried to prevent the regulator to declare a diseased organisation. How did the risk managers do so for the PLA? We had two options to get it right. We could change the outcome of the capital requirement model or the accounting data. The risk managers did their best to avoid the regulators' wrath by improving the PLA. We did so with the technique that had the least operational constraints, by adapting the accounting data. With the help of the head of the accounting department, the risk managers re-established the other numbers such that the risk calculations showed the right outcome.

The establishment of the body of health of the risk factors followed a similar process. We left some extreme numbers out of the analysis and explanation, not drawing attention to the results. We could easily have shown that the model had multiple flaws. We stuck to one flaw since the regulators already knew that one. Thus the sovereign debt risk calculations became the small disease. At Insurance

Company V and the Group, we could thus convincingly tell the regulators that the PLA showed the different risk factors of the model.

The regulators had the possibility to question the risk managers' representation of the organisational processes. With that, they could create the disease. In the next section, I discuss questions the regulators asked after their first investigation of the capital requirement model. The questions themselves did not matter as much, the priority lay on getting the answer right.

7.3 Answering The Regulator

Part of my time at Insurance Company V, I organised the regulatory requests and our answers. Like a project manager, I collected the answers from different teams. I tried to find the relevant documents in order to respond to the requests. One of the regulator's demands regarded the calculations of the risks for the asset side of the balance sheet. Financial market risks belonged to this category. The regulator had sent us an official letter with twenty observations about these asset risk calculations. We had to convince them that the model did work. So we did our best to find the right answers.

In the observations, the regulator poked holes in risk managers' representation of the capital requirement model. They criticised the methodologies. They also wanted to know more about the data. In the letter, the regulators almost established a body of disease. Luckily for Insurance Company V, the risk managers could respond to the observations. They could debunk the regulator's critiques and show a body of health again.

Here, I use the singular for regulator. In the PLA, I used the plural. I do so because the PLA related to an exercise that dealt with multiple national regulators. The Group had its own regulator. Insurance Company V had its own regulator as the other local entities. In the case of the regulatory observations, we answered to our regulator. Insurance Company V dealt with their own national one.

As with the PLA, the capital requirement model came out of a body of illness. The risk managers themselves had an unclear understanding of the risk calculations on the asset side. The risk managers did not have all the data.

The regulator had shown flaws in the model that the risk managers agreed with internally. The risk managers knew some the asset side risk calculations did not correspond to the actuaries' knowledge standards. However, the body of illness the risk managers saw did not matter.

The risk managers had one goal. Their answers to the observations of the regulator had to convince them the model worked. Just as the PLA had to prove the model, the answers to the observations had to debunk the criticisms. The risk managers had to defend the model, whatever they might think of it, independent of the internal chaos.

Patricia, CRO, had said the following during an interview; 'You do not tell the regulator the model is wrong.' She might have told others inside the organisation, she might have thought the model was wrong. However, she would never say so to the regulator. This outside actor had the resources to create hefty financial costs. Thus even though she or one of her subordinates might think the model did not work well or did not agree with some of the methodological choices, they were not supposed to divulge their doubts to the regulators. They had to communicate a well functioning organisation.

While I organised the critiques and the responses, Alice was in charge of the asset side of the model at Insurance Company V. However, in its process, she had lost the hierarchical power over the people executing it. Her superiors had decided upon a reorganisation. Those working on the asset risks, Brad and Vicky, would fall under a new manager who still had to be hired. In the mean time, Patricia, the CRO, became their manager. Alice lost her say and Brad, the most senior risk manager on the asset side, had the lead in practice.

Brad and Alice had different opinions about how to respond to the regulators. Alice preferred to see them as a cooperative partner. She wanted to share some of the difficulties with them. Brad, on the other hand, preferred keeping the regulators at a distance. He wanted to remain vague and reticent towards the regulator as long as he did not have a right answer. Brad and Alice agreed on one thing. They both saw the right answer as the one that proved the model.

With the team, we had multiple meetings to discuss the answers to the regulators. The direction we had to take in the answers was clear. We had to either falsify or deflate the observations criticising the model. We had to show that the

capital requirement model, its underlying risk factors and data were right. We would argue that choices would be prudent and accurate. Sometimes we would also say that the observations the regulator pointed out did not have many consequences, that they were immaterial in the overall calculation. Sometimes we could not find the right answer. In those cases, we would tell the regulators that we were carrying out extra research. By doing this, we changed what we saw into something acceptable for the regulator. We knew of murkiness and ineffective calculations. We wanted the regulator to know about certainty and efficient calculations.

As said in section 3.3.2, Insurance Company V's calculations followed a production process. The regulatory capital requirements model was made out of multiple calculation steps. In their observations, the regulators had made comments on these different steps.

The determination of the risk parameters was one of the basic steps of the model. These risk parameters would then be used in the simulations of the balance sheet. The final outcome would be the regulatory required capital amount of the different entities. For the equity (stocks) risks, the model differentiated on geographical location. Stock-indexes, such as the S&P 500 or the Euronext 100, laid the foundation for the risk parameter. However, a different stock-index was used for different stocks. That differentiation depended on the location of the stock market. For example, a stock from the CAC-40 (the French bourse) or quoted on the FTSE (UK stock exchange) would have a parameter of the European index.

One of the regulator's observations dealt with the geographical location of the equity risks. The regulators had noticed that more than a third of the equity portfolio had the equity risk factor called 'development countries'. In the letter, the regulator described a surprise about the quantity of stocks in this category. They did not say the classification to development countries was wrong. They just had not expected such a proportion in that specific category. With the surprise came a doubt. Did Insurance Company V really calculate their equity risks with the right methodology?

The Right Geography

The regulator concentrated on two things in the observation on the ‘development country’ equity classification. First of all, the regulator wondered about the large proportion of the portfolio in this specific category. They thought it might be inaccurate. Secondly, the regulator thought that other classifications such as a European stock index might be better. They were not convinced that the development country-index was prudent enough. They specifically named one European stock-index as possibly more prudent, ie. having a bigger effect than the development country-index.

We had to respond to the two aspects the regulator had put forward. There was the doubt about the classifications and the prudence of the calculations. Brad took the lead in the answers on the equity risks. In his previous job, Brad had worked on the creation of the equity risks. Brad gave me the task to find an answer.

He gave me some pointers on how I could respond to the second part of the observation. I should compare the two different stock-indexes and their effects on the equity values, the shocks. Brad thought that the development countries had a bigger shock than the European stock-index. I agreed intuitively. He gave me the shocks of the current development country-index risk factor. For the European stock index, I had to find multiple years of data and re-create their shocks. I would then compare the European stock index’s shocks to the development index’s.

Brad also gave me another task, to rebuke the first part of the regulator’s observation. Did we really have such a large stock portfolio in development countries? Brad told me to be efficient, to look at the largest sums. I had to look at one of the largest accounting entity. Then, I had to find the stock locations of the most pertinent group of equity. If I could say the most substantial part of the related investments found itself in development countries, we could refute the regulator’s observation.

Why did I not have to look at the whole portfolio? Because the smaller investments would not change the capital requirement as much as the large ones. Of course, for completeness, the full portfolio needed investigation. However, our goal had nothing to do with giving a complete picture. The risk managers in Insurance Company V also had time constraints. They could not look at all

small details. The focus lay on the relevant aspects of the capital requirement model. And the large investments themselves had that relevance. Their changes in value could directly impact the capital requirements for the accounting entity. The smaller investments had less impact and were less relevant.

I looked into the geographical location of the stocks. I first looked at the location of the most pertinent group of investments (the largest 60% of investments). In the end I had the time to look at the full 100%. I checked if the investments indeed related to a development country. By scrutinising the origin of the stock, we could easily counter the regulator's observation. It turned out that the largest part of the stocks indexed as development country risk were indeed based in these countries.

Thus, I refuted the first part of the regulator's doubt. That also meant I had mended the hole the regulator had poked in the health of the organisation. That left the second aspect of the observation, the prudence of the 'development' stock-index opposed to the European stock-index. This task was a more difficult. We only had the data of the 'development' stock-index shocks. Therefore, I had to recreate them but I did not have access to the capital requirement model itself.

Choosing a Distribution

For the approximations of the shocks, I used excel. The data came from a couple of years of the European Stock index. I had to make this comparable to the shocks of the 'development' stock index. Brad and I decided to use a standard distribution function that looked like the European stock index. When you establish a distribution, such as the normal, Chi-square or the Student-t distribution, you have a discretionary power. The data, in this case the European stock-index, never completely fits a pre-defined probability distribution. The stock-index resembled multiple distribution functions. It could have been like a normal distribution, as well as Student-t distributions with different degrees of freedoms.

So we had to make a choice between the different distribution functions. Brad and me decided to stick to Student-t. We had two reasons for this, based on what we saw as a coherent and prudent calculation. First of all, the Student-t distribution was used in the rest of the model distributions. Secondly, the

Student-t distribution has thicker tails. That is a statistical way to say that extreme values are more likely to occur. Thus, we argued that the Student-t distribution (especially with low degrees of freedoms) was the more prudent choice.

Besides the degrees of freedom, two variables mattered in these distributions. The mean and the variance shaped the form of the distribution. With the help of the observed mean and variance of the European stock-index, we could recreate values of a related distribution. We could not determine the degrees of freedom. What we could and did do, was to simulate multiple Student-t distributions with different degrees of freedoms.

Simulations are not very difficult but not as straightforward as one might think. In order to have a good approximation, you need to have a lot of points. So, I recreated a couple of hundred points for multiple student t distributions. Then, with the mean and the variance I recalculated a distribution of the European stock index. To make sure that the simulated distributions resembled the European stock index, we made graphs and plotted the different vectors next to one another. We found multiple Student-t distributions that resembled the data of the European stock-index.

Brad and I took the extreme probabilities of these simulated distributions. We compared them to the shocks of the development countries' stock-index. In the comparison, we could show that the development country index had higher shocks than the European stock-index. We wanted the 'development' stock-index to have higher shocks. Higher shocks meant that it was the prudent choice. That way we could debunk the second part of the regulators observation about the 'development' index' prudence.

Multiple Student-t distributions, with multiple degrees of freedom, resembled the European stock index. And, the less degrees of freedom, the higher the shocks. Thus, some of these distributions showed higher shocks than the ones calculated the capital requirement model calculated. The European based stock-index distributions with low degrees of freedom were more prudent than the development index's shock. What to do?

We wanted to show that the model worked and that the regulator's observation was wrong. The theoretical calculation of the distribution gave us a margin

to move. None of the distributions we had calculated were wrong, they all approximated the European stock index. We wanted to give the regulator an image of a prudent choice. So we chose a couple of distributions with higher degrees of freedom. They showed lower shocks than the ones from the development country index. The statistics did not give a certain answer. We used the malleability to our advantage. We had the resources to do so since we could make the choice between different distributions. So we framed our message to the regulators with help of the malleability of the calculations.

The regulator received two answers in the end, one short and a more elaborate one. Both of them debunked their observations on the ‘development’ stock-index. The first message told them shortly that most of the stock in the portfolio were actually from development countries. We added that our calculations showed that the development index shower was more prudent. We had thus conveyed our objections to their critiques.

Brad, Alice and Vicky send a second answer a month later. They send a document with the research behind it. I had started the first version and Vicky and Brad had edited it afterwards. The two created a document that gave the same two messages, concluding that the choice for the development index was the right ones. The document did not include the distributions with the lower degrees of freedom. The final document showed an analysis that reasoned for the choice of the ‘development’ stock-index. It was better than the European stock-index in both classification and prudence.

Things could of course have been very different. I can poke holes in both the observations of the regulators and model choices. For example, why these stock-indexes and not another one? I could also contest the regulator’s argument put in front of us. They used the concept of prudence. This concept relates to Solvency I, not Solvency II. SII deliberately left behind prudence for accuracy in risk calculations.

Those contestations did not matter in the game of resources. The regulator could tell us that something was wrong. We, the risk managers at Insurance Company V, then had to make sure that they saw it was right. They could declare a state of disease of the company, with high capital costs, fines or an invalidated capital requirement model. We had to convince the regulators that

was not necessary.

This thesis is not about what could have happened, it is about what happened. And the observations of the regulators criticised the model. With it, the risk managers saw their body of health turn into a body of disease. We still had a card up our sleeves, we could adapt the knowledge we presented to the regulator. Maybe with that representation of the organisation, we could convince them to declare a body of health. So we reasoned with the calculations to show the model was right. In this case, we chose the distribution that showed the model's risk factor were prudent. We could do this because the statistical methods were malleable. This small aspect of the model became right again, at least to the outsiders.

7.4 Conclusion

The cases above all show the internal resources the risk managers used to create the right image to the outside of the organisations. Where the risk managers could do so, the outside communications contained clarity. Both shareholders and regulators needed to see a good organisation. For the shareholders, the lack of disease would be lowered the cost of capital. The risk managers tried to show the rightness of the internal capital requirement model to the regulators.

On the inside, the vision is messier. The risk managers dealt with a body of illness. Their numbers did not fit, methodologies were unclear and internal conflicts existed between departments. They could not solve these problems for the internal world. They did not have the resources to do so. They did have the resources to create an external image.

The outsiders with resources decided if the organisation was healthy or diseased. They did this, partially, with information created by the risk managers on the inside. So to avoid this state of disease, the risk managers transformed their body of illness into what the outsiders might think of as healthy.

The risk managers at Insurance Company V had the regulator as focal point of the body of health. They mainly interacted with this outside actor that could hurt them through fines, extra regulation and by, in the extreme, de-licensing. The risk managers saw ambiguity in their own numbers. In the PLA they did

not know how much capital had to be explained by the model. In the answers to the regulator, they could choose between multiple distributions.

Even though the risk managers had muddy numbers, they made sure the message to the outside was relatively clear. They had to show that the organisation dealt with the risks wisely, as the regulator requested. They thus had to perform the right knowledge for a body of health.

The shareholders were never far away. The model itself had to be approved by the regulator so that the shareholders would be happy. Besides that, in some extreme situations, the risk managers directly worked on knowledge that focused them. In the case of the non-life accounting entity, Brad stepped in to resolve a possible lack of solvency. I gave a second example with the pension funds that costed a lot of regulatory required capital. The risk managers' reassessment to another capital regime significantly diminished the capital requirements. The costs for capital would thus be lower and better for the shareholders.

In this chapter, I have described and analysed the risk output. For Insurance Company V, the risk managers' assessments did not necessarily resemble the internal situation. Within wide constraints of knowledge standards, the risk managers made their internal assessments into an outside assessment of health. However, what happens in the case of disease? If the outside world knows about the difficulties of the organisation, and therefore its body of disease, what do the risk managers do then? I go into the case of Bank F in the next chapter. There, the body of disease was always present.

Chapter 8

Body of Health or Body of Disease?

Bank F was known to be a problematic bank. They had defaulted, or almost defaulted, multiple times. The organisation still existed but had changed shareholders in between bankruptcies. First, they had been a publicly traded company. Then, after one of the defaults, the states had taken ownership of the organisation. The moment the states had stepped in, Bank F had encountered its true default and therefore also its body of disease. It had not died yet but was about to. All actors in and outside of the organisation knew that it had serious trouble.

Ever since the states were the owners, the organisation had to follow a new set of external constraints. They did not have to maximise profits any more, as had been the case when it was publicly traded. They did, however, have to keep the new owner happy. For example, they had to minimise losses. They had also new types of rules imposed by the states on how to fund themselves. So Bank F's owners could also declare the body of health, they just did so differently from normal shareholders.

The risk managers worked within the constraints set by the states. They were a key factor in keeping the bank alive, even though it had already caught multiple diseases. The risk managers did not, as shown in chapter 5, change the investment decisions. They did not create a new internal situation with less trouble. The risk managers did not have the resources to do so. They did change the way things were presented to two outsiders that could do harm to the organisation. The risk managers tried to give both the regulator and the state a

(relatively) healthy image of the risk assessments.

For example, they made sure they answered regulatory requests such the regulator nor the states would see more problems. They also made sure the organisation's needs fit within the frame stipulated by the states. They did their best to give information the two parties could use to declare a body of health.

At the same time, the possibility of another disease never left. The risk managers knew that some of their assessments could lead to another default or unhappy regulators. They tried to avoid the situation where a resourceful outsiders would declare a disease but they could not always prevent it. This lack of control came on the one hand from the body of illness that the risk managers had in front of them. The internal situation of values and calculations restricted the risk managers in their attainment of the body of health. On the other hand, the outsiders could also act in ways that the risk managers did not expect leading to a body of disease out of the insiders' influence.

A bank's body of illness relates to a bankruptcy and in two major aspects, the value of its assets and the available liquidity.¹ First of all, liquidity is about the following question: Can the bank still pay my bills? In case the answer is yes, the bank is liquid and stays alive. If no, the creditor can declare bankruptcy, in theory. Secondly, asset values relate to the balance sheet of the organisation. Does the bank have enough value compared to total debt? If the answer is yes, there is no bankruptcy and the bank stays alive. If the answer is no, the bank can default. However, it is not necessarily the death of the organisation. People on the inside or owners might be able to convince outsiders to either put in liquidity or to add value. If they cannot, then default might happen.

The default and the body of disease of Bank F deals with both liquidity needs and asset values. Thus, the risk managers worked on both of these aspects. In this chapter, I go into the body of disease and the work of the risk managers to maintain some healthy aspects. First of all, I describe Bank F's body of disease. What was exactly wrong with Bank F? Afterwards, I treat the liquidity and the asset problems separately.

¹See Davydenko (2012) for a discussion of both value and liquidity for defaults of firms in general

8.1 The Default

Bank F had a disease ever since Lehmann Brothers had defaulted in 2008. Before this milestone in the autumn of 2008, Bank F had seemed in great shape. Over a dozen of years, they had expanded exponentially. Even after the first signs of trouble in the subordinate debt market in 2007, they had continued to grow. Some risk managers told me that Bank F had even helped out a neighbouring bank before Lehman's default. Thus, Bank F had shown an great body of health. The situation changed quickly. With Lehmann's default, Bank F also became a diseased bank.

Why did the tables turn so suddenly on Bank F? Other than a savings bank, Bank F depended heavily on loans from other banks. It received almost all of its liquidity from the so-called inter-banking market. In order to pay its ongoing bills, from loan repayments to wages, Bank F needed money from its banking peers. When Lehmann Brothers defaulted, the market dried up. Bank F lost its money supply. In order to pay back its bills, Bank F asked for help from states which they received. However, with the financial aide, they lost their status of a healthy bank.

Lehmann's default had led to a chain of financial problems for Bank F. The years following the first liquidity problems, Bank F's situation worsened. Not only did they have trouble finding liquidity, the problems also arose on other fronts. For example, some of the products on Bank Fs balance sheet, the bonds, decreased in value. The loss of value was so big that their values endangered the viability of the bank as well.

The risk managers themselves had seen the transformation. Multiple risk managers told me nostalgically how Bank F had once been a 'Great Bank'. Not only did they have good memories of a prestigious organisation, they had always regarded the bank as very safe. To put it in the words of the body metaphor, the bank had been healthy. However, when Lehmann went down, the money supply dried up. As safe as the bank had seemed before the crisis, as problematic it was afterwards. Trevor had seen the process while working as a risk manager on the trading floor. He summarised the situation eloquently 'Every time someone had gas around the world, we felt it'. Where the bank had seemed risk free before

the crisis of 2008, it only accumulated problems afterwards.

The abrupt shift from working for a good bank to working for a bad bank had been traumatic for the people working there. The problems one anticipates and the ones that happen do not always correspond. The risks the risk managers had identified before Lehmann's fall and the ones identified afterwards did not correspond either. The financial risks and problems that Bank F had to deal with went beyond the expected.

For a couple of years after Lehmann's default, Bank F continued on its own. They could do so only with the help of a set of European states and the national and European central banks. The central banks gave Bank F specific liquidity. They had done the same for other banks in difficulty in the Eurozone. The respective European States had given guarantees to the creditors of Bank F. If they would default and go into liquidation, the state guaranteed to reimburse the creditors.

Even with the states' and central bank's help, problems kept hitting Bank F. Amongst others, Detroit's default, the Spanish Housing Crisis and the Greek crisis created trouble for the portfolio. Since Bank F already had trouble, these continuous losses piled up on top of an already bad situation. The organisation just seemed to have collect problems and all its activities were affected.

For a couple of years, the people in Bank F ran from crisis to crisis. At least, those working on the organisational knowledge did. Those in the front office working on investments were either fired or did not have work. They mainly sat in their offices and twiddled their thumbs. On the other hand, the risk managers and the people in management had to find ways to handle the problems that came at them. The complete falling away of certain bond markets, for example, meant that choices had to be made about which bonds to sell. Then, choices had to be made in how to revalue the remaining assets. The risk managers handled these problems. At the same time, the interest rate situation deteriorated so much that the collateral required for the derivatives increased enormously. The loan portfolio came into trouble as well. Then there were lawsuits the bank had to deal with.

Robert, former risk manager of both bond values and liquidity at Bank F, had learned one thing from these years. Once things go bad, all the bad things

come together. The liquidity needs led to an extreme vulnerability to other types of negative events.

Multiple risk managers told me these years felt as a continuous stream of trouble. They became used to mending urgent financial problems. At the same time, structural changes did not have the priority. The risk managers had taken a resigned attitude towards the negative events they experienced. They had dealt with this for multiple years. Urgent problems had become the new normal.

During the fieldwork for example, the ECB published results of one of its financial sector risk assessments. I had been quite nervous about the possible outcome but seemed to be the only one in MRM. David, who worked on the bond valuations, explained to me that if things would go wrong, we would see the managers run around the hallways, stressed out. They always did so when things were going bad. However, he showed no interest in the matter, neither did any other risk manager outside of a hierarchy position. They knew the situation would not change with a failure or pass at the stress test. They would still have to answer requests for assessments, data and methodology.

Bank F had officially bankrupted during the Eurocrisis. The people in the organisation did not always have a clear idea on why the final default happened exactly. Some talked about the different European sovereign bonds that had lost value. Others saw the lack of liquidity as the final cause. Some discussed the final default as a political question.

The final blow to its independence came during the Eurocrisis when Bank F had encountered difficulties due to the low European sovereign bond values. Bank F had wanted the states to step in again. However, the different European states had encountered political pressure to help out only with a punishment. So the states decided they would only invest with a nationalisation. For Bank F, the nationalisation was the only option to remain alive. In the end, at one point in time during the Eurocrisis, Bank F needed the states' help and did not get it the way they expected. Bank F defaulted and the states took over. They restructured the organisation and Bank F was left behind to die slowly.

Gerard had worked in the department that dealt with the liquidity needs (Asset and Liability Management, ALM) when the final default happened. He mentioned that the straw that broke the camel's back had been another bank in

the interbanking market who wanted their loan payments.²

The lack of creditors' flexibility surprised me. In my experience in the financial world, you could always renegotiate a loan. A default of payment never meant a direct default, especially between actors who had multi-billion euro balance sheets. When the amount is large and the lender a long-standing client, you can renegotiate; discussing moment of payment, interest rate or final amount. The interdependency between creditor and debtor makes that possible. However, Gerald explained to me the sacrality of the interbanking market. You always paid back loans on-time in this market. You could not renegotiate the terms.

Of my participants, Gerard had been closest to the moment of default. He had probably seen it or at least been in an adjacent office when the creditor had called for the default. At the same time, the others had interpreted the situation in the right way as well. All aspects had come together and led to the nationalisation. Bank F had needed liquidity and not obtained it, the assets had lost value and the states could not help another time. The risk managers either saw an outsider who had declared a body of disease, such as the creditor or the states. Some invoked the inside knowledge and lack of change to explain the default, they saw a body of illness that had not become a robust body. They saw for example the liquidity needs or the asset values that declined.

Even though this multitude of visions existed, three aspects of the default were clear. First of all, the new owners of the bank were the states. The outside pressure thus shifted from the general shareholders through the public listing to a specific set of actors, the EU states. Secondly, the bank had difficulties to obtain liquidity through the interbanking market. Thirdly, the assets on the books did not hold the value from before the crisis. Both regulators and new owners knew of the last two situations.

The European states had thus finally decided that Bank F could not be cured. They had declared its disease. However, they could not just let it die. The European states depended on Bank F to remain alive. They nationalised the organisation but let it die slowly. As if Bank F lay in coma on the intensive care unit.

²The English language sadly lacks the precise word for this moment between cause and event. In German it would be *Anleitung*, in Dutch *aanleiding*

Why did the states keep Bank F alive? The states had multiple reasons to not directly liquidate Bank F. First of all, the death of Bank F would mean an enormous loss of jobs. In the respective countries, mass job losses would lead to political unrest. This was especially a reason at the beginning of the crisis. Secondly, a liquidation would affect other banks and the banking system as a whole.

The situation lasted long enough for the states' finances to become intertwined with the bank. The state guarantees became too large. Losing them would have meant significant write-offs in the national accounts. An important element here is that a lot of the assets on Bank F's book would be worth more at their maturity date (when the contract ended) than if they had to be sold immediately. The states expected to lose the least amount of money by letting the bankers at Bank F take care of the assets. They kept Bank F alive, under certain conditions.

Two outsiders mattered for the risk managers, regulators and owners. The two would sometimes merge. When the owners wanted to know more about Bank F's state, they could pass through the regulator. The regulators became the intermediaries for the owners. Regulation and ownership interconnected. Whenever regulation was implemented, the regulator came directly into play, either European or national. Whenever the owners wanted something, either a state or a national regulator would be the interlocutors. Both helped to create Bank F's body of health by giving liquidity.

In order to keep the owners and regulators happy, Bank F was not supposed to go under again. Valery, head of the MRM team, had pointed out to me that the objective became to lose the least money possible, rather than make the most profit. Without the states, Bank F could not gather enough liquidity. Nor could they counter the value changes in their portfolio. Thus, the states' help kept up a form of a body of health. At the same time, outsiders knew that Bank F had a body of disease without them. Thus, Bank F bounced back and forth between body of health and body of disease.

The risk managers were crucial to the maintenance of the state of the organisation. They created the transition from inside information to outside representation. Ever since Bank F's problems had started, there had been multiple firing

rounds. Trevor, head of the calculation, described the risk managers' positions in those redundancy plans: 'half of the risk management department had applied for the plan to leave and take a severance package, but general management had refused them, stating that they could not lose the risk managers.' All other departments, including the front office, had lost most of their workforce. The risk managers thus had to stay to take care of the presentation of Bank F's state to the new owners and the regulators.

The risk managers did not seem to be able to counter the body of illness the investments and liquidity strategy had created. Only if the regulators threatened a body of disease, the risk managers had some influence. Valery, head of MRM (Market Risk Management), acknowledged so. More importantly, however, was to keep the whiff of a body of health to the regulators and the states.

The in-between situation of disease and health had consequences for the internal knowledge production. The risk managers translated the internal calculations, numbers and computer systems into outside knowledge. Yet these systems had hardly seen technical updates since the Lehmann's fall. Other, healthy, banks had moved on from the crisis, invested in database management and changed the calculations of the products on their books. Bank F had handled crisis after crisis, outside attacks on the body of health. They had not had time or money to invest in up-to-date IT-systems or methodologies. Even more so than in Insurance Company V, the risk managers dealt with an extremely messy body of illness. They had old and unadjusted systems in a changing market environment.

Illness on the Inside

The internal knowledge and resources on the state of the organisation resembled a strong illness. I can best illustrate the risk managers' difficulties with the implementation of a new discounting rate, the overnight index swapped or OIS. This interest rate was a key variable for the financial products' valuations at Bank F.

The risk managers had limited resources. They did not have the techniques nor the information to keep up with market standards. When the interbanking

market fell away, value calculations changed for financial products. Money had become a scarcity, impacting interest rates calculations.

Before the liquidity problems started, the standard interest rate had either been a euribor (for products in euros) or Libor (for dollar and pound sterling products) short-term rate, for example the 3-month euribor. The risk managers called this the BOR rate. However, the liquidity problems created a difference in price between short and long-term money. A three month loan became more expensive than an overnight loan. So to reflect the daily value of the financial products, the interest rate variable had to change as well. Here, the Overnight Index Swapped, OIS, entered the stage.

Directly after the liquidity problems began, the leading banks had started to use new calculations of derivative values based on the OIS. Michael and Freddy, now at Bank F's MRM, had worked at Bank X in that period. Freddy told me how he had worked on the new model with the OIS even before the fall of Lehmann. At Bank X, they had implemented the new interest rates afterwards. Michael told me how one of the largest American investment banks started calling different trading rooms for quotes. They wanted to test the other banks to see who understood the new situation as well. Some banks had adapted quickly, most had not.

Bank F kept using BOR for many years, never fully adopting the new calculations. They had not had the means. During the first years of the trouble, their priorities had lain with surviving. However, the OIS had become the new normal. To create acceptable valuations for counterparties or regulators, they had to adopt the new interest rate standard. The outsiders had pressured the Bank F to change its valuations, be it indirectly. After a couple of years of resisting, they finally succumbed to the pressure. A project started to change the valuations from a BOR interest rate to an OIS rate.

Before I entered Bank F, the project had already been going on for a couple of years. To have a working OIS rate, Bank F needed to implement changes all over the organisation. The people in the project had to adapt all derivative values, all bond valuations and therefore also the balance sheet itself. Consequently, the whole information system required modifications. The market data calculations, the derivative models and the bookkeeping systems needed to change.

The Group level had to change the calculations and computer systems and so did the different subsidiaries. The local entities all had different computer programs which required their own specific changes. All in all, the project impacted the whole organisation, from valuations to computer systems, in all legal entities.

The OIS/BOR subject came up in almost all the risk management meetings. Every time a new point of calculation or classification required modification. The process was highly complex, complicated and chaotic. Here, Bank F had an internal body of illness. It had an unease in all nooks and crannies of the organisation to adapt to the new standards.

The risk management and calculation department would implement the new OIS rates at the end of my fieldwork. Bank F finally managed to get its systems in order, more than six years since the market's interest rate changes. Or at least, the risk managers thought so. When the calculation department had implemented the new calculations, the computer systems did not cooperate. The numbers could not be calculated, the software failed.

The unease went beyond the body of illness. The OIS difficulties affected the production of knowledge for the outsiders. The calculation department had thought it wise to calculate the first OIS based values while producing one of the quarterly reports. However, since the calculations had not gone as planned, the calculation department had not managed to create the quarterly figures. The calculation department found a solution a week later. At least Bank F now had an OIS valuation.

Bank F had implemented the OIS to show outsiders the right image. The new interest rate would follow market standards. However, the underlying body of illness had made it almost impossible to implement the new standard.

The risk managers encountered many difficulties in their calculations trying to keep to external standards. Even so, they had to work on the knowledge of the organisation. When regulators and owners could have further negative impact on the organisation, the risk managers tried to find solutions. The risk managers worked in a sense of illness that they tried to present as healthy.

Two aspects mattered so that Bank F maintained some health. On the one hand, they needed liquidity to finance the different contractual engagements, on

the other they needed good valuations. I first discuss the liquidity situation with the help of the liquidity and balance sheet risk team. Afterwards, I go into the second aspect, the valuations.

8.2 Managing Liquidity

The risk managers in the liquidity and balance sheet team (LBS) kept their eye on the liquidity situation of Bank F, in a relatively cooperative relationship with the liquidity team of the finance department. With the help of projections and reports, the two teams tried to make sure the bank would not default due to its liquidity needs.

The liquidity situation involved multiple outsiders, who all had the resources to declare Bank F more diseased. The states and the regulators all looked at the liquidity situation. The risk managers and finance department gave them reports on the subject. Besides the main outsiders, the liquidity needs depended on actors who could provide cash, other banks in the interbanking market.

The two teams, risk and finance, tried their best to show an appetizing situation to the resourceful outsiders. They did so within the possibilities of the regulatory requirements. With the room they had, they tried to have enough liquidity so that the outsiders would not declare more diseases. For example, other banks could call for another default in case of non-payment. The states could break up the organisation and sell it in parts.

Who did what exactly in the appeasement of the liquidity situation? The finance division decided upon which loan would be taken when. They also created the knowledge about what those requirements would be. The calculation teams (finance division) calculated the amounts that the bank had, the people in asset and liquidity management calculated the future needs. The risk managers looked at regulatory requirements. They especially focused on the stressed liquidity needs. The risk managers took a expectable but extreme parameter. They then calculated the stress' impact on the balance sheet.

During the fieldwork, two major events happened with regard to liquidity. One was the collateral problems. I described the topic in-depth in the previous

chapters.³ The second event came directly from the previous defaults. The regulator had allowed for a very specific liquidity construction to keep Bank F alive.

Bank F had found a way to obtain extra liquidity through internal transactions, they called this mechanism the ‘reserves of bonds’. They had received a derogation from the regulators for this. The regulator, with the derogation, had declared a body of health there were they would normally have declared a body of disease. However, during the fieldwork, the exemption to the rules ended. The regulators had put pressure on Bank F to step out of it. We did not know exactly what would happen if we did not do this. However, the regulator and states had the resources to, for example, cut-up the organisation. So, we had to get out of the ‘reserve of bonds’ mechanism. With that, we had to find multiple billions on the interbanking market.

Let me first describe more precisely the work of the LSB team and the finance division. Afterwards I go into the question of the ‘reserve of bonds’.

Creating the knowledge on Bank F’s liquidity situation

In the LBS team, Jacob and Valentin worked on the overall balance sheet situation. They focused on the multiple reports the regulators requested and the implementation of the regulatory requirements linked to liquidity. The latter were the net stable funding ratio (NSFR) and the LCR (Liquidity Coverage Ratio). They also worked on the weekly and monthly reports to the regulator.

Part of the communications related to the calculations of the liquidity needs. The finance division calculated two types of numbers. First of all, they determined the amount of value Bank F had each month, its stock. Secondly, they projected the future needs of liquidity, the flows. Two different teams carried out these calculations. The calculation department calculated the stock. The asset and liquidity management team (ALM) created the flow projections. They used Bank F’s stock as input as well as hypotheses of future payments.

The risk department took these calculations of the financial division, both stock and flows. Valentin and Jacob would stress the data had relatively crude pre-determined hypotheses. For example, they took the complete loan portfolio

³See chapter 4, section 4 and chapter 5, section 4 subsection 2

and approximate that the average duration of the loans would be another seven years with a three year interest rate. Of course, this was not the exact interest rate that they received for these loans nor was it the exact duration of the loans. However, it approximated the income flow and that was good enough.

The people in the ALM team calculated the different projections for the development of the liquidity needs as well as the balance sheet changes. Stephanie worked there. She took the time to explain her work to me in front of her computer. She created the files with the future needs in liquidity. She collected the data from the calculation department without questioning it. Her responsibility lay with the flows, the calculation department did the stocks. She would then add this to a large excel file. In it, known in- and outflows as well as hypothesis about the future situation came together.

Stephanie did not feel the need to know the exact composition of the numbers in front of her. Her colleague Blake had told me the lack of interest in the accuracy of the numbers. What mattered was how they would effect the future liquidity needs. The relevance lay in the overall picture, not in the accuracy of the numbers.

When Stephanie showed me the excel file for the projections, she added 'you will laugh'. An excel file full of small rules for each of the balance sheet lines opened in front of me. It held an iteration of lines that seemed relatively incoherent. This was why Stephanie pointed out that I would laugh when seeing it. The file was neither high-tech nor very sophisticated, it did its job. It created numbers that projected the liquidity needs. Even though the projections approximated the future cash flows, they were, apparently, carried out in an acceptable way. In Bank F, the calculations just did not have the sophistication one would expect.

Jacob in the LSB team would check Stephanie's projections. He would look at two things. First of all, he searched for incoherences in the numbers. They wanted to know if the results had possible flaws. Secondly, he would check if the data fulfilled the regulatory and owners' requirements.

To check the coherence of the data, Jacob did not go into all the underlying calculations. That was too much work. He looked at large changes in the data For example, he checked if the bond values of the previous week were not significantly

lower from the ones of that week. If he saw a large change in the data, he would start digging. He would go into the underlying files to see if he could explain the difference. For example, an important market event could change the values. Sometimes, Jacob could not find a logical explanation. In such a case, he would contact the people in the finance division. They would give him either a new explanation or new set of numbers.

Jacob would thus check the data not for falsehoods but for coherence. He had to be able to explain the data to outsiders. He expected outsiders to ask questions when they saw large changes. As long as he could defend these changes, he could communicate a healthy vision of the organisation.

Jacob also checked if the liquidity projections followed the owners' requirements. For example, the owners had requested limits to the liquidity outflow. They did not want that Bank F had outflows exceeding x million euros per week. The owners had good reason to ask for such a limit. Namely, if Bank F could not pay, the states had to enact their guarantees. That meant that they would have to cough up the cash. And even though states generally have deep pockets, they can also have liquidity problems. They did not want to have to put forward an unexpected large amount of money when Bank F would have difficulties again.

However, sometimes the outflows for the coming weeks did surpass the maximum amount. If so, Jacob would try to find a reason why the higher outflows would not impact the states. For example, the payment could be an internal one, going from the head office to the subsidiary or vice-versa. That would mean the states would not have to put forward the money in case of default. Jacob saw an illness but he did not try to prevent the transaction. He would create knowledge that the states might accept as healthy.

Outsiders' Constraints

The states and regulators were not the only outside actors related to Bank F's liquidity. In order to have enough cash, Bank F needed to find outside partners. They mainly did so in the interbanking market. By signing short-term loans, they dependent on these actors. If they could not obtain the money, Bank F would not be able to pay their bills. Consequently, these creditors could invoke

a body of disease.

Liquidity was less malleable than the risk measures or valuations. It directly related to expectations of repayment and an agreement regarding cash payments by an outsider. Thus, the risk managers could not find the boundaries of knowledge standards to portray the right image of the organisation. If Bank F did not have enough cash to pay a creditor, the latter could call for bankruptcy. The outsiders' resources were very present in the case of liquidity.

Bank F already had that body of disease. They had already received help from the state and the central bank outside of these market relations. The regulators had a relatively flexible attitude to Bank F's liquidity situation. They accepted Bank F had significant problems. They did not want to aggravate the situation. The organisation had encountered the regulators' flexibility in multiple instances. First of all, the regulators allowed leeway on the liquidity risk measures as LCR and NSFR. Secondly, Bank F had the 'reserves of bonds' construction.

During my time at the organisation, that leeway decreased. The regulators had the legal power to give Bank F derogations but could also take away the exemption.

First of all, let's look at the specifics of the room the regulator allowed Bank F in its liquidity situation. The LCR and the NSFR had a specific norm attached to them. The regulators had determined them based on the Basel Committee's publications on the two ratios (BIS, 2013).

Valentin and Jacob knew that the Bank F could not fulfil the requirements as set by the Basel Committee, lacking long-term funding. The regulators agreed tacitly to an exemption to the rules for Bank F. At the same time, they still wanted the risk managers to report the NSFR and LCR. Since the regulators knew that Bank F could not obtain long-term funding, they allowed the breach of the official rules. Even though they could have punished Bank F for this, they did not. The regulators thus declared a partial body of health beyond the official rules.

At the same time, the regulators and the states had also stopped some of the friendly derogations to Bank F. This related both to the usage of the 'reserve of bonds' as well as the usage of mechanisms of last resorts, the Emergency Liquidity Arrangements (ELA).

The Malleability of Liquidity: ELA and 'Reserve of Bonds'

Lets first go into the 'reserve of bonds'. The mechanism worked as follows: Bank F issued bonds that its local subsidiaries then bought. Since Bank F fully owned the subsidiaries, Bank F did not create any money or value. However, the central bank had given Bank F a derogatory of the rules. The subsidiary could use these bonds as a guarantee for funding by the ECB. With the help of one of the ECB's funding measures, a subsidiary would give the bonds to the ECB. In return, they would receive cash. This way, Bank F had created money where there had previously been none.

The derogation ended during the fieldwork. The subsidiaries could not swap the bonds for cash anymore at the central bank. The regulators did not seem inclined to extend this form of money creation. So if Bank F wanted to keep some form of health through liquidity, they needed to obtain the money of the 'reserve of bonds' on the market. The regulators had stopped their lenience, tightening their declaration of the body of health.

Then there was the Emergency Liquidity Arrangement (ELA). ELA is the ECB's possibility to obtain cash quickly so that a bank does not default due to a lack of liquidity. Bank F had used the ELA of the ECB to obtain liquidity and fulfil its engagements before its default. However, once the states had taken over, they decided that Bank F could not go to ELA anymore. The states had lost some of their lenient attitude.

A stigma existed between banks on using ELA, this specific ECB facility. Using this liquidity possibility indicated to other banks that as a bank you needed money and could not obtain it through the interbanking market. In one of the first interviews, the head of a subsidiary ALM department at Bank G told me they could not use ELA or any other of the ECB's liquidity facilities. The outside world saw Bank G as a healthy bank. If they would use the ECB's possibilities, they would show that they could not obtain the money in the market. It would show a sign of disease. Going to the ECB for liquidity would deteriorate their market position, maybe even lead to more costs on the interbanking market. Thus, Bank G did not obtain their liquidity through the ECB.

Bank F did not have the same level of health as Bank G. They had previously

preferred to go to the ECB than to fully default on their creditors. However, once the states had stepped in, they wanted Bank F to remain out of trouble. Requiring the ECB's liquidity arrangements indicated a disease. So the states had said that they could not go to the ECB anymore. The people in Bank F could thus not use the ELA mechanism anymore. They could only do so if they wanted to breach the agreement they had with their owners.

At the end of my internship, the traders who obtained the liquidity for Bank F found themselves in a difficult situation. They could hardly obtain enough cash on the interbanking markets. The liquidity situation had worsened so much that they almost had to go to ELA.

Bank F, even with the state guarantee, encountered difficulties to obtain liquidity in the interbanking market. Other banks would not just lend them large amounts of money. However, at the end of my fieldwork, Bank F needed heaps of cash. The cash collateral situation had deteriorated, which meant they needed to put up more cash to their swap counterparties. On the other hand, Bank F had to get out of the 'reserve of bonds' mechanism and therefore lost a significant part of its cash. The extra need for cash and its loss meant that Bank F needed even more liquidity from the interbanking market. That did not put Bank F in a comfortable situation, the opposite.

So while the front office presented its plans in how to obtain the liquidity, the risk managers had concerns. They did not express this very harshly to the front office. However, they did discuss it amongst themselves. One of the main things they put forward in different instances was that we could not go to the central bank again. Asking for ELA would have negative consequences, breaking the agreement with the bank's owners. The states might step in another time.

In contrast to the risk managers, the people in ALM as well as the front office were less concerned. They seemed to see the liquidity of ELA as an option. The risk managers did not want to go against the will of the states. This difference in acceptability of actions reflects their roles in the organisation. The finance department had to keep the organisation alive financially. The risk managers also wanted to have a stable financial situation and were concerned about the outside pressure beyond the financial. They cared more about the knowledge presented to the owners. The risk managers feared the reaction of the owners

more than the finance department.

The risk managers were thus concerned about the liquidity body of health. The risk managers took one part of the calculations, the stresses and the regulatory calculations. The people in the finance division calculated the needs and the stocks. They also decided on how to handle future liquidity needs. All of these calculations worked towards a healthy representation of the liquidity. They would convey this knowledge to the states and the regulators. The last two could then decide if they would declare a body of health or disease.

In this case, risk managers could change numbers and measures. The calculation of these needs for liquidity were part of the body of illness. However, the liquidity provisions also depended on the interbanking market. Thus, the internal feeling of illness also depended on outsiders. To make a vision of health, the risk managers needed cooperation from the outsiders. The states and the regulators had shown the malleability of their regulations and direction between body of health and body of disease. At the same time, they could use their resources to declare the state of the organisation any way they wanted. Thus, the risk managers had to make sure they followed these outside requirements and stuck to a body of health.

8.3 Making the Asset Values

Not only the liquidity situation mattered for Bank F's health. The values on the balance sheet could mean solvency or insolvency. This was the second possible cause of default.

The creation of a good vision of assets relied less on outsiders than the liquidity. Internal models, calculations and accounting categorisations all created the values. The external accountants were the only direct outsiders who intervened. They gave some restrictions in the accounting standards. These rules gave less restrictions than the liquidity needs from the interbanking market. The assets values had more malleability to them.

The owners and regulators did want a solvent Bank F. The risk managers had many tools to make sure the values reflected their expectations.

Within MRM, the valuation team took care of the asset side of the balance

sheet. Pete managed the team. He mainly had experience with bond valuations. The team had two sides, one working on the bond values, the other on the derivatives.

I limit myself to the bond values. The bond values could fluctuate so much that they could lead to direct insolvency. The bonds thus could lead directly to default. I will discuss the derivative part of the team in the next chapter.

In the valuation team, two aspects required a body of health. First of all, the financial market assets were part of the balance sheet. Their worth therefore represented the financial viability of the organisation. Secondly, the regulator asked questions and needed answers. The risk managers in the valuation team also responded to the regulators. They tried to do so by showing acceptable risk calculations. They hoped that the regulator would then attribute a body of health. The valuations on the bond portfolio give a great example of how the team handled the internal and external difficulties.

Creating The Balance Sheet

The bond values had a significant impact on the state of Bank F. Bank F showed its financial health on its main medium of external communication, the balance sheet. The bonds made up a large part of the assets on that balance sheet. The proportion of bonds was so high that their valuations could determine solvency or insolvency. Not only did the bonds impact the viability of the bank, the categorisation of the bonds impacted the capital amounts. Outsiders found the impact of the bonds on the quarterly and annual results. The official accounting medium had the focus of the risk managers in the valuation team.

Pete told me that he very much enjoyed the impact of his work. Previously, he had worked in the front office. He had talked about impacts of hundreds of thousands euros on a daily basis as a trader. For most people hundreds of thousands of euros was already a lot of money. However, Pete had the opportunity to be a risk manager at Bank F. There, his choices could mean changes of millions and billions. He had impact on the whole financial state of the bank.

He was so proud of his work on the annual reporting that he came to my office to show it to me. We went through more than a dozen of pages of his

team's work on the previous year's annual report together. There, his team had worked on in this document. The annual report represented his work as a risk manager. He would defend it to the external accountants. Besides that, he saw the different market risks in this document.

However, Pete acknowledged that not everything was in there. They did not describe all problems that Bank F encountered in the annual report. He, his subordinates and people in accounting only presented some. They only showed what the external accountants needed to accept the annual report. That way they had an approved annual report as well as the least amount of visible trouble.

He gave the example of the bonds held in the category called Available for Sales (AfS). Part of these bonds impacted the equity (capital) as required under the international accounting rules (IFRS). There were thus two types of AfS bonds, those that changed the capital amounts and those that did not. They used the separation between the two to show the least negative image they could.

In the annual report, they only showed the possible negative impact to the equity amounts, not of the whole portfolio. If you would not know about the differentiation between the AfS bonds, you would not know what to look at. The formulation in the annual report read as if the possible negative impact came to the whole AfS portfolio. Yet the numbers only related to one part of it, the one that directly affected the reserves. The impact of the full AfS portfolio to the asset values was much higher.

Pete explained the wording and the background numbers to me. He said 'It is not cheating. It is written very clearly'. The formulation did indeed only refer to AfS' impact on the reserves. However, the writing had an ambiguity to it. The risk managers at Bank F kept to the rules since they respected the international accounting norms. They did not misrepresent the negative impact, just showed less of it. With that, they tried to obtain a body of health by outsiders. At the same time, the internal knowledge of the AfS showed an very bad situation, a clear illness the risk managers could not resolve.

The valuation team's risk managers did not only try to obtain a body of health for the bond values in the wording of the annual report. The bonds' categorisation as AfS fell within IFRS' fair value standards. The international accounting rules showed leniency to the methods of valuation.

Internally Valuing Bonds

In the IFRS fair value accounting regulation, financial assets' values have to derive from market values. Due to the AfS categorisation, the bankers at Bank F did not have to take the daily basis. The fair value methodology allowed for multiple types of calculations.⁴ At Bank F, they had chosen for value calculations within level 3. In this level, the values come from an internally created model. After the crisis had broken out in 2008, the risk managers had made such a model for the bonds. Within IFRS' Level 3, they could internally control Bank F's bond values.

Not only did the risk managers control the values with the model. They also used it to direct the Other Comprehensive Income (OCI). This item does not influence the results directly but does impact the equity. This balance sheet item represents the AfS' part that influences the reserves, as discussed in the previous section. Its downward fluctuations could also default the organisation. It almost did, and would have if the values had not been based on an internal model. The internal model created a body of health which otherwise would have been a body of illness. Lydia dealt with the bond values in Pete's team.

For more than five years, the regulators had let the risk managers use an internal model. The calculations fit in one excel file. In it, the risk managers had not created a methodology that portrayed the right market values. Their model gave a favourable vision of the bonds. The outside representation of the bank's finances could still follow general accounting codes about financial health. Namely, with the model calculations, the OCI and the values would not bring negative equity on the balance sheet. Outsiders, such as the regulators but also counterparties and the states, did not have access to the knowledge on the dire internal state of the bonds. They did have access to the knowledge that showed the contrary. On the balance sheet, they could see a, relatively, good value.

The regulators had allowed Bank F to keep up this knowledge creation of the bonds for multiple years. They had given the balance sheet a bill of health and with that, the internal model. Thus, the internal model and its methodology show how far Bank F could go so that the regulators accepted their represen-

⁴In chapter 9 section 2, I go into the specific types of fair value possibilities.

tations as healthy. The risk managers in Bank F could go relatively far in the internal model. The regulators only objected to the model after a long period of use. One of the regulators had told Bank F that the model did not take enough market data into account.

Just before the fieldwork started, Bank F had migrated the valuations in level 3 (internal model) to level 1 (market based). The regulator had told Bank F that they should do so. The risk managers had not wanted the regulators to punish them. Consequently, they had followed the regulator's request and changed the methodology of the valuation. I will go into the changes from level 3 to 1 in the next chapter. Here, I show the usage of the internal model before the transition.

The internal model valuations fit in an excel file. Before the calculation department and the risk management had broken up, the risk managers had used the excel file to calculate the bond valuation. One of those calculators had been Lydia. After the reorganisation, the calculation department handled the bond data and the excel file. The MRM department, Lydia, would then look at the calculation department's calculations. She checked for incoherences, to see if they had calculated the values in the right way.

At Bank F, they could not value their bonds any more with the model. Nevertheless, the model is worthwhile discussing. It namely shows the possibilities the bankers had to obtain a body of health of the regulator.

The price of a bond generally comes from a calculation of the credit risk (spread) and a non-risk bond. With the spread relative to a non-risk bond, different bonds can be compared. The non-risk bond is, in most cases, a sovereign bond with a similar maturity. At Bank F, the model valuations also followed this procédé, with the final outcome a model value. The difficulty of the valuation lay in the determination of the credit risk.

When discussing bond valuations, the different participants would not always differentiate between value and spread since the two were inherently related. The outcome of the calculation was always a value. The risk managers, at the same time, focused on the calculations of the spread.

Lydia explained the calculations of the bond values extremely clearly to me. We sat together at her desk, in a larger office that she shared with three Valuation team colleagues. Her colleagues were not there. Behind her desk, in front of her

computer screen, Lydia walked me through the model's variables. She told me the outcome of the excel file was logical, one aspect followed the other. However, she did emphasise the importance of practice. One needed to have calculated the model values multiple times to truly understand which parameter influenced what.

The risk managers called the excel file's output the model values. Nevertheless, the calculations required some market data input. For each turn of the internal valuation model, the risk managers would obtain the latest changes of a well-known bond index. Data providers such as Bloomberg and Reuters provided it. The risk managers had made a macro that extracted the index values automatically.

Lydia told me that the bond index did not follow the variations of the market values. They were much smoother and gave higher values than the market values themselves. She did not think the index reflected the bond values well in an ideal world. However she told me that they had created the model to give stable bond values. The index helped to obtain that goal.

Besides the limited market data, the model also used three characteristics that depended on the bonds themselves. It used their credit rating, their maturity and their asset class. First of all, the rating came from a rating agency such as Moody's or Standard and Poor's. Secondly, the maturity was the length of the bond, the amount of years until the cash flows from the issuer would stop. The contract normally ended at the date of maturity. Thirdly, the asset class was the type of issuer the bond came from, such as a sovereign state or a corporate actor. If a bond would have the same three characteristics as another bond, the two would receive exactly the same.

The three bond characteristics did not directly determine the price. The risk managers had another matrix with prices. The model would pick the item in the matrix that corresponded to the asset class, rating and maturity of the bond. The matrix value and the market's bond index would then give the price of a bond.

The Secret File

The items in the matrix came from what Lydia called the 'secret file'. Just

after the crisis had hit Bank F, a quantitative credit risk modeller and the then head of market risk management had created the file.⁵ Her former boss had kept the file relatively hush-hush, as if it contained Bank F's most confidential information. Lydia and me laughed together about the seriousness of this name. Compared to the document on the screen in front of us, secret just seemed too much credit. We saw just another excel file with a set of numbers. The file did not give a high James Bond impression. It listed credit information.

The file that gave the matrix input had not been changed since its conception, six or seven years before my interview with Lydia. The makers had used knowledge standards from the credit risks to calculate a financial market object, the bonds. The file listed the basic credit risk information per rating. These were a known loss given default and a known probability of default. These two variables are standard credit risk measures. The loss given default tells you the amount of your investment you will lose if default happens. The probability of default gives the expected chance that your investment goes under.

The creators of the model had taken the data of the two credit risk variables from a regulator. On its publicly available website, they had taken the basic inputs for the loss given default and the probability of default for each rating. With this information per rating, the model did two or three linear calculations. In the end, a bond value came out per rating, maturity and asset class. As a last step, the bond-index slightly changed the values in the matrix.

The model's methodology had a legitimate feel to it. It took a regulatory data as its basis and adjusted by a market index. The model, however, followed the logic of credit risks, not market risks. While probability of default and loss given default are standard measures for bank credits, bonds normally have a different form of calculations. Their market values either come from their aggregate values of the bond's transactions or from similar data on related bonds. While the makers of the model thus used legitimate concepts to construct the new bond value, these credit-based theories did not correspond to the market value approach.

Why did Bank F use the internal valuation model if it did not stick to the

⁵See Carruthers (2014) for a description of policy process behind the allowance of the model values in the US

market value knowledge standards? Well, the model gave higher values for the AfS category bonds than the market. This had been the case at the start of the model as well as when it was abandoned. According to Lydia, the model values had been good for the bank. Other market risk managers as well as her bosses Pete and Valery had repeated this opinion to me. The model had kept the bank from showing too many OCI losses on the balance sheet.

The Value of the Model

The risk managers themselves did not think the model was a good thing. It did not represent the right value of the bonds. Besides that, it masked a low market value of the bonds. With that, the internal model was one of the illnesses of Bank F. The risk managers felt that the model did not fit a right calculation of bond values.

Nevertheless, the risk managers needed the model. They did not need it to create a robust, well-functioning organisation. The risk managers used the model to present the right value to the outside of the organisation. Had they stuck to the market values, the bank would have shown a body of disease, including default. The model valuations were thus the best choice. At least, they were the best choice until the regulator told them they should change the values.

The change from model to market values could have led to default if it would have happened two years earlier. All involved, risk managers, regulators, agreed on this. So before, the transition between the two valuation methodologies could not have taken place. However, just before my fieldwork, the regulator had told Bank F that their model did not sufficiently take the market into account. They told Bank F to change their valuations. With this demand, the regulator had indirectly threatened with a body of disease if Bank F continued with the same model.

What did the risk managers have to do to avoid the regulators punishment? They had two options. They could have recalibrated the model. With a change they could have increased the impact of the market values. However, for the model to be accepted by the regulators, it had to resemble the market. The risk managers realised that taking market values directly was the best solution. They did not think much of the model anyway, so they could get rid of it in the

meantime. Lydia put it as follows:

Lydia: So the basic matrix had little value changes, as well as the bond-index values, they do not follow the bond market's variations. That meant that the usage of market values was too low [for the regulator]

Interviewer (Anne van der Graaf): You did not look into changing the model itself?

Lydia: We asked ourselves the question if it was worthwhile recalibrating the model. But if you change the model and you have values that are too low and therefore stick too much to the market, why not take the market ones directly? The model was there really to have something better.

AvdG: What do you mean with better?

Lydia: For the AfS. As the market spreads have diminished lately and thus gotten closer to the model, not the same but closer, we have still lost millions of euros in the switch from model to market, a couple of years ago it would have been really bad. Today we could make the switch [between market and model].

Interview Lydia, market risk manager Bank F, valuation team

At Bank F, the moment was thus right to change from model to market values. Even though it still lost millions in the transition, the accounting losses would have been much higher two years earlier. At the same time, the new market values could cause future trouble. The risk managers could more or less control the fluctuations of the model. The market however could not be contained by the risk managers.

Avoiding a Possible Equity Disease

The regulator saw the market valuations as a body of health. Yet, they did not necessarily create a good equity situation. Thus, the risk managers had to avoid the situation where the market value changes would create a lack of equity. Such a situation would give the shareholders the possibility to declare a body

of disease which the risk managers wanted to avoid. Together with the finance division, they created a plan.

The states owned Bank F. Consequently, Bank F did not have the necessity to make short-term profits. They did have to stay alive, without going to ELA and by staying solvent. If Bank F expected to continue to receive a bill of health from their owners, they should refrain from asking them money again. Thus, the risk managers had to make sure that they minimised the effects of the transition to the market valuations.

Not only did the bonds' market changes endanger the bill of health. New regulation (Basel III) would have the bond values impact the available capital. If there was not enough of the latter, the states would have to put in extra money. That was exactly what the risk managers had to avoid. To do so, they had to carry out the transition to the market values such that they did not impact the available capital.

Under Basel III, the losses of value in the AfS category would impact the available capital amount. So, if the values of the bonds would drop, the available capital would do so as well. To prevent the walk to the states another time, the risk managers and finance division had a plan. Blake worked in the department that handled the future financial plans, the Asset and Liability department. He worked closely together with Stephanie.

Blake explained to me that he wanted a portfolio with as few AfS bonds as possible. He knew that in the current situation Bank F had enough capital. The market values covered enough available capital. However, if the values would drop, Bank F would need capital from the states again. Since the states did not show a willingness to give this money, Blake and his colleagues tried their best to plan for as little valuations in the bond portfolio. The risk managers', in their turn, carried out the work related to the valuations that came with this.

The risk managers used the replacement of the model to switch the accounting category of some bonds.⁶ To avoid a possible body of illness, they transferred the bonds from the AfS category to Loans and Receivables (LnR). In AfS, a drop in market values still influenced the capital amounts. In the LnR category, value changes would not have impact on the capital. Thus, the risk managers

⁶for a detailed explanation of this procédé, see chapter 9, section 3

stabilised the situation by transferring, where possible, the bonds from the AfS category to the LnR category.

The bond values of Bank F created continuously fluctuating states between one internal trouble, possible external trouble and a representation excepted by resourceful outsiders. First of all, the market values could have diminished the equity of the bank. The bank would have bankrupted since it would not have fulfilled the accounting rules. The risk managers thus saw a body of illness that could easily turn into a body of disease.

They had been able to defer such a declaration of disease. Risk managers had made a model that gave good valuation and regulators had allowed it. The valuations that came out of it did not negatively affect the equity amounts. Thus, the internal valuation model made it possible that owners, regulators and other outsiders kept up the body of health.

Even though the model did not fit the knowledge standard, the risk managers used it for the bond valuations. They produced valuations and with it, knowledge for outsiders. They continued to use this 'bad' calculation. They only stopped when an outsider who could declare a body of disease, in this case the regulator, told them not to. The regulators had ordered the risk managers to change the valuations. The risk managers followed the regulators demands, changing the methodology. However, they made sure that the change in valuations would not impact the future make-up of the balance sheet. The risk managers had found a way to prevent a future declaration of disease.

8.4 Conclusion

The body of health, disease and illness all lay close to one another at Bank F. If one outsider would not accept the knowledge presented to them, they could directly declare a disease. The risk managers encountered illness after illness on the inside. They saw the difficulties Bank F had to fund itself. They encountered large parts of the portfolio that had extremely declined in values. In neither of these cases did the risk managers have the possibility to change the situation. They could not create a robust organisation from the inside. They lacked the resources to give Bank F bonds with good values or get stable long term funding.

The risk managers did have another possibility. They could try to show that everything on the inside was right. That did not mean that they would receive a direct declaration of health. Only the actors on the outside could do this. It had been a counterparty in the interbanking market that had requested the final bankruptcy. The states did not want to see the death of Bank F and had helped them out. The states had declared Bank F more or less healthy again.

Outside actors thus decided if Bank F could stay alive or not. The regulator could punish Bank F, the states could retract their money or stop their financing and the counterparties could request bankruptcy in case of non-payment. These outsiders had the possibility to declare health, disease or death. The risk managers produced the knowledge that could convince these outsiders to keep up the body of health. They mainly focused on the states and the regulators, who looked at the accounting and requested reports themselves. While the risk managers continuously saw a body of illness, they had to make sure they portrayed something healthy.

Chapter 9

The Fairest Value

The market seems far from the work of the risk managers. The puzzle at the start of this thesis related to a division of labour of one economic equation, the expected profits of investments in financial markets. The risk managers focused on the creation of knowledge about the organisation, not on the market decisions.

In this chapter, I bring the market back into the analysis. I do not do this from the point of view of market control. In the initial puzzle, the risk managers act on the market. However, that is not how risk managers use markets. In chapter four I have shown that the risk managers do not have a control over market interactions. They are just too far away from the risk managers. The market comes in again when they create organisational knowledge.

The risk managers use financial markets just as they use accounting tools or risk calculations. They use market logics to create a representation of the organisation. They expect that outsiders then accept that knowledge as a body of health. The market logics do not come from the changes in the stock market. The risk managers base it on one specific accounting practice, fair value accounting. This method would theoretically increase financial instability. However, since the risk managers used it to the advantage of their own knowledge creation, they used it to maintain stability.

Within the fair value accounting regime, the market price determines the value of an object. The market thus gives the price for both the financial reporting and regulatory risk calculations. For financial organisation in the EU, IFRS

standards determine the fair value framework.

The intuition behind market values for financial investments is the following. For those products, you can easily take the price Bloomberg or Reuters gives you. For other products, such as insurance products and the related liabilities, fair value accounting becomes more difficult. At the moment of writing, no market exists for these liabilities. That makes it difficult to find a market value, as you have to create it yourself. The fair value accounting is thus more or less easy to implement based on the market that exists around the product.

Fair value accounting is not without consequences. Market values create the organisational knowledge. The rules indicate that the outside would determine the knowledge of the inside of the organisation. A main characteristic of market prices is their fluctuation. That fluctuation, outside of the organisation's control, also influences the balance sheet (Barth, Landsman, & Wahlen, 1995). Organisations that apply fair value accounting thus have a higher instability of their outside representation of value.

Empirically, fair value accounting's fluctuation effects have already had negative effects on economic wealth. The usage of the new IFRS rules exacerbated the problems in the 2008 financial crisis (Arnold, 2009; Bignon, Biondi, & Ragot, 2009). The extreme market changes in the crisis made multiple banks (nearly) default.

Fair value's background lies in economic theories of values and transparency. IFRS's fair value mechanism resembles economic ideals of market prices as the ones with complete information (Richard, 2004). The market as the bearer of true value relates to Fama's (1965) efficient market hypothesis. He argues that financial market prices, under certain hypothesis, reflect all information, historical and what is known of the future.

Other types of accounting, such as historic cost price, do not have the outside determination market prices have. The value in the accounting books largely comes from the choices of people inside the organisation (Casta, 2003).

Market prices seemed like a less subjective measurement than historic cost accounting. Fair values would increase transparency in reporting (Casta *ibid.*) by decreasing the influence of the people inside the organisation. Prices would namely come from an external party that represented full information (Biondi,

Chambost, & Klee, 2008). The downside of fair value, as mentioned, is the increased instability of balance sheet values.

The fair value practice behind the company doors is less clear cut. Where fair value creates instability, the risk managers tried to limit it. They did not have the possibility to 'win', to increase profit. That responsibility lay with the people in the front office or in sales. Risk managers continuously saw illness and possible declarations of diseases. They also found themselves in tight spots within the organisation, between colleagues and departments. So the risk managers used the malleability of fair value to make sure they did not lose. They could not 'win' because they could not create profits. So they tried to, at least, find stability.

In the previous two chapters, knowledge and resources came together within and outside the organisation. The focus lay on the creation of a, to outsiders, acceptable representation of the organisation. In this chapter, I go into the nitty-gitty negotiations on a team level. This change of focus also means a change of knowledge representation. Namely, a similar knowledge/resource dynamic went on between teams and people inside the organisation as the one between the inside of the organisation and the outside. The risk managers also had to maintain stability (or 'win') in their own work environment. That means that the local standards and resources also matter.

The risk managers' local decisions on the representations of values is unique. It resembles Crozier and Friedberg's (1977) theories on local interdependencies within organisations. Independent of the official hierarchy, local rationalities and resource dependencies make the work environment. However, this French school of organisational studies does not focus on the measures shaping work. The work of Burawoy (1979) and Sauder and Espeland (2009) is worthwhile here as well.

Burawoy's (1979) making out resembles to the way the risk managers made the calculations. In the factory, the shop floor workers strategically used their performance measurements. They would play a game in their production. With it, they tried to avoid boredom, earn enough money and avoid extra pressure in their job. Sauder and Espeland (2009) use the theory to explain the effects of law school rankings on law schools. On the one hand, the law schools adapt themselves to the measures. On the other hand, they do not completely let themselves be disciplined by the numbers. Actors use and act towards the measures

but their local interactions make these actions, not the rationality of the number.

Thus, to bring the two theories together, local rationalities matter in the workings of an organisation. They structure how workers handle performance measures. In the case of the risk managers, it gets more complex. The risk managers did work in a local rationality and they structured their action towards the measures of risks. They could also create measures. Even though there were general knowledge standards, the risk managers could use them for their political frame. They could find the stability in their work not just by acting towards certain measures, they could also adapt them to their needs.

The personal and local needs of the risk managers were diverse. Some risk managers wanted to organise and lead certain meetings. Others had a strong dislike for one of their colleagues, resulting in an effort to thwart the work of that colleague. These personal and extremely local preferences changed the outcomes of the risk measures. Especially the second example, the derivative model methodology, captures these personal struggles. The other two show the local combined with the outsider pressure. Thus, the risk measures do not only portray an expected declaration of health, they also portray the local rationalities between the risk managers.

I thus want to show in this chapter the detailed interactions and outcomes in the search of local stability. To do so, I take the example of the fair value measurements. During the fieldwork, I saw the risk managers use fair value accounting in a flexible manner. Different market ideas and calculations helped avoid negative consequences. Where the ideal of the market price is fixed, in these practices the market became a malleable object. The risk managers would change the definition, such that they would obtain their the objective.

The risk managers used three different concepts of the market. First of all, there was the the direct interaction. These were transactions or possible transactions with a limited set of counterparties. Secondly, there was the aggregated price (aggregation). Think here of the stock market curve or the end-of-day financial market price. Finally, they could also use the ideal calculation. This was based on a concept of the ideal market.

Resourceful actors on the in and outside could challenge risk management's position. Risk managers tried to keep these challenges at bay by using these

three different market concepts at different moments in time. Choosing the right fair value had little to do with the true value. It was ‘right’ because it avoided the maximum amount of problems, or at least the most urgent ones.

I will go into three examples of the fieldwork where the risk managers used ideas of fair value to their advantage. The first is about the reclassification of the AfS bonds to another category, hold-to-maturity. In the hold-to-maturity category, market changes did not influence the value of the bond. This follows on the internal valuation model description in the previous chapter. The second example is about the valuation models of derivatives. Third of all, I go into the usage of the market in the calculation of insurance risks.

9.1 Fair Value in Banking and Insurance

In the international accounting standards IFRS 13.9, fair value is defined as follows: “Fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date” (IASB, 2011, IFRS 13 A609). IFRS 13 gives a more detailed explanation in its appendix, where fair valuations need to relate to a particular asset or liability (a unit of account), the principal or most advantageous market for the asset or liability needs to be followed.

Gerald, my direct colleague in MRM, explained to me why fair value worked at Bank F. The bank found itself continuously on the brink of default. Consequently, when bankruptcy would happen, it would have to sell its assets immediately. The market values reflected the value of the assets at that moment.

At the same time, Gerald also acknowledged that fair value had brought a lot of trouble to Bank F. Due to the accounting rules, they had had to depreciate the assets. Consequently, the balance sheet ratios had decreased so much that the organisation would have bankrupted had the state not stepped in. At the same time, fair value undervalued assets. The assets would never had been sold at that time of the low market value. Bank F was better off by keeping the assets and sell them later when prices increased again. So Gerard thought of fair value as the right price under certain circumstances.

For Insurance Company V, the fair value situation was not the same. First of

all, there was no indication the organisation would bankrupt soon. Secondly, the insurance balance sheet did not lend itself easily to market valuations. Solvency II had brought fair value to the whole balance sheet, both sides. The asset side allows for market values relatively easily since most investments took place on different financial markets. However, the liabilities do not. The market to sell already signed insurance contracts did not exist at the time of writing. The insurance company that has underwritten a contract also has the responsibility for the future payments to the insured. Selling a liability would thus mean giving another the responsibility to pay the client.

So how do you know what the market will give you for your liabilities? Or to say it more appropriately, how much will you have to pay someone to take over your insurance contracts? Jane explained this to me in an interview. She was the manager of life risks (both model and general) at Insurance Company V. She had started her career at Insurance Company T in the research and development department. That department had been one of the first to think about market values in insurance accounting and Jane had participated in the reflections from the start.

Jane explained that the first question they had asked themselves had been: 'What would Mr Market give'. She and her colleagues had known the markets did not exist for insurance liabilities. To solve this practical problem, they had decided to use a theoretical market. With Fama's (ibid.) efficient market hypothesis, they could say that stochastic calculations recreated markets. So where the markets did not exist, the calculations re-enacted it. They had applied the stochastic calculations to the liability projections. They had found a market value for the liabilities, at least a theoretical one.

Both in Bank F and Insurance Company V, the risk managers had difficulties with the fair value assessments. As Gerard's explanation of fair value shows, the market values could even cause bankruptcy. But if they would not adopt fair value, the risk managers in both organisations could find themselves in trouble with resourceful outsiders. Regulators, accountants and shareholders could create difficulties for the organisation. They could also create a threat to the risk managers. So what the risk managers did was to adapt the market values of their products. They tried to avoid the wrath of these outsiders. They could do

that due to the malleability of the fair value standards.

Not only did the market values of the insurance liabilities have difficulties to come into existence. Sometimes market prices do not exist or difficult to see. IFRS' fair value standards allow for leeway. Three different levels allow for different market circumstances. Under level one, the market price is directly taken without adjustment. Level two is a combination of the market price and an internal calculation. The third level, level 3, allows for a calculation of asset values with an internal model. Level 3 has one caveat. Namely, assets cannot belong to the level for an indeterminate time.

Even with these derogations, IFRS's fair value would supposedly show the right value of a financial asset on the balance sheet. Nothing is predetermined in accounting. The operator always makes a choice of what fits when and where. For fair value measures, the same malleability of the accounting practice holds. The market price is not one number, it can be many numbers. The makers of the fair value pick one to create the final valuations.

Yann worked in the accounting department at Insurance Company V. He created the consolidated assets for the head office. For this, he used IFRS's fair value accounting. First of all, he took the local numbers on the financial assets. He would then transpose those numbers to the format the head office wanted. He would receive his input data from bookkeeping. He would receive the values of the entity's assets dated up to three days before this final deadline. He ignored if the market data he received came from the end of day, the daily average or the mid-day price. Yann did not receive 'the' market value of the assets. He received a value from the bookkeeping department. They had, together with the investment department before them, derived the number from a stock market.

The reporting data did thus not exactly represent market values. In the interview about his work, Yann did not show his concern about this. He did not care about the small value changes that occurred within one or two days, or on the day itself. He cared about large value changes. For example, a default of a counterparty would lead to a large loss. Yann thus created market data. He did not care about the exactness of the market price. The market prices could mean many things, from different calculations of prices to the extraction of the numbers on a different day. To Yann, all of these methods fit the IFRS bill. As

long as the valuations showed coherence, Yann would accept them.

Thus, the fair value framework does not determine accounting and risk assessments directly. The risk managers and accounting department have room for manoeuvre. They have some autonomy in the decisions of the values. In their room for decision making, the risk managers used three different market ideals. They would switch between the three to avoid possible problems (the visible negative consequences). In the three examples underneath I will show exactly how they did so.

Before I go into the examples, I will explain the three different types of markets. They differ from the three fair value levels. The risk managers namely used these market typologies to later fit them into the fair value framework. First came the market type, then they found a way to fit it to the fair value accounting techniques.

The first concept of the market is The Direct Interaction. This is an interaction about a product between a limited amount of actors. The product possibly changes ownership between those involved. Negotiations can happen around the value of the product between the different actors.

The second type of market is an aggregated form of transactions, which I call The Aggregation. End-of-day prices are a mathematically calculated market price, based on transaction data, as is for example the establishment of a historical volatility curve.

The third type of market is The Ideal Calculation. The market comes from internal calculations, without the use of direct transaction data. They can resemble what an ideal market is supposed to look like, for example by recalculating the efficient market hypothesis. However, they do not do so necessarily.

Let me now show you how the risk managers used the three different markets to avoid problems either for themselves or the organisation. I do so first with the transition of the accounting categories of Bank F's bonds.

9.2 The Bloomberg Person: Bond Valuations in Bank F

The market risk department of Bank F constantly dealt with market values. Bank F's bond and derivative values namely followed the fair value accounting. By altering the ideas of what a market was supposed to be, the risk managers avoided problems with regulators and owners.

As said in the previous chapter, the bond values had already led to difficulties for Bank F. They had used an internal valuation model, as IFRS's level 3 allowed. The regulator had told Bank F they did not want to see the internal model anymore. So, the risk managers had to change the valuations. While they changed the valuations from level 3 to a level 2, they also changed the classifications. The bonds had previously been in the AFS category. With the change in valuations, the risk and finance divisions wanted to put as many bonds as possible in the Hold-to-Maturity category. In that category, the capital amounts would not be impacted by market value changes.

That is where this section comes in. The bonds had to be reclassified and I had to do that. In order to understand the local rationality of the bond classifications, I need to specify the use of a specific concept. Liquidity for a bank means the amount of cash it has. In the case of markets, liquidity means the amount of transactions carried out in a short time.¹ In this section, I will use liquidity solely in as a classification of the amount of market transactions.

If a market has liquidity, it has enough transactions to have a continuous price quote. When there are no buyers and sellers, the market is illiquid. Liquidity is key to understand ideas of markets. For example, during the fieldwork I talked to an economist who worked as a direct advisor to a board member of Bank G. Bank G was one of the largest European banks at the time. He told me that only assets and bonds took place in true markets. They namely had liquid markets. Derivatives and collateralised debt obligations had seen dried-up markets during the financial crisis. The economist judged that they did not belong to a true market. Even though one bought and sold derivatives, the

¹For a great explanation of the creation of liquidity see Carruthers and Stinchcombe (1999)

possible lack of liquidity in their markets made it a non-market transaction. The man thus paradoxically told me that true markets existed but that not all market transactions belonged to one. He distinguished the Aggregated market from a market interaction. The Aggregated market, in his view, had to have liquidity. The Direct Interaction, the transfer of a good, did not necessarily take place in a ‘true’ market.

Bank F’s bond portfolio had exactly encountered the problem of a lack of market prices. A large part of Bank F’s bonds had found themselves in illiquid markets after the 2008 crisis. Illiquidity means prices have large variations. So few transactions take place that prices become erratic. With the fair value standards, the bonds would have had to follow these extremely changing market prices. The market prices could have led to such a devaluation of the assets that bankruptcy of Bank F could have occurred.

With a lack of liquidity in the bond market, Bank F had been able to implement the internal model for bond valuations. They had adopted the level 3 market valuations. The regulators allowed them to do so. Bank F had chosen for a market valuation that followed an Ideal Calculation, one produced by the internal model (this excel file).

After having used the internal valuations for several years, one of the central banks that controlled Bank F stepped in. They instructed Bank F that the model did not use enough market information. The internal model could not be used any more. The bank had to switch to full market values, to fair value’s level 1 or 2.

Both Pete and Lydia, who did bond valuations in the valuation team, had expressed that the only (morally) right value came from the market. They agreed with the logic of the regulator. Lydia and Pete deemed it legitimate that the regulator had asked for the change in valuations. The model value had had its use as it had avoided another default for Bank F. With the pressure of the regulator, the risk managers had to change the valuation methodology. Therefore, they accepted the decision by this external authority.

The regulator’s demand, however, led to two problems. One was on the scale of the organisation. The market value could namely bring the bank into financial trouble again. Especially with the new Basel regulation coming up, a low market

value could lead to low capital amounts. Secondly, locally, Pete's team could get interpersonal problems again in the reclassification.

First of all, on the organisational level, the bonds could still cause difficulties for Bank F's books. One of the issues was the lack of buyers and sellers of the bonds in the portfolio. However, at the time of the fieldwork the portfolio was stable. Bank F, at that point in time, also had enough capital available to fulfil the capital requirements. Nevertheless, the bond markets could easily change their prices. They were still relatively illiquid. The capital position could thus come in danger again.²

A normal bank, one that did not find itself between life and death, might have accepted the value fluctuations. The market changes could also mean possible gains. However, Bank F was not a normal bank. It depended on a set of European states that had already put in a lot of money to keep Bank F alive. The risk managers did not know what would happen if they would ask the states for even more money. The states could easily declare a true disease and unplug life support. The risk managers thus had to avoid asking more money from the states. However, that request became imaginable if all bonds required full market values. How could they avoid doing so?

Together with the asset and liability management department, the risk managers would change the categories of the bonds. In the AfS category, the bond values affected the OIC and, in a later stage, the capital amounts. However, in the Hold-to-Maturity (HtM) category, the bonds did not do so. The risk managers thus tried to maximise the amount of bonds in the HtM category. They did need a reason for that reclassification. If a market showed signs of illiquidity, the bonds could transfer from the AfS to the HtM category. The risk managers thus had to make sure they classified as many markets as possible illiquid.

This is where the second problem comes in. In order to obtain the bond value and to show the illiquidity of the market, the risk managers used visual techniques. They obtained screen shots from a Bloomberg screen. The special computer gave multiple screens for the history of buyers, the price of the asset

²This capital position has to be seen in the change to Basel III / CRD 4 and the specific category of the bonds. Since they were in AfS, market value changes were not seen as results but as changes in the provisions and counted towards the Tier 1 Core Capital in Basel III / CRD 4

and the pricing-tool of the asset. The risk managers used these pages to show the illiquidity of the bond.

The process was more troublesome than just looking at a couple of pages of the Bloomberg terminal. They had to make a word document in which they copy-pasted the different screens. That document served as the bonds' proof of illiquidity. Copy-pasting different screens is a cumbersome task, especially for thousands of bonds. Not everybody in the valuation team, Pete's team, saw this task as a worthwhile one.

Out of a team of five, two persons had a quantitative background. They worked on the derivatives. The other three, including Pete, had specialised in the bond values. The derivatives people had a mathematical engineering background, whereas the other three (including Pete) had a background in economics or finance. The educational background represented a cleavage. The two people in the derivatives section had little respect for one another, never mind those specialised in bonds. A mathematical background in this Bank meant more legitimacy than a business degree. The lack of respect between the team members led to conflicts in the team. They found it difficult to work together.

The copy and pasting of screenshots took a lot of time. Pete had previously split up the work between all his team members. However, one person in the team, Janice, thought that copy-pasting was below her standards. She was an engineer and proud of it. The three people with bond experience did not have that degree. She expressed her superiority to the others. This did not sit well with the other team members, even with the other quantitative person. So Pete did not just have to show illiquidity, he also had to keep the calm in his team.

Before I go into Pete's solution to his team's relational problems, I describe why the risk managers looked at the screenshots. The levels of fair value relate to the different types of liquidity, the first level being very liquid while the third means a completely dried-up market. The risk managers could deduce the prices and the level of liquidity from the screenshots.

A normal, level one, market value of a bond would be taking data from the Bloomberg terminal on the quotes of the counterparties and take an average. On the screen a price could be found for buying the bond, the bid, and one for selling the bond, the ask. By taking a limited set of the highest price and the average

price (the mid) of the different participants' bid and ask prices, they calculated the bond's valuation.

With the visual aides of the Bloomberg screens and the characteristics of specific bonds, the risk managers could argue that assets lacked liquidity. Their markets did not have enough buyers and sellers. Il-liquidity mattered because with it, the risk managers could legitimately change the accounting category of the bonds. They could transfer them from AfS to HtM. In HtM, the market fluctuations would not have an impact on the balance sheet. Thus, the risk managers tried to show that most bonds had an illiquid market.

In order to do so, the risk managers needed screenshots from the Bloomberg machine. But Pete still had the interpersonal problem in his team. His solution? He asked me for help. I had just started as an intern and he knew that I knew how to code. I was not part of his team and he did not have any official power to ask me to do anything. However, I did not have much else to do. So when Pete asked me if I could not find a way to automatically create screenshots, I said yes.

With three different VBA-scripts I created an automatic tool to copy-paste the screenshots. Pete had solved the problem in his team. Now, the people in his team only had to look at the different screens to determine the markets' liquidity. They had so many bonds to assess that Pete asked me to step in.

He asked me to reclassify the most obvious cases of illiquid bonds. When I told Gerard about my new task, he said 'Aren't we supposed to transfer most of our level 3 bonds in hold-to-maturity?' He thought the experts in the team had the knowledge to carry out the task. I was only an intern and had no specialist knowledge on bond valuations. However, the amount of bonds that needed reclassification was immense that my lack of experience did not matter. Pete, to lighten the pressure on his team that was already under stress, had asked me to determine the market liquidity.

I did not have the objective to reclassify the appropriate assets, I had to show the il-liquidity of a maximum amount of assets. Here, the multiple types of markets come in. The internal model, the ideal market, had lost its legitimacy to the outsiders. The risk managers had to re-establish a market logic. That logic came from the screen shots. There, the risk managers had to show that

the market did not exist. They did so based on the concept of the aggregated market.

To check for illiquidity I looked at the multiple Bloomberg screens related to the bond. I could see the prices offered at that moment and the historical prices. The previous transaction prices were represented on a curve in a graph. Besides the prices, the data provider also gave liquidity scores themselves.

Pete had given me bonds known as the most illiquid ones. Most of them did not show any transactions for the last two years. Nevertheless, in most of the cases, a buyer presented itself. The screen showed a possible price for which a buyer did exist. I had to say that the market did not exist for these bonds and I could back-up that statement with the lack of transactions.

Even there, I could have argued that the market did exist. The screens showed some prices. If Bank F would have accepted that price (or a lower one), they would have sold their bond. The market interaction was possible, the Direct Interaction did exist. If I would have wanted to, or if the people around me in Bank F would have wanted to, I could have argued that a transaction was possible. Therefore, the bond did not belong to an illiquid. But that was not what I had to argue, I was supposed to argue that the bond was not liquid. So I looked for the second market type, the Aggregation. So that is what I did.

Even for the most illiquid bonds, I could have argued that a market existed. And the other risk managers were aware of the ambiguity that existed. On the one hand they had to show that the market did not exist, so they used the Aggregation. Yet if they wanted to know the price of a bond, they did see a market. They would use the Direct Interaction.

During my fieldwork, Pete had carried out a study that was not in favour of Bank F's health. He had namely looked at how much the bank had saved with the help of the internal valuation model. By doing so, he had made the body of illness visible to the outside world. With that, it could damage the declaration of the body of health. Valery, MRM head, had been angry at Pete for even producing the study. She had even told Pete to put the study in the bottom of his drawer and never put it out.

Pete namely showed with the study that Bank F could have obtained a price for its bonds. Bank F had chosen to classify them as Level 3 and used an Ideal

Calculation as a market. The risk managers had been able to do so because they had convinced the regulators that the bonds' aggregated markets did not exist. Pete showed that they could have found a market, in the form of the Direct Interaction. Pete had namely used quoted prices for his study. With that knowledge, Pete proved that Bank F had breached the regulators' demands. It was thus better for Bank F to not have the study at all. They did not want to invoke the regulators' wrath.

In the case of the bond valuations, the risk managers established multiple market prices. They picked the one that both fell into the regulatory standards at the time and would give Bank F a balance sheet that fulfilled the equity standards. Just after the crisis, the risk managers had convinced the regulators that the market did not exist anymore by showing a lack of aggregation. They could thus implement an ideal calculation as a market price for the bonds. They used their model until the regulator told them to stop.

When the regulator decided that the risk managers had to use another type of market valuation, the risk managers listened. They changed to valuations based transaction data. At the same time, they saw other potential negative consequences. Bank F could lose its stable capital position again if market prices would change too much. Therefore, the risk managers changed the accounting category for a maximum amount of bonds. They used a very restricted definition of market prices, sticking to a restricted aggregated market. The risk managers thus used the three different market concepts to value the bonds. Each time, they picked the one that would avoid most negative consequences to the organisation.

9.3 Meeting on Models of Swaps - Do we have the right value towards our counterparty?

The derivatives had more mathematical and computational complexity to them than a couple of Excel sheets. They existed within a world of models, market data recalculations and daily value changes. The same team of the bond valuations also dealt with the risk control of valuation techniques for swaps.

The derivatives' values affected multiple communications to the outside. First

of all, the values of the derivatives influenced the total balance sheet. The amounts here did not compare to the bonds. Consequently, the risk managers did not feel as concerned for the derivative value fluctuations as for the bonds. Secondly, the derivative values changed the collateral amounts. Bank F's derivative model calculated the collateral the bank had to put up, in comparison to the counterparty's model. That meant the derivative models affected two sets of actors. On the one hand, through the collateral amounts, it possibly influenced the relation with the states. On the other hand, the counterparties of the derivative transactions mattered. The collateral value was namely established between the two actors in the transaction.

In MRM, Janice and Howard looked at the derivative model values. That job mainly encompassed an investigation of the different models that existed. Pete was their boss but did not have the experience with derivatives. Besides MRM, a whole team in the calculation department handled the derivative calculations. The people who calculated the market data in the calculation department also had an impact on the derivative values. Namely, their ability to create one or the other market variable could change the methodology that the risk managers could use for the derivative models.

The personal relations within the valuation team and between MRM and the calculation department were not optimal. That influenced the valuations. Tensions existed between MRM and the calculation department. The two departments had split up a couple of months earlier. The calculation department had seen their responsibilities diminish. Where they had previously decided upon methodologies, now they were executors of MRMs visions. That left some of the people in the calculation department, especially the managers, with animosity towards MRM. They did not want to implement new methodologies decided by someone else.

Besides the difficulty between the calculation and MRM department, another interpersonal relationship was significant. Most of Janice's interlocutors did not like her. She would come in late and leave early and did not show any flexibility towards her colleagues. She stuck to her guns and would say judgemental things about them. Most people in MRM and calculation department expressed their personal difficulties with Janice.

At the same time, Valery and Pete had given Janice a substantial salary raise when she entered the MRM department. She had not had one for more than eight years, something unusual. She still made less than Howard or other quantitative people. However, he latter did not think she did her work well and he had not received a raise. Howard openly discussed his unease which increased general animosity towards Janice.

The different outside partners and the internal relationships all mattered in the determination of the derivative valuations. The risk managers decided upon new valuation models in multiple periodical meetings. In one of them, the collateral model meeting (CMM), they compared their own values to the values of the counterparties. With the comparison came possible methodological changes. This meeting had the objective to diminish the values differences with the counterparties in the collateral exchange.

I was able to attend one of the CMM meetings near the end of my fieldwork. Two groups attended, people from MRM and those who sympathised with or worked on the front office and data collection. The first group included Janice, Valery and Pete. The second group included Howard and people from the derivative calculation team and the market data team. Howard was part of MRM and worked, just as Janice, on the derivative models. He preferred to sit with the calculation team rather than his own. Besides that, there was also one person who worked with front office present, Frank. He was a quant and developed the models for the transactions. The two groups sat on opposite sides of the table, showing their distance in visions also spatially.

Normally at Bank F, people would assemble in a meeting. The highest in the hierarchy would talk in an informal manner about the options at hand. They would, generally, avoid conflicts. The rest, those lower in the hierarchy, would be quiet. In the CMM, things were a different. The people with the technical knowledge exchanged views while the managers only spoke to make a decision.

In the meeting, Janice, risk management's organiser of the meeting and the three quantitative men, Jules, Frank and Howard were clearly hostile to one another. Jules was the head of the team that created the market data. Frank was a model developer (a quant) and Howard. Steve, a derivative data calculator, was also present. Valery and Pete also sat at the table.

In the meeting we went through the different types of derivative models. Janice had created a hand-out in which she compared Bank F's values to their counterparties. Before I go into the meeting I want to clarify how people at Bank F valued the derivatives in relation to the collateral exchanges.

Calculating Derivative Values

The calculation of a derivative's value is not an easy task. The calculation team carried out this task with a lot of difficulties. They found themselves in continuous trouble with their IT systems. Besides that, they did not always have the right input data. A third reason for their difficulties were the models themselves. Bank F did not always use the same calculation as their counterparties, partially because they had not innovated their models.

Steve, the derivative value calculator, had explained his work to me behind his computer. Some types of swaps were easy to calculate, the vanilla swaps. Others, the more complex swaps were much more difficult to value. The right input values lacked a lot of the times. Steve told me that the market data team worked on making the market data available. That meant in practice that the team was figuring out how they could recreate curves. They would want to make the curve have the shape of what they thought the market should look like.

An example of the creation of the market data were the volatilities of the interest rates. These implied variances of the interest rate data were supposed to have the form of a smile. The market data team expected the implied volatility to show an inverted half-moon shape. However, not all curves had this smile. The market data team tried to improve their models to have a smile again. Without it, the derivative calculations did not give the right value.

Another aspect and a headache case for the whole risk department was the calculation of the short term interest rate. Before the 2008 crisis, overnight and three month interest rates had been the same. When the interbanking market dried up, the overnight rate mattered at once. However, Bank F did not have the right data and systems available and had a lot of difficulties to implement the new standard rate.

Changing from three month index to an overnight meant a change in the discount rate. Discount rates are key in most valuations of financial assets.

They actualise the future cash flows to their current value. Bank F had not been able to implement the OIS curve. The overnight ratios were a discussion point with counterparties on the prices.

And sometimes there are disputes. Than you have counterparties who say, attention, that is a large difference on that deal there. Afterwards it is the back office that sends us an email, and we then explain that the difference is due to the discounting between 3 month Euribor and Libor and overnight rate. But afterwards the counterparty would ask every day: When are you passing to the overnight rate? when are you passing to the overnight rate? When are you passing to the overnight rate?

Steve, Derivative Values, Calculation Team

The people on the risk management side (including the calculation team) wanted to avoid one thing with the counterparties, a dispute. Namely, if the difference between the two parties derivative values became too large, the counterparty could trigger a dispute. That would lead to a costly situation for Bank F where they would have to legitimise their models. For a lot of derivatives, they could not argue the rightness of the models.

To avoid a dispute with the counterparties, the people in the calculation department had found a solution. Instead of the recalculation of a market value with a model, they had chosen data from transactions. They had gone from an Aggregated to the Direct Interaction market. If the difference between the counterparty and Bank F's value would become too big, Steve would 'overwrite' the value. He would take the value of the derivative that the counterparty had given them the previous day. This way, they had a value that seemed right to this outsider, avoiding a negative consequence (the dispute).

Steve: So we take their value of the night before and we say, this is our value. [..]

Anne van der Graaf (AvdG, interviewer): And do the counterparties know?

Steve: Some of them have found out, yes, but we do not manage to price the [derivatives] so we need to do something. [..]

AvdG: And is it always the day before?

Steve: Yes, it is always the day-before. Because if we go to far then we have too big of a difference and then there will be a dispute.

The way the prices in these incalculable cases were taken is a simple representation of what was expected by the counterparty; the value of the deal was the one given by the counterparty the previous day. In the market categorisation of this chapter, it follows the Direct Transaction. Steve found the method lamentable, he preferred to have his own models. Steve thought that their own aggregation or ideal calculation of the market had more legitimacy. It fit the knowledge standards better to have one's own calculation of value. Nevertheless, Steve and his colleagues preferred to give a number that resembled the counterparty's over a dispute with them. They had avoided a negative event with this outsider by almost matching their numbers.

Meeting to Compare Derivative Values to Counterparties

At Bank F, the calculation of derivative values did not go easily. They found their intermediate ways to give a number that fit the counterparty's expectation. In the CMM, the different participants discussed exactly how to have the derivative values fit the counterparty's better.

In the discussion of the CMM, they focused on the model families whose distance to the counterparty values was too high. The participants discussed the ten most extreme models. Janice had created a hand-out in which she presented a graph of each counterparty's ratio to a base line of zero. Zero meant that she had not detected a difference in values between the counterparty and themselves.

In the graphs, different counterparties found themselves in a different part of the cloud. The groupings indicated that they used different models from one another. Other counterparties would always have values relatively close to Bank F. That meant that they used the same models as Bank F. The dispersion of the different counterparties also meant that none had the true model.

We had discussed a couple of the derivative models. Janice sometimes suggested a new calculation or just said that they needed to further look into it. Howard, Jules and Frank would object to her assessments. They would try to

destabilize her. Half-way through the meeting a specific currency came up. Janice suggested a new methodology for a specific currency swap. The discussion on the new calculation was exemplary for the whole meeting.

Janice: This is the culmination of ..

Valery: The apotheosis..

When Janice suggested the new methodology, a clash erupted between the two sides of the table. In the discussion, both peoples' position of personal preferences, organisational possibilities and visions of what the market is supposed to be became extremely clear. First of all, the men in front of Janice did not like her, which they showed in the fierceness of their opposition. Secondly, these men, Howard, Jules and Frank, translated their personal preferences into a preference for keeping the things the way they are. They wanted to avoid an increase in their daily workload. They used the market's Ideal Calculation to reinforce their position.

With this specific swap, Bank F did not have big discrepancies for certain counterparties whilst for others they seemed enormous. Janice had done some research and had found that they should change the correlation calculations. She had analysed three different variables. The volatility, the correlation and the simulations that were carried out for the value determination could all be changed. She had found that if they would calculate a historical correlation (A) rather than their current implied correlation (B), Bank F's values would approach the counterparties.

The historical correlation (A) represented a market as Aggregation. Its input came from previous market transactions, which were then framed into a final number, the correlation. The implied correlation (B) did not have historical market transactions as input. It showed the correlation in an ideal market with the help of simulations. It thus represented the market idea of the Ideal Calculation.

Janice argued correlation A should be implemented. When she presented her analysis on the correlation, the men on the other side of the table (Jules, Frank and Howard) started to chip in. They contradicted Janice. In unison, they said that they did not want the correlation to change. In the conversation, market

practices, prices and counterparties were not the same. Their representation of the market did not relate to the swap transaction or the daily collateral exchange with the counterparty. They thought the market related to what the right models would do.

The discussion continued, went into why the volatility was not changed and Janice added arguments every time why it was correlation B that had to be used. Frank, Howard and Jules were in the end convinced that they had to look at the correlation. Janice's argument had won. The table had accepted that the valuation differences came from the correlation, nothing else.

Even though the opposition to correlation A had lost one part of the argument, Frank, Howard and Jules did not give up. They argued that correlation B was still best. Jules put forward that the model had already been validated internally. So from a practical perspective, they should not change the valuation methodology. Jules added, 'as long as a model is seen as internally correct, why then look at the counterparties?' Jules used the ideal calculation to say that he had the right correlation.

Jules' position on the correlation corresponded to what would be good for his own work situation. His team already had a lot of projects of methodology changes on their plate. If he would have to change the calculation of the correlation as well, he would only add to his team's workload. He seemed to want to avoid to ask them to implement another variable. The market value as the Ideal Calculation worked well for him.

Where Valery and Pete had been dozing off, Jules' argument woke them up. The counterparty was important to them, more important than what the model men saw as the ideal model. Valery said that the counterparty did matter. The two MRM managers did not see the Ideal Calculation as the right market. They worked on the problems the counterparties could give them. They thus wanted to avoid the possible negative event of the dispute. They saw the market value as the one that gave them the least trouble. In this case, that meant a market value inspired by the Direct Interaction.

Howard however countered the going against his own superior, saying that they would not have a problem if they use a correlation that is in line with the market. After the meeting, Howard told me that he would always counter

Janice's argument. He thus supported Frank and Jules. He argued for the Ideal Calculation as the right market value in his struggle with Janice.

Pete: So all our counterparties are wrong? No, that is not possible.

Jules: But I need to know what the driver is. Should we have methods that are in line with the market? Than it is Correlation A and we will do our best to improve that number. However, is the driver the counterparty itself, then it should be Correlation B.

[...]

Howard: But we do not want to just stick to the counterparty.

Pete: Yes, that is what we want, we want to stick to the counterparty.

Valery nods but adds: Well, yes and no, what we want is a price first of all. Secondly, in case a counterparty starts to make trouble, we can actually argue and establish our case. We want to be able to 'deal'. It does not matter if the methodology exactly right in a document, I want the price that is closest to the deal. I want something that I would be able to explain to my clients at the desk.

Valery's words ended the discussion. What she wanted first of all was a price. Bank F already found it difficult to obtain a price at all. Secondly, Valery wanted avoid trouble with the counterparty. Neither Valery nor Pete thought it was important to represent the ideal market value the model guys had put forward. They did think it was necessary to be able to convince the counterparty that Bank F calculated the right value. One way to do that, Janice's suggestion, was to stick to the counterparties' values with a historical correlation. The right value to Valery and Pete thus came from the direct interaction, not the ideal calculation.

The discussion above shows two visions on the right market price. On the one hand the people dealing with the calculations of the prices saw derivative prices as the representation of what mathematics said financial markets should be. These were markets of Aggregated Curves and Ideal Calculations. Choices between the two, a historical or a implied volatility were made on preferences

as well as objectives. Jules', Frank's and Howard's preference for the least extra work and a dislike of Janice coincided with their market ideal.

Janice, on the other hand, protected her role as the guardian of the counterparty pricing. She preferred The Aggregation. With her continuous fight for the historical correlation, she had also protected her autonomy in the workspace. She had not let the guys who disliked her win the argument.

A third concept and interpretation of the market came from Valery and Pete. The actual interaction and value exchange mattered to them. In the negotiations with the counterparty the mathematics made a good argument but in the end the value had to be relatively true to the one of the counterparty. Their preferred market concept in this case was the Direct Interaction. By taking that as the basis, problems would be avoided with the parties they were dependent on, the counterparties. The last quote of Valery says it best, 'as long as I can deal and make the transaction I do not care which methodology is used'.

The example above thus shows the three different market types used alongside one another. None of the arguments came from an ideal of the true value. All actors had their own wants and needs and adapted their argument towards their preferences. Valery and Pete saw the problems from the counterparties. Janice had to present her analysis of the valuations compared to the counterparties. Howard, Jules and Frank saw extra work and a person they did not like. They used the different ideals of the market to get their objective. In this case, Valery got what she wanted. She was the boss and thus had the resources to decide what would happen. The right market thus depended on who wanted what, when and if they were part of the discussion.

9.4 Answering the Right Asset Risks

As explained earlier, fair value measurements in insurance did not resemble the ones in banking. For risk managers at Insurance Company V, the market was too far away to see the transactions. The insurers calculated risks with models based on ideal typical markets. The risk management department did not deal with the exact valuation models of the assets. The risk managers did help the finance department with calculating the provisions (liabilities). With Solvency

II, these liabilities had to follow market standards.

The following is a case where Insurance Company V's risk managers used both a market rationale and non-market rationale to appease the regulator. It shows that the risk managers' dependency on the regulator has most importance in the risk calculations. Risk managers used market values or non-market calculations interchangeably, as long as they think the outcome of the knowledge production is effective in the regulatory relationship.

The risk managers at Insurance Company V simulated different risks in relatively crude categories. All of them would end up in a final regulatory capital requirement. The organisation would need to have at least that amount of regulatory equity on the balance sheet. Multiple calculation steps led to a final simulation of the balance sheet exposure that would then define the final regulatory capital. Calculations happened both at Group and local level.

Within the risk management division of Insurance Company V, the market was more absent than present. The market existed with the help of the stochastic rates, the theoretical simulations of market values. The 'stoch' rates were just like one of the other model inputs. The market was hardly talked about. Sometimes, the risk managers would discuss a valuation of an asset. But even the people working on the financial market risks hardly referred to financial markets, not meaning the market was absent. In the work of the risk department, the market was part of underlying reasoning of the right calculation.

One of the calculation steps to the final capital involved the creation of regressions per product group. During the fieldwork, I had not thought too much about the regressions. I just assumed the risk managers used historic data points or other empirical data, indicating a set of random data points come from an underlying population. To test the accuracy of such a regression, one would need another sample of the same population, for example with a historical sample.

However, the regressions used 'market value' data. The risk managers had adapted the basic life and financial risks with the stochastic rates. They now resembled what market data supposedly looked like. Namely, the data now incorporate the full information of the knowns at that specific moment. To test the regression, you cannot just use any dataset of the population. The data already incorporates the historical knowledge so you cannot test it.

During the fieldwork, the regulator had asked questions about the accuracy of the capital requirement model.³ This was the national regulator that looked at Insurance Company V. Their questions were more like observations and objections than open questions. For each part, from life to non-life and the investment (asset) side, they investigated the methodology and input of the model. My risk department had to respond to the questions on the investment side of the model.

At the same time, the Group had developed and handled the asset side of the model. The local risk management departments, including the one of Insurance Company V, had little knowledge and information about the asset side of the models. My colleagues and me had documents with the methodology of the calculations. However, the policies contained relatively little information. They described the different steps and methodologies. However, they did not show how the different calculations were exactly implemented nor the reasoning behind the variables. Me and my colleagues thus did not know much about the background of the asset side of the capital requirement model.

Since they did not have the tacit knowledge of the asset side of the model, the local risk managers could not answer all questions. Nevertheless, they had to do so. Their regulator had asked them to respond to its objections. They thus had the responsibility to deal with the questions. The manager responsible for the answer, Alice, expressed that she had the priority to answer the local regulator. They had to give the regulator knowledge that might appease them. They wanted the regulator to give them their bill of health, to accept the regulatory capital model of Insurance Company V.

The Group, on the other hand, had all the information that could please the local regulator. However, they were hesitant to share their knowledge. The interaction with the local regulator did not have their highest priority. They had their own regulator to think about. Their priorities thus did not align with the local ones.

We had received an official letter from the regulator with their observations. I had send the questions that only the Group could answer to the people responsible at Group level. However, they did not respond. Even after multiple reminders by me, Brad and Alice, the Group did not give us the answers we

³See chapter 7, section 4

needed. We had a deadline to deal with, independent of the Group's responses. So Alice reassigned the questions to the people in her team. We met in her office to discuss the answers. Alice, Brad, Vicky (who worked with Brad on the financial risk side), Joey (the financial risk intern) and Barry, a consultant from an international insurance consultancy firm, all sat around a small table.

Even though the risk managers did not express it explicitly, we had to show the model worked, not the other way around. The new capital model would supposedly lead to less capital requirements and therefore less costs.⁴ So it was key for the organisation in general, and the risk managers in particular, that the regulator approved the model.

One of the questions related to the calibration of the regression functions. The risk managers thought the Group should answer this question, as they did not know enough about it. The regulator had pointed out that the final formulas might stick too much to the original data. They called this overfitting. Even though it might seem like a good thing a the regression formula fits the data it describes, it has its shortcomings. When a regression overfits, it takes too much of the sample specificities into account rather than the overall trend of the population. The formula explains very well the one dataset you based it on but not another.

The Group did not give us a counterargument to the regulator's observation on overfitting. It was up to us, local risk managers, to respond. During the meeting in Alice's office, we discussed how to answer to the overfitting question. There, I made a mistake. I thought about overfitting with normal, empirical, data. I said that we could easily see if the regressions actually overfitted by using a historical data sample. Barry the consultant corrected me, 'no, but [the regression functions are] market conform', which made my point seem a bit stupid. Alice looked at me and shook her head. I had said something so wrong it was un-debatable. The rest of the meeting I had lost my credibility and was not expected to chip in anymore. I had namely forgot about the standard data creation in Solvency II, that data incorporated ideal markets. The market data

⁴The economic reality at the time of research was one of low interest rates. This made lower capital requirements with the Solvency II model questionable. But that economic reality did not defer the process of approval of the model. The latter became a question of pride and reputation.

already incorporated all historical information.

Barry the consultant continued on the market conformity of the data. He made a point in how overfitting might not be possible in the market based environment. Can a regression, based on stochastic simulated data points have an over fitting? The data points used for the calibration and validation of the regression formula were market conform, meaning that the entirety of their sample was to hold all market information in it. The data points were stochastic points, the representation of the market with a random walk. Therefore, Barry put forward, ‘is it possible to over fit with the market knowledge of complete information?’

Barry thought that the simulated market data could not have an overfitted regression formula. He believed he could make the case against overfitting arguing the amount of simulated market conform data points contained full information. Thus, he used the argument of the Ideal Calculation to show that the regulators’ comments did not hold.

Barry was the only consultant in the room, the one who had the most experience dealing with the local regulator. He had a flair of legitimacy that the others did not have. No one in the room had an argument as eloquent as Barry. So, Barry received the task to explore the argument based on the Ideal Calculation of the market further. The meeting had to continue and Barry seemed to know what he was doing.

I got elongated from the project and did not see the final discussions on the overfitting. However, the final answer to the regulator did not include Barry’s argument on the Ideal Calculation. The risk manager had written down that they would look into the matter of overfitting. They promised the regulator that they would carry out a study to see if overfitting happened. They had thus tabled the idea of the market.

The risk managers had to counter the regulators’ objections to the possible overfitting of the regressions. They did not have the exact knowledge so they had to find an argument. In the initial meeting, the Ideal Calculation seemed like a great counter argument. The right person had put it forward and no one else had a better idea. However, in the end, Brad, Vicky and Alice had not chosen Barry’s market inspired argument. They preferred to take the time and prove

the regulator at a later moment that the regressions did not overfit.

The market based values, and thus the fair values, could pop up in risk management. They would come up in a meeting once in a while, if the risk managers could use them for their final knowledge production. In insurance, the market was hidden in the calculations. There, the fair value calculations related to the Ideal Calculations. Transactions or aggregations of markets did not come into the Insurance's risk managers realm. The Ideal Calculation could come forward as the legitimisation of a specific outcome. However, when the market argument did not have any use to the risk managers, they would abandon it as easily.

The risk managers depended on the health or disease declarations of the regulator. So however they could convince the regulator to give them a body of health, the better. Fair value or not, as long as one or the other kept the regulator happy, the risk managers would use it.

9.5 Conclusion: Usages of Fair Value in Risk Management

The three situations that are described above show the making and usages of market values. They show why risk managers use which market idea under which circumstance. By using different markets as basis for calculations, risk managers avoid negative consequences from the outside actors. They continuously appease actors that can bring conflicts to the organisation by showing them the right value. Regulators, owners, external accountants and counterparties all receive framed knowledge in the hope that they give a body of health.

The right market value comes from different market definitions. The bond values, derivative models and asset regression functions were all calculated on market ideas. The market concepts ranged from something related to the transaction process itself between a limited amount of actors to one that does not relate to any transaction but to an ideal imitation of the market. The risk managers in Bank F used the Direct Interaction, the Aggregation and the Ideal Calculation interchangeably. Insurance Company Vs risk managers either used

no market theory or the Ideal Calculation.

The first market type, The Direct Interaction, could be seen in the risk management practices of the bank. Examples are the usages of the valuations of the counterparties of the day before to value your own derivatives as well as counterparty being the driver in your own valuation determination. A third is the bid and ask price on a Bloomberg screen.

The second market concept, The Aggregation, can be seen in a valuation curve represented in Bloomberg, or the liquidity of a market. The third market concept is The Ideal Calculation and could be clearly seen in the calculations of markets in insurance risk as well as through the internal model for bond valuations that was adopted in Bank F.

When is which market used? The risk managers created fair values, with the help of these three different market usages. Accounting theories have posed that fair value creates more instability. Risk managers tried to diminish that instability, or at least to avoid declarations of disease by outside actors. They used the three markets to adhere to the fair value regulation while maintaining stability. Besides that, people might have personal preferences for a right value but in all the cases described above, external pressure trumped such morals.

That brings this thesis back to the original market-risk puzzle, the paradox between market equation and division of labour. The risk managers did not control or interact with financial markets. They used the different market representations to prevent losses, both for the external view on the organisation as for themselves. With the fair value accounting standards, the risk managers needed to value and calculate as these outside knowledge standards expected. However, they made sure they adopted the rules in a way that would not endanger the body of health of the organisation.

Chapter 10

Conclusion

A banker who sold financial products to optimise the capital structure of large firms, including banks and insurance companies, told me the following: ‘Banking is like driving in Formula 1. You might be a very good driver but if you are not part of Ferrari, you’ll never win.’ He said this after complaining about the competitors’ CEOs. Theirs would go out and meet the CEOs of his clients when a deal had to be made, his would stay in an ivory tower of bureaucracy. Of course, this man gave a caricature of Formula 1. The last couple of years McLaren and Red Bull also have obtained good results. He also caricatured banking, where many ‘drivers’ are behind a sale, not just one. Yet the analogy was very apt. First and foremost, the salesperson depended on the organisation, the team that made the car. Secondly, Formula 1 cars crash. They do so very often and with large damages.

Studies of financial market interactions have focused on the drivers (ie. traders), the overall classifications (ie. the market) and the cars (ie. the models). However, as my interlocutor told me, being or not being part of the Ferrari team changed everything. The organisation was thus the key actor for his activities. That is where my research has stepped in. It shows the importance of the organisation, its internal and external rules, and resource distributions. By looking at risk management practices of financial markets, underlying power relations have become clear.

But why does this matter beyond the walls of these organisations? The

financial crisis of 2007/2008, the Great Recession that followed and the Euro-crisis that started in 2012 are all examples of the effects of financial organisations and their ‘crashes’. Banks and Insurance Companies do not only affect those directly involved, their losses and decisions can have impact on both the macro-economy as well as the individual lives of people. One key aspect in this chain of events is the internal choice for risk taking and the control of those risks. The risks and thereby possible financial losses can make or break the viability of the organisation and with that the financial stability of an economy.

This thesis has shown the interactions of a set of people in two organisations. Its localness might make it seem trivial for those looking at macro economic questions or the stability of the financial sector. Yet, these local actions make the financial organisations, markets and thereby also the financial flows to society. Here, in the financial organisations, people make choices that create or avoid financial crashes.

To conclude, I summarise, discuss and reflect the research. I consider how the conclusions affect the literature and how the conclusions of this research affect the social studies of finance and the sociology of organisations. At the end, I reflect on the research itself and possible new routes. But first of all, I recapitulate this thesis’ results.

10.1 Financial Market Risk Management in Large Financial Organisations

Banks and insurance companies have their own risk management division to avoid such a ‘crash’. They supposedly identifies, controls and measures the risks. European regulation requires that large financial institutions have this official department. Risk management would avoid crashes. They do so in a relatively unexpected way. They make sure the outside contact to those who could harm the organisation limits the harm. The risk managers use available knowledge practices and resources to create a form of stability. They do this for themselves but also for the organisation they work for, avoiding negative events.

The thesis started out with a puzzle. How can we understand on the one hand

the joint economic relationship between risk and profit and the organisational break-up of the two? That led to the following research questions. The main question: *Why do risk managers in large financial institutions manage risks as they do?* had two sub-questions. First of all, we needed to understand what these financial risks are. Thus, sub-question one was: *What are financial market risks in large financial organisations?* Secondly, we needed to know what risk managers do. Consequently, sub-question two was: *What do financial risk managers do in large financial organisations?* Answers to each of these, led to the answer to the main research question.

The literature on financial market interactions led to a focus on the knowledge practices behind the risk management. To answer the first question, the environment of the creation and reception of the risk assessments was handled first and afterwards the risk definition itself. Specific knowledge standards set in the market and by the regulator determined parts of the assessments. However, a political frame also existed. The assessments had to fulfil a specific expectation not necessarily related to the calculations. Risk managers created financial risks not just because of the knowledge practice installed between them but also because others expected a certain outcome. Not only did the assessments incorporate two aspects, the political and technical framing, the risk managers also had two different definitions of the risks they dealt with.

On the one hand, the risk managers saw risks in the investments made by the different organisations. This is the risk ascription. Calculations in a far and relatively invisible future apply to this aspect of financial risks. Then, there are the consequences attributions. These assessments relate to a visible future in which specific negative events will happen almost certainly. The risk managers then try to avoid these negative events. With the creation of the risk assessments and the risk definition, I can answer the first sub-question. People that worked with financial risks defined them as both the negative possible consequences coming at the organisation but also the negative aspects related to financial market decisions. They had the form of assessments that had to please those people who received them and were made based on calculation standards set both by external and internal knowledge practices.

The second sub-question is about the activity surrounding these financial

risks. By looking into both aspects of the risk definition, the risk ascription and the consequence attribution. This relates to a question of control. Namely, do they master the risk taking in the financial markets with the specific assessments from the risk managers? The answer to this question is no. To control one needs resources. The risk managers did not have enough legitimacy, material resources or formal decision making power to make sure the risk assessment were followed by those who invested on the financial markets. Most importantly, the risk managers did not have the right information to create the assessments. The importance of time in and consequently distance to financial market interactions makes it difficult for the risk managers to obtain the right data. They were simply too far away to create assessments at all or to have them accepted as true by their financial market interlocutors.

Besides the activities related to the risk ascription, the risk managers also worked on the consequence attribution. Here they did have resources. They namely had the power to avoid difficulties for the organisation. The problems come from outsiders that the organisation depends on, most notably the shareholders and the regulator. The risk managers mainly steered away the possible problems the regulators could bring. By responding to their requests and alleviating the pressure of regulatory measures, the risk managers took care of the dependency relation between the organisation and the regulator. At the same time, they also helped the finance department in keeping shareholders happy. The risk managers' knowledge on both the regulatory impact and the market exposures helped the finance department to avoid losses on the balance sheet. They thus had the resources to avoid the negative consequences created by a set of outsiders. The second sub-question is thus answered. The risk managers worked on the avoidance of the negative consequences a certain set of outsiders to the organisation could bring them.

But how did the risk managers avoid the negative consequences? That brings me to the main research question of the thesis: Why did the risk managers manage the consequence attribution through both the political and technical framing? Here, I use the concepts of the body of health, disease and illness. By bringing the knowledge practices together with the work, I answer the main research question. Namely, risk managers protected the organisation from outsiders' negative effects

by creating specific sets of knowledge. They saw negative consequences coming at them, the body of illness. How can they avoid these events? Well, they created assessments that appeased the regulators and shareholders that controlled these events. The outsiders could then, with the positive information, declare a body of health. Consequently, the risk managers made sure the outsiders would not harm the organisation. The outsiders did not always accept the assessments as a sign of health, thereby diagnosing a disease. At those moments, they could create difficulties for the organisation. For example, they could deny funding or require a capital increase.

Thus, why were the financial risks managed as such? Well, the risk managers wanted to avoid negative consequences from resourceful outsiders, especially the state and the regulator. But how does the body of health relate to the financial markets the risks supposedly come from? This was the start of the thesis. The financial market risks were not controlled or diminished because of the risk management actions. Only when they could show a resourceful outsider might have problems with financial market actions, they could change things. Thus, only when the body of health was threatened, the investments could change on the risk managers input. However, the market was still part of the assessments. Multiple ideas of the market were used to create a stable situation, either in the local work environment or for the organisation. The market was thus a legitimate argument, a knowledge practice, that could be adapted to the resource distribution of the situation risk managers' found themselves in.

The technical framing was adapted, where possible, to the political frame, to those who received the news and who had a resource advantage. Risk assessments were created in situations of pressure and based on the available techniques. However, the techniques were relatively flexible and could thus help diminish pressure of those with resources. Having answered the research question, what does that imply for the literature?

10.2 Markets, Models or Organisations?

This thesis started out as one about the models and assessments of risks, that other side of the profit equation. However, the organisational setting became

quickly apparent and remained an important factor. The two aspects, the material and the organisational, or the knowledge practices and the resource distribution, remain important throughout the demonstration. However, the material changed form, it went from a mathematical concept to an accounting representation. Even though the creation of numbers with models made the final body of health, the technical frame was, where possible, adapted to the expected representation of the risks. Thus, the message had priority over the techniques behind it. What does this imply for the study of finance and organisations?

First of all, lets go back to the question of control. Literature on knowledge practices as well as neo-institutionalism on organisations expect a form of control through knowledge. Actors would act based on the standards set of what is seen as good, such as financial models, regulatory required risk assessments or a rule (institution) firms supposedly keep to. Defining risks as a mathematical calculation of the probable losses, as economists and economic sociologist tend to do, also fits within the idea that this specific knowledge can master future negative events. Risk assessments would thus indirectly limit risk taking when investing and limit the negative effects that might come from these investments.

This research has shown that the control through knowledge can only happen if those that supposedly do so also have resources to enact on the control. A threat of punishment has to exist. In the case of risk as the risk ascription, and thus the calculated supposedly rational evaluations of the future, this does not happen. Risk management does not have the resources to enact upon these assessments. Consequently, the latter do not control the investment decisions in large financial organisations.

In the investigated instances, risk assessments did not control. They existed, and were created, for something else. They directly prevented negative consequences. Outsiders with resources might directly bring on the latter to the firm. In order to avoid such an action, the risk managers made assessments that would appease the possible threats. Of course, the risk reports and numbers fell within a specific frame of knowledge, especially the one expected by the outsider. However, the knowledge frame itself does not control action, in these cases it is used as a resource to avoid negative consequences. This tells us a couple of things about both the studies of finance as well as the study of organisations.

The lack of risk management's impact on the different investments and its focus on the body of health helps us further understand financial markets. Key in this is the risk managers distance from the financial market interactions. The people who supposedly control the negative aspects of financial markets focus on the organisation. It implies that the people who invest the money for those organisations do not have the organisation's risk limits imposed to them. The firms allowed for this lack of control and sustained it. The risk managers focused on the outside threats, thereby leaving the financial market actions outside of the crossfire. Certain authors in the social studies of finance put the market and its operators external to the organisations they act for. Even though traders seem independent, they are still dependent and encrusted within the firm. And it is the legitimacy construction and resource distribution within the organisation that make the actions on the financial market possible.

Within the social studies of finance, the focus has mainly been on the knowledge practices of different groups of people in the financial markets. This research does not contradict those results. It partially corroborates them. I add a dimension to the importance of knowledge, namely one of resources in interdependent relationships. These relationships exist in and outside organisations. The topic, risks, as well as the method, a participant observation, brought to light the daily practices that are hidden from view when one focusses on investment and market practices. Risk is the 'other side of the coin' of this search for profit, ideal to show the mechanisms of power behind the financial market interactions. Here, the resource dependencies come in. A knowledge standard only determines practices if the resources exist to sustain them.

What does the above mean for the social studies of financial markets? That in order to understand market interactions even further, resources and knowledge practices (and material) should be brought together. Within organisations, within markets and between organisations and markets, the standards of calculations and material could be related to the resources of the different actors.

That leads me to the question of the studies of organisations. One of its literatures has focused the last forty years on the question of institutions and how organisations follow them. It has investigated the setting and adherence to a general standard by the different actors. Thereby, the knowledge creation

itself and the resource distributions have gotten lost. This research shows the importance of the study of the internal creation of knowledge. Whilst organisations might adhere to institutions one way or another, the investigation into the resources of the actors make clear how and why this happens. One of the main questions here is why organisations survive. However, by looking into adherence to institutions or just resource distributions, one lacks the insight of the actions that make that survival.

In the case of risk management of large financial organisations, I have gone beyond the standard quest of organisational survival by understanding how the people inside made their organisations survive. I thus explain why the firms survived. Risk management made organisational life possible. The risk managers kept the regulators at bay. They also helped with the financial figures such that they represented a more or less healthy organisation. Why do people internally do what to maintain the organisation? Here, a division made sure that the knowledge projected outside the firm prevented a downfall. They did not do this necessarily because of knowledge standards or internal professionalism. What mattered were the resources these outsiders had and what they could do with it. These outsiders themselves had accepted certain knowledge practices, such as accounting standards and regulatory risk measures. The risk managers created acceptable knowledge where possible, from an internal illness and chaos. They did not do so necessarily because the standards existed, they did so because outsiders with resources indirectly threatened them to do so. The risk managers tried to obtain a body of health from a body of illness, where the outsiders would give it to them.

All in all, the study of organisations could be enhanced by looking into the local creation of knowledge as well as the resources that come with it. The studies of financial markets could look more into both the organisation as an actor in itself as well as the resource distribution of the different financial market actors. And one thing is certain, financial market risks are not a control of far away future losses. They are a control of visible negative consequences.

10.3 Reflection

In the end, this thesis contain two ‘morals’¹; ‘hubris’ and absurdity. Behind the question of risk control lies a form of ‘hubris’². To characterise, in economic theory and the sociology of economics the idea exist that risks are rational calculations. That these numerical assessments would avoid potential losses of the actions taken in financial markets. By calculating, financial actors would have a form of control. The actors themselves sometimes believe they master financial losses. They implement specific investment strategies based on these rationales. As seen with Bank F, those strategies could quickly turn against them. In Insurance Company, the pure control of risks had not been adopted yet, even though the Solvency II models did hint at such a practice. But since the models were new and almost incomprehensible for the separate participants, the idea of control through risks was not as present. But mastering financial losses with the help of rationale was almost impossible. The far away future was too far away to really think about financial losses.

The second moral of the research is one of absurdity. Many a risk assessment, report or calculation came from a relatively absurd situation. On numerous accounts in the nine months of participant observations, I found myself in meetings where numbers flew around, the methodology was unclear or people did not seem to understand one another. Everybody had their own little world in which they tried to survive, working with the requests from colleagues and hierarchy, prioritising to create their own stable situation. Thus, objects were negotiated, restated, sent out without too much notice. It was messy and incomprehensible. However, one clear thread existed. What the hierarchy wanted or what could improve the financial situation of the organisation had priority. So something could be red, white or blue in an excel file or a meeting. As long as those who had the power to destroy the organisation or your own personal situation saw something in the colour pink they liked, the thing would be pink. Especially when talking

¹Moral here relates to an overreaching conclusion of a story rather than the situation of judgement

²‘hubris’ indicates overconfidence. The word relates to the tradition of Ancient Greek tragedies. The characters of big Greek tragedies create their own downfall, not because they are reckless, but because they are blind to the consequences of their actions. They believe too much in their own good.

about billions of euros, the absurdity and reality are extremely close.

The limits of this research lie in multiple places. One of them is the location. This research's conclusions only directly apply to the fieldwork locations. However, we can assume based on the widely held interviews that these practices do not limit themselves here. At the same time, it is not certain the conclusions can be extended beyond the fieldwork locations.

Secondly, the research has a temporal and a personal aspect. Even though the individual viewpoint was partially mitigated by the questionnaires, it still existed. Given the gender aspects of the fieldwork, a male researcher would most probably have another experience, as would a non-white man or woman.

Finally, the fieldwork was done in specific moments, when things went bad at Bank F and with the implementation of Solvency II at Insurance Company V. The different data collection methods have tried to mitigate this temporal aspect as well, for example with the help of interviews in which people explained their careers. Yet the different meetings and decisions were specifically made during the fieldwork. I do not know what happened when I left.

Future Research

What does all of this mean for future research? This ethnographic research has given in-depth data on the usage of risk management. The main finding of the research is relatively general. The assessments that represent the organisation come from the knowledge practices but also the resource dependencies in which actors find themselves. That result not only relates to financial market risks but also to how we can see organisations and financial markets. Consequently, multiple future routes of research are possible, methodologically but also theoretically and empirically inspired ones.

First and foremost, the methodological choices limited the vision on risk management and therefore the generalisability of the results. A study with multiple cases inspired by the theoretical outcome of this research could put to rest doubts around the generalisability of this research. Although the closed nature of financial organisations and the difficulty to access risk management could make such a systematised research design relatively difficult.

Secondly, the theoretical conclusions on risk management can also be looked at from other angles. For example, does the focus on the consequence attribution also hold for the front office? Or do the people there focus more on long-term possible risks? Also, how does a financial organisation fail? Based on this research, one might expect that the failure comes from a set of actors with resources, including sovereigns and other banks. The body of disease of financial organisations needs further investigation to fully understand the question of failure. Furthermore, the finance department's creation of accounting figures and financial assessments would fall in a similar theory. Do they try to obtain a body of health out of a body of illness? And what would that tell us about the accounting firms publish?

Third of all, the thesis puts forward questions on the importance of financial organisations. Can we see them as determinant actors in other settings as well or does it limit itself to the question of financial market risks? And what about resource distributions between them? Since funding but also standard setting partially come from the different firms, what can we say about resource distribution of the different firms and the people working for them?

These questions open up new strands of research where this thesis has tried to close at least a small knowledge gap. Namely, why do risk managers do what they do in large financial institutions? And there, I found that in the cases studied, negative consequences to the organisation were avoided from actors who had the resources to bring harm, such as the regulator or the shareholders. By creating assessments they thought would give a body of health the risk managers presented a control of risks and losses and possibly avoided harm to the firm from these outsiders.

Gérer les risques financiers

Protéger l'organisation

Résumé en français

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Cette thèse porte sur la gestion des risques associés aux marchés financiers au sein des grandes organisations financières européennes. En effet, la crise bancaire de 2007/2008 et celle des dettes souveraines qui l'a suivie ont démontré que les banques et les assurances pouvaient faire faillite et potentiellement entraîner dans leur chute les états nations. Désormais, les risques financiers portés aux bilans de ces entreprises ne peuvent plus être considérés comme de simples pertes potentielles mais comme un danger réel pour l'ensemble de la société car susceptibles de déstabiliser l'économie.

Lorsque les entreprises financières investissent, elles sont exposées à des risques de marché qu'elles doivent prendre en compte et donc mesurer. Il existe ainsi chez ces acteurs l'acceptation implicite de pertes et de défauts qui font l'objet d'une «évaluation des risques ». L'association systématique des risques à leur évaluation amène à définir le risque comme la connaissance d'événements négatifs potentiels susceptibles d'affecter leurs investissements et non comme les évènements eux-mêmes. L'appréciation du risque rassemble des gestionnaires de risques au sein d'un département qui calculent, évaluent et rendent compte des risques liés aux investissements de l'organisation sur les marchés financiers.

Cette thèse vise à améliorer la compréhension de la gestion des risques de marchés financiers dans les banques et les compagnies d'assurance de la zone euro. Elle s'intéresse aux raisons qui amènent leurs employés au sein des divisions du risque à adopter une approche particulière. Pour ce faire, il est nécessaire de répondre à deux questions sous-jacentes. Premièrement, il est primordial de définir le risque financier et donc d'identifier «quels sont les risques du marché financier dans les grandes organisations financières ». Deuxièmement, il est important de se pencher sur les pratiques en analysant ce «que font les gestionnaires des risques financiers au sein de ces grandes organisations ».

Position dans la littérature

La question de la gestion des risques au sein des banques et des assurances est complexe et requiert la mobilisation de deux littératures pour décrypter le travail des gestionnaires des risques. Le premier d'entre eux correspond au champ des études sociales de la finance. Le second est le champ des études organisationnelles

auquel sont empruntées la théorie institutionnelle, celle de la dépendance des ressources et celle des rationalités locales. La mobilisation de ces deux littératures permet d'insister sur l'importance respective des ressources et du contrôle par la connaissance. Insérer le risque dans les études sociales de la finance

Les études sociales de la finance définissent les marchés financiers comme la résultante des interactions locales entre les objets et les personnes. Elles se concentrent sur la rentabilité des marchés financiers en étudiant les infrastructures de marché, les modèles et les traders (Muniesa, 2000 , Godechot, 2001 , MacKenzie, 2008). En résumé, les enquêtes sur les pratiques locales des acteurs financiers ont ainsi permis de comprendre le fonctionnement du secteur au jour le jour. Elles montrent que les connaissances (des acteurs) façonnent les interactions sur les marchés financiers, dont le fonctionnement peut être bouleversé par l'évolution du matériel.

Cependant, le profit n'est pas le seul facteur motivant un investissement sur un marché. Les risques occupent une place centrale, comme l'illustre l'une des équations financières fondamentales décrivant un arbitrage entre le profit et l'appétit pour le risque. Cet aspect est demeuré marginal dans les études sociales de la finance. Ainsi, cette thèse ambitionne de combler la méconnaissance de la contrepartie du profit, la seconde partie de l'équation, en étudiant les risques.

Dans la théorie financière, il existe un lien direct, quasiment mécanique, entre les niveaux de profits et de risques financiers. Les investissements perçus comme sûrs, tels que les bons du trésor, offrent un retour sur investissement modeste. En revanche, les actions, souvent moins certaines, doivent procurer un profit plus élevé. Cependant, la réalité des organisations financières est loin de refléter ce cadre théorique. En effet, il existe une division du travail entre les professionnels du risque, concentrés dans la division des risques, et les responsables du profit que sont les traders et commerciaux appartenant à la division d'investissement. Cette division du travail s'accompagne d'une inégalité de fait car la gestion des risques a moins de statut et de ressources que les personnes qui investissent (Ho, 2009).

Cette recherche part du paradoxe entre un lien direct dans la théorie financière et une séparation de fait au sein des organisations. Afin de l'éclairer, il est donc nécessaire de mobiliser la littérature sur les organisations, en particulier la

théorie de la dépendance des ressources, celle du néo-institutionnalisme et celle des rationalités locales. Comprendre le rôle de l'organisation

Pour la théorie de la dépendance les organisations reposent sur des ressources et des normes internes et externes et ne sont donc pas complètement autonomes. Par exemple, les banques et les assurances sont soumises à l'autorité des régulateurs contrôlant leurs activités. Le néo-institutionnalisme considère que l'organisation fait face à des standards (les institutions) auxquels elle doit s'adapter afin de survivre (DiMaggio & Powell, 1983, Scott, 2008). Dans cette optique, l'acceptation des acteurs prime sur le bien-fondé de ces standards qui est relégué en second plan. La norme se perpétue de par l'acceptation des acteurs qui peuvent la nourrir.

Enfin, des auteurs tels que Crozier et Friedberg (1977) insistent sur le rôle des rationalités locales légitimant la distribution des ressources afin de décrypter le fonctionnement organisationnel. Un exemple phare est celui de Burawoy (1979) qui explique l'organisation du processus de production au sein d'une usine comme étant la résultante d'un équilibre entre les pressions de la hiérarchie et la mobilisation des ressources des ouvriers. Les études sociales de la finance ont insisté sur les connaissances locales et l'importance des relations horizontales, à l'instar de Beunza et Stark (2004), qui expliquent l'évolution des techniques de trading par les échanges de connaissances entre les traders. En revanche, ces études ignorent l'importance des ressources organisationnelles telles que la hiérarchie.

Cette focalisation sur l'importance des connaissances présente dans les études sociales de la finance s'inscrit dans la vision foucaldienne du contrôle. Ici, le calcul des risques viendrait encadrer les décisions en développant un standard d'action en ignorant la prévalence de la recherche du profit et la division du travail. Cette thèse fait appel à la fois aux études sur la mobilisation des connaissances et sur celle des ressources pour comprendre la gestion des risques de marché financiers au sein des organisations.

Méthode

Pour répondre à ces questions de recherche cette thèse s'appuie sur une ethnographie au sein du monde bancaire et assurantiel de la zone euro entre 2013 et

2016. Elle se compose d'entretiens et d'observations participantes. 84 personnes en relation ou travaillant directement sur les problématiques de gestion des risques ont été interviewées. De plus, l'auteur de cette thèse a également réalisé deux stages d'une durée respective de 4 et 5 mois au sein de la Banque F et de l'Assurance V.

La Banque F avait fait faillite pendant la crise et était maintenue en vie avec l'aide de l'état. Le stage a été réalisé au sein du département de gestion des risques de marché du groupe. De 20 à 25 gestionnaires de risques étaient en charge de la valorisation et réévaluation des actifs financiers et de la gestion des risques résultant de la situation financière de la banque. La préoccupation principale de la banque était de minimiser les pertes plutôt que de maximiser les profits.

Le stage au sein de la compagnie d'assurance V a été réalisé au sein du département en charge de la modélisation des risques financiers et vie qui faisait partie de la division des risques. L'assurance était la principale filiale nationale d'un des plus grands groupes d'assurance européen. L'équipe au sein de laquelle l'auteure évoluait était en charge du calcul des risques dans le cadre de la réglementation «Solvabilité II ». Les autres équipes étaient en charge du suivi des risques directement liés aux investissements et aux produits d'assurance.

Cette thèse s'appuie sur la littérature et les données empiriques pour répondre à la question de recherche en trois temps. La première partie discute de l'objet qui occupe ce travail en définissant ce que sont les risques financiers. La seconde partie s'interroge sur le travail de gestionnaire du risque. Enfin, la dernière partie étudie le risque par le prisme de l'environnement de travail.

Première Partie : Gestion des risques ?

Cette première partie examine le risque de marché financier tel qu'il est perçu au sein des secteurs de la banque et de l'assurance. Le chapitre 3 décrit l'environnement dans lequel le risque est utilisé en partant des obligations réglementaires jusqu'à l'utilisation des évaluations du risque par les différents niveaux de hiérarchie. Le chapitre 4 propose d'ouvrir la boîte noire du risque en interrogeant les différents acteurs sur leur propre définition du risque et son utilisation.

Le troisième chapitre mobilise deux concepts théoriques pour décrire l'environnement propre aux risques financiers. Le premier correspond à l'idée d'un «encadrement technique» où l'évaluation du risque est conditionnée par les capacités matérielles et les normes de connaissances communes. Le second correspond à l'idée d'un «encadrement politique» où l'évaluation finale dépend également de ce qui est attendu par son destinataire.

L'encadrement technique varie d'une organisation à l'autre tout comme l'ordre de grandeur des calculs et l'horizon temporel. En revanche, l'utilisation des calculs et des évaluations restait très similaires en raison des attentes de la hiérarchie. Les managers ne s'encombrent pas des questions techniques mais s'intéressent uniquement aux conséquences d'une évaluation. Ainsi, leurs subordonnés font en sorte que le cadre technique s'adapte à leurs attentes. Le chiffrage doit apparaître comme juste c'est-à-dire qu'il doit être similaire aux chiffres précédents et préférablement avoir un impact positif sur les données financières. Dans la majorité des cas, l'encadrement politique prime sur l'encadrement technique qui apparaît comme nécessaire mais malléable.

Puisque la technique n'est pas suffisante pour expliquer les risques financiers, le chapitre 4 mobilise les définitions des participants pour ouvrir la boîte noire du risque. Si les acteurs ont des définitions différentes, deux approches distinctes émergent. La première, correspondant à une «attribution des risques», fait un lien direct entre de probables pertes dans un futur lointain et des produits ou investissements financiers spécifiques. Dans la seconde, «l'évaluation des conséquences», les acteurs associent le risque aux conséquences d'un événement négatif visible dans un futur proche.

Si les gestionnaires de risque travaillent sur les deux aspects, ils adhèrent à l'une ou l'autre des définitions en fonction de leurs expériences passées et de leur situation présente.

Partie II : Travailler dans la gestion du risque

Cette deuxième partie s'intéresse à l'organisation du travail des gestionnaires du risque en s'appuyant sur les deux définitions précédentes permettant de clarifier leur travail.

Le chapitre cinq repose sur le travail «d'attribution des risques »et remet en cause les travaux d'inspiration foucaldienne sur l'encadrement des risques. En effet, alors que les travaux de Power (2008) et Mikes (2009,2011) présentent la gestion du risque comme un contrôle, il est notable que les gestionnaires de risque disposent de moins de ressources que les investisseurs. Il convient donc de s'interroger sur la plausibilité d'un contrôle sans légitimité ni moyens d'actions matériels et formels.

Les données montrent que les connaissances des gestionnaires sont insuffisantes pour contrôler les investisseurs en raison de leur manque de ressources. L'un des éléments les plus saillants réside dans le fait qu'ils ne disposent pas des informations nécessaires pour réaliser leurs évaluations. Les investisseurs financiers doivent agir très rapidement sur les marchés sans contact direct avec les gestionnaires. Cette distance coupe ces derniers des informations essentielles pour réaliser leur travail d'attribution des risques.

Le sixième chapitre s'intéresse à l'évaluation des conséquences par les gestionnaires de risque. Attribution pour laquelle ils disposent de davantage de ressources car ils sont investis du pouvoir d'éviter les conséquences négatives pour l'organisation. Ils peuvent être décrits comme les défenseurs de l'organisation vis-à-vis des menaces extérieures telles que les actionnaires et les régulateurs. En effet, leurs réponses régulières aux demandes du régulateur permettent d'éviter une intervention potentiellement néfaste de ce dernier. De plus, ils soutiennent également le département financier en rassurant les actionnaires car leurs connaissances des normes réglementaires et des positions de l'organisation permettent de limiter les pertes portées au bilan. Ce chapitre conclut que les gestionnaires de risque protègent l'organisation des conséquences négatives liées aux actions des intervenants externes.

Partie III : Produire des risques sous des contraintes externes et internes

Cette dernière partie rassemble les résultats des deux sections précédentes afin de comprendre pourquoi les gestionnaires de risque adoptent une gestion du risque spécifique. Ses trois chapitres explicitent les raisons qui les poussent à produire

des évaluations visant à éloigner les évènements négatifs.

Ce chapitre insiste à nouveau sur l'importance des ressources et des connaissances pour comprendre la relation entre les acteurs extérieurs et les gestionnaires de risques. En effet, il est important de souligner que ces deux ressources sont inégalement réparties entre les parties prenantes. D'une part les gestionnaires de risque connaissent les difficultés de l'organisation mais ne peuvent pas les résoudre ni les empêcher. En revanche, les actionnaires et les régulateurs n'ont qu'une vision partielle de la situation de l'entreprise par le biais des informations communiquées alors qu'ils disposeraient des outils nécessaires pour contraindre voire fermer l'organisation.

Afin de clarifier les mécanismes à l'origine des évaluations, cette thèse développe un ensemble de nouveaux concepts décrivant l'organisation comme une entité sociale. Cette approche semble être la plus adéquate car les gestionnaires de risque doivent agir pour protéger l'entreprise dans son ensemble. Ces concepts présentent l'état de l'organisation comme un corps.

Les différentes parties prenantes traitent le bien-être de l'organisation de la même manière qu'un corps. Les acteurs externes décident de le déclarer «sain» ou «malade». Les acteurs internes quant à eux constatent s'il est «fragilisé» ou «robuste». La manière avec laquelle l'organisation est diagnostiquée dépend des ressources et des connaissances des différents acteurs.

Les acteurs externes tels que le régulateur ou les actionnaires disposent des ressources nécessaires pour déclarer l'entreprise comme «saine» ou «malade». Le diagnostic d'une maladie impliquerait de nombreux problèmes pour l'organisation susceptibles de déboucher sur un défaut. La «fragilité», visible depuis l'intérieur, ne débouche pas nécessairement sur la faillite de l'établissement. Les gestionnaires de risques ne disposent pas des ressources nécessaires pour revenir d'une situation «fragilisé» à une situation «robuste» ni pour déclarer la faillite de l'entreprise.

Les gestionnaires de risques protègent l'organisation des effets néfastes des acteurs externes en dressant un portrait de l'organisation. Ils empêchent une situation «fragilisée» de dégénérer en «maladie» en créant des évaluations apaisant les acteurs externes. Ils peuvent ainsi amener les régulateurs et actionnaires à déclarer un corps «fragilisé» comme «sain». Toutefois, leurs évaluations ne sont

pas toujours acceptées et la «maladie » peut être déclarée, ce qui générera des difficultés pour l'entreprise, comme le refus d'une augmentation de capital.

Le meilleur exemple du passage d'un corps «fragile » d'un état «sain » à un état «malade » est celui de la Banque F. Cette organisation avait connu de nombreux défauts mais l'état l'avait sauvegardée. Elle avait été «malade » à plusieurs reprises et les gestionnaires de risques géraient une situation de fragilité perpétuelle. Lors de l'observation participante, les régulateurs menaçaient régulièrement de constater le décès. Alors que les gestionnaires faisaient face à de nombreux problèmes, leur manque de ressources les empêchait d'y remédier en influençant les stratégies d'investissement ou de gestion des liquidités. Leur stratégie consistait dès lors à distiller aux régulateurs des informations spécifiques afin d'influer positivement sur leurs diagnostics. Ils ont ainsi changé leur modèle de valorisation des actifs en utilisant les règles afin de s'assurer que leur propriétaire, l'état, évite de diagnostiquer une nouvelle «maladie ».

Le dernier chapitre s'interroge sur les liens entre les marchés financiers et la gestion des risques. Lorsque que le corps est en bonne santé, les gestionnaires ne peuvent pas influencer la stratégie d'investissement jusqu'à ce que la menace d'une maladie apparaisse. Dès lors, ils peuvent inciter les investisseurs à modifier leur stratégie. Il est notable que dans cette situation, les gestionnaires de risques font un usage stratégique de différentes normes du marché, comme source de légitimité, pour amener les parties externes à déclarer le corps «sain ».

Conclusion et implications

La littérature sur les interactions au sein des marchés financiers se concentre sur la connaissance des pratiques des participantes. Pour comprendre l'objet des risques financiers, cette thèse insiste sur l'existence de connaissances spécifiques constitutives d'un «encadrement technique » de l'évaluation du risque défini par les régulateurs et les marchés. Cet encadrement coexiste avec un «encadrement politique » puisque l'évaluation doit être conforme à des attentes spécifiques internes. À ces deux encadrements s'ajoute une double définition du risque utilisée par les participants.

Le point de départ de cette thèse questionnait les modèles et l'évaluation du

risque, c'est-à-dire la seconde partie de l'équation fondamentale de la finance. Néanmoins, il est rapidement apparu que le cadre organisationnel demeurerait clé. Si les connaissances et les ressources sont importantes pour l'ensemble de la démonstration, les modèles et leurs chiffres restent malléables. Les connaissances sont mobilisées pour influencer le diagnostic final du corps et assurer sa conformité avec les attentes de l'encadrement politique. Ces résultats ont des implications pour l'étude de la finance et des organisations.

Tout d'abord, ces résultats remettent en cause la théorie du contrôle par des standards. En effet, la littérature sur la connaissance et la littérature néo-institutionnaliste insistent sur le rôle du contrôle par la connaissance en arguant que les acteurs agissent selon des référentiels de bonnes pratiques fondés sur la réglementation, les institutions ou les modèles financiers. Ainsi, la tendance des économistes et sociologues à définir le risque à partir des calculs mathématiques de pertes probables s'insère dans l'idée qu'il est possible de maîtriser les événements futurs. L'évaluation du risque serait soi-disant capable de limiter les prises de risque lors des investissements et leurs conséquences négatives.

Cette recherche a montré que le contrôle par la connaissance n'est possible que lorsque les gestionnaires de risque disposent d'un pouvoir suffisant. L'inexistence de menaces et de sanctions dans le cadre de l'attribution des risques neutralise l'efficacité de ce type de contrôle au sein des grandes organisations financières.

Dans les instances étudiées, les départements du risque ne sont pas en charge d'un contrôle par la connaissance mais davantage de la prévention des conséquences d'événements négatifs. Pour ce faire, les gestionnaires du risque réalisent des évaluations à destinations des parties prenantes extérieures afin d'éloigner leurs menaces. Ainsi, si les chiffres et les modèles utilisés correspondent bien à l'encadrement technique attendu par les régulateurs et les actionnaires, ils ne permettent pas de véritablement encadrer les actions au sein des organisations.

L'absence de lien véritable entre les gestionnaires de risque et les investissements permettent d'approfondir la compréhension des marchés financiers. Les personnes en charge du contrôle des risques sont maintenues à distance des interactions de marché et se concentrent sur l'organisation afin d'assurer l'apparence saine du corps. C'est donc l'organisation qui permet aux investisseurs d'échapper à un contrôle direct en reléguant les gestionnaires de risque aux menaces externes.

Si certains auteurs considèrent le marché et ses acteurs comme des entités externes aux organisations qu'ils représentent, il semble important de rappeler qu'ils restent encadrés au sein des entreprises. Ainsi, c'est bien la construction de la légitimité et la distribution des ressources à l'intérieur des organisations qui rend les interactions sur les marchés financiers possibles.

Cette étude ne va pas à l'encontre des résultats des études sociales de la finance qui insistent sur l'importance des connaissances au sein des différents groupes agissant sur les marchés financiers. Elle les complète en y ajoutant l'importance des ressources dans les relations d'interdépendance à l'intérieur et à l'extérieur de l'organisation. Tant par son sujet, le risque, que par la méthode mobilisée, l'observation participante, cette étude a mis en lumière certaines pratiques invisibles par les études se concentrant sur les seules pratiques de marché. Le risque qui est la contrepartie de la poursuite du profit est le sujet idéal pour mettre en avant les relations de pouvoir derrière les marchés financiers. La dépendance vis-à-vis des ressources émerge comme un facteur clé car les normes de connaissances ne peuvent influencer les pratiques qu'en leur présence.

Ainsi, pour améliorer notre compréhension des marchés financiers, il semble important de combiner les ressources et les connaissances. En effet, les normes de connaissance et les équipements utilisés peuvent être la résultante de la distribution des ressources entre les différents acteurs agissant sur les marchés et au sein des organisations.

Les travaux portant sur les organisations ont majoritairement insisté sur l'importance des institutions dans la structuration des actions organisationnelles. Ces études insistent sur la mise en place d'un référentiel commun et son suivi par l'ensemble des différentes organisations. Cependant, elles négligent le processus de création de connaissance et l'importance de la distribution des ressources qui sont essentiels pour comprendre leur processus de survie.

Le cas particulier de la gestion du risque au sein des grandes institutions financières a permis d'éclairer les mécanismes locaux permettant d'assurer la survie des organisations. En effet, la gestion du risque permet la perpétuation de l'entreprise en éloignant le régulateur grâce à la confection de chiffres financiers garantissant l'image d'une entreprise «saine ».

La division du risque écarte la possibilité d'une faillite grâce aux ressources

des acteurs externes auxquels elle transmet une représentation de l'entreprise conforme à leurs standards. Ainsi, elle peut transformer la situation chaotique d'une entreprise faible en une représentation susceptible d'obtenir un diagnostic favorable.

Addendum I

Names and Organisations of Participants

Multiple names and organisations have been used in this thesis. In the following tables, ordered alphabetically, the pseudonyms of the different participants can be found as used in the thesis. The fourth table of Addendum I contains a description of the different organisations mentioned in the thesis. All are based in countries of the euro area.

Participants [1/3]		
Name	Organisation	Role
Albert	Bank F	Interest Rate Risks
Alice	Insurance Company V	Head of Life risk modelling
Amir	Insurance Company V	Risk Management – life model
Ariel	Insurance Company V	Accounting and Consolidation
Ayden	Bank F	Calculations department – Value-At-Risk
Barry	Insurance Company V	Consultant – Life risks
Basil	Bank F	Calculations department
Blake	Bank F	Strategic Asset and Liability Management
Brad	Insurance Company V	Financial risk modelling
Cameron	Bank X	Credit Risk Modelling
Camille	Bank F	Calculations department
Carlo	Bank F	Calculations department
Carter	Bank F	Calculations department
Casimir	Insurance Company V	Head of Accounting Department
Claude	Insurance Company V	Intern
Dan	Bank F	Calculations department
David	Bank F	Bond Valuations Risk Management
Dennis	Insurance Company V	Consultant – life and financial risks
Diane	Insurance Company V	Non-Life Risk Model
Didier	Insurance Company V	Financial Market Risks
Dirk	Bank Y	Head of Risk Modelling
Drew	Reinsurance 1	Risk Modelling
Edward	Bank G	Insurance Risks
Emma	Bank D	Quant, modelling of derivatives
Ewan	Insurance Company V	Life and Financial Risk Model
Felix	Bank G	Risk Modelling Fixed Income
Francesco	Insurance Company V	Consultant
Frank	Bank F	Quant, modelling of derivatives
Freddy	Bank F	Risk Management -market risk

Participants [2/3]		
Name	Organisation	Role
Gene	Insurance Company V	Financial Market Risks
Gerard	Bank F	Transversal Risks
Hannah	Insurance Company V	Consultant – Life risks
Harald	Bank X	Calculation department
Howard	Bank F	Valuation Risks
Isabel	Bank F	Head of Asset and Liability Management
Ivan	Bank F	Calculations department
Jacob	Bank F	Balance Sheet and Liquidity Risks
Jane	Insurance Company V	Head of Life Risks
Janice	Bank F	valuation Risks derivatives
Jef	Insurance Company V	Finance department
Joey	Insurance Company V	Intern
John	Insurance Company V	Innovative Insurance Products
Jonah	Insurance Company W	CRO / CFO
Joseph	Bank F	Calculation department
Jules	Bank F	Head of Market Data Calculations
Konrad	Insurance Company V	Intern
Kristjan	Insurance Company V	Risk Management – Standard formula life/nonlife
Lalitha	Bank F	Risk Management
Leonard	Insurance Company V	Consultant
Lucius	Association of Actuaries	Head
Lydia	Bank F	Bond Valuations Risk Management
Marcus	Bank F	Head of IR and FX risks
Marla	Bank F	Balance Sheet and Liquidity Risks
Martin	Insurance Company V	Financial risk modelling
Mathilda	Bank F	Calculation department
Maureen	Bank F	Calculation department
Michael	Bank F	Investment Risks
Miriam	Bank F	Calculations department

Participants [3/3]		
Name	Organisation	Role
Nasim	Insurance Company V	Consultant
Nathalie	Insurance Company V	Consultant
Nicholas	Bank F	Head of Liquidity Management Desk
Nikki	Brokerage firm	Risk Management
Niklas/Frank	Bank F	Head of Balance Sheet Risks (MRM)
Oliver	Bank Y	Risk Management
Oswald	Bank F	Calculations department
Otto	Insurance Company T	Asset Management – Management Reporting
Patricia	Insurance Company V	CRO
Pete	Bank F	Valuation Risks
Robert	Bank D	Balance Sheet and Liquidity Risks
Ruth	Bank F	Risk Management Markets
Sherman	Bank G	Insurance Risks
Stefan	Bank F	Calculations department
Stephanie	Bank F	Strategic Asset and Liability Management
Steve	Bank F	Product Control - Swap value calculations
Sylvie	Bank F	Market Risk Management – Subsidiary
Tony	Insurance Company V	Head of Life Risks
Trevor	Bank F	Product Control - Head of Calculations Market Portfolios
Valentin	Bank F	Balance Sheet and Liquidity Risks
Valery	Bank F	Head of market risk
Veronica	Bank F	Foreign Exchange Rate Risks
Vicky	Insurance Company V	Financial risk modelling
Wade	Insurance Company V	Consultant
Yann	Insurance Company V	Consolidation Accounting
Yvonne	Bank X	Regulatory Affairs

Organisations	
Bank D	European Bank, active in credit and investment markets, used to be together with Bank F
Bank F	European Bank, in long-term liquidation. Both credit and financial market products. A group with multiple entities worldwide
Bank G	Large European bank, active in credit and investment markets, including insurance
Bank X	Large European bank, active in credit and investment markets
Bank Y	Large European bank, active in credit and investment markets
Insurance Company V	A large Local branch of one of the largest European Insurance Companies; The Group
Insurance Company T	One of the largest European Insurance Companies
Insurance Company W	A cooperative insurance company, one of the biggest nationally, especially non-life products
Association of Actuaries	A professional organisation for people with an actuary diploma in country z in the EU
European Brokerage Firm	Mid-sized global active brokerage firm
Reinsurance 1	One of the global re-insurance companies
The Group	One of the largest European insurance companies, the headquarters that Insurance Company V was a part of

Addendum II

Questionnaire Questions

In the table underneath, you can find the exact questions send out to the participants in the two fieldwork locations. The participants filled out the questionnaire in Excel. They had two tabs, one with the open general questions about their work, a second one with the name generator.

The questionnaire at Bank F and the one at Insurance Company V were not identical. The first two questions of the first part, the Open Questions on Risk, differed. Where for Bank F financial market risks are specified, at Insurance Company V this is changed into 'risks'.

Open Questions Risk	
OQ 1. Bank	How would you define 'market risks'?
OQ 1. Insurance	How would you define 'risk'?
OQ 2. Bank	How would you describe the current role of the market risk department?
OQ 2. Insurance	How would you describe the current role of the Risk Division?
OQ 3. All	How would you describe your role in the organisation you work in?
OQ 4. All	What is the influence of the regulator on your work?
Network Questions	
NQ 1. All	Please give your first and last name?
NQ 2. All	What is your function?
NQ 3. All	Which higher education diplomas have you obtained?
NQ 4. All	Which position did you have before your current job?
NQ 5. All	Who do you work with on a regular basis?
NQ 6. All	Who do you occasionally ask for information or support?

Addendum III - MCA Data

Bank F MCA

Bank MCA variables - Categories					
Risk Definition	Risk Balance Sheet	Risk Financial Variables	Risk Portfolio Impact		
Role Department	Risk Measures Methods	Role Unclear	Follow Control Market Risks	Risk Measures Methods Reg(ulation)	
Education	Fin(ance) Master	Math(ematics degree) diploma	or Engineering		
Previous Career	Finance	Front Office	Quant	Analyst	Risk Control
Team	Market Risks	IR_FX (interest rate and foreign exchange rates)	Liquidity	Valuations	General
Hierarchy	H4 (non-management)		H3 (management)		

Variance explained MCA dimensions - Bank								
	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5	Dim.6	Dim.7	Dim.8
Variance	0.465	0.351	0.326	0.266	0.232	0.212	0.177	0.165
% of var.	18.602	14.036	13.058	10.629	9.264	8.480	7.061	6.590
Cumulative % of var.	18.602	32.638	45.696	56.325	65.588	74.068	81.129	87.719
	Dim.9	Dim.10	Dim.11	Dim.12	Dim.13	Dim.14	Dim.15	
Variance	0.108	0.092	0.046	0.036	0.017	0.006	0.001	
% of var.	4.332	3.694	1.827	1.447	0.686	0.255	0.038	
Cumulative % of var.	92.051	95.745	97.573	99.020	99.706	99.962	100.000	

Coordinates of first five dimensions of MCA (66% of cumulative variance)	Dim 1	Dim 2	Dim 3	Dim 4	Dim 5
Risk Balance Sheet	1.371	0.749	-0.676	0.014	-0.191
Risk Financial Variables	0.439	-1.291	1.164	0.053	0.572
Risk Portfolio Impact	-0.618	0.080	-0.072	-0.020	-0.087
Follow Control MarketRisks	-0.234	-1.061	0.071	0.059	0.535
Risk Measures Method	0.276	0.120	-0.702	0.055	-0.652
Risk Measures Method&Reg	-1.167	0.821	-0.069	1.594	0.705
RoleUnclear	0.394	0.706	1.173	-0.968	0.121
FinMaster	-0.495	0.217	-0.095	0.040	-0.207
MathEngineer	0.991	-0.434	0.190	-0.079	0.414
Analyst	-0.967	0.179	0.509	-0.438	-1.119
Finance	-0.084	-0.845	-1.088	-0.714	0.101
FrontOffice	0.774	1.349	-0.024	0.920	0.042
Quant	0.894	-0.857	0.767	0.498	-0.400
RiskControl	-0.666	0.556	-0.043	-0.146	1.106
General	0.805	0.549	-0.616	-0.435	1.200
IR_FX	0.543	-0.917	-1.146	-0.435	-0.610
Liquidity	-0.949	0.049	-0.387	0.163	0.394
MarketRisks	-0.258	-0.508	0.589	1.344	-0.415
Valuations	0.196	0.736	1.119	-0.855	-0.422
H3	1.107	0.293	-0.086	0.555	-0.011
H4	-0.426	-0.113	0.033	-0.213	0.004

Insurance Company V MCA

Insurance MCA variables - Categories					
Risk Definition	Uncertain Event Ascription to Products	Uncertain Event Consequences		Calculable Probability	
Risk Role	Act and Control	Handle Shock to Balance Sheet	Maintain Solvency	Management Decisions	
Highest Degree	Actuary	University Degree Mathematics		Business Degree	
Previous Career (PC)	Non-Life Actuary	Life Model	Financial Market	Management Actuary	Finance Actuary
Current Division	Regulation	Model Life	Model Non Life	Non-Life Actuary	Life Risk
Hierarchy (H)	H5 - Non-Management			H3_4 (3 and 4) - Management	
Internal External	Internal			External (consultant etc.)	

Variance explained MCA dimensions - Insurance									
	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5	Dim.6	Dim.7	Dim.8	Dim.9
Var iance	0.437	0.379	0.343	0.266	0.226	0.200	0.172	0.147	0.135
% of var.	16.099	13.956	12.644	9.799	8.331	7.366	6.339	5.400	4.972
Cumu- lative % of var.	16.099	30.055	42.698	52.497	60.828	68.194	74.534	79.934	84.905
	Dim.10	Dim.11	Dim.12	Dim.13	Dim.14	Dim.15	Dim.16	Dim.17	Dim.18
Var iance	0.123	0.101	0.057	0.048	0.032	0.026	0.011	0.006	0.006
% of var.	4.543	3.717	2.112	1.752	1.172	0.961	0.393	0.238	0.206
Cumu- lative % of var.	89.448	93.166	95.278	97.030	98.202	99.163	99.556	99.794	100.000

Coordinates of first five dimensions of MCA (61% of cumulative variance)	Dim 1	Dim 2	Dim 3	Dim 4	Dim 5
CalculableProbability	-1.045	-0.087	-0.354	-0.680	0.001
UncertainEvent_Asc	0.183	-0.770	-0.212	0.493	0.748
UncEvent_Conseq	0.517	0.631	0.380	0.055	-0.562
ActAndControl	0.962	0.150	0.289	-0.360	-0.207
HandleShocksToBS	-0.032	0.738	0.233	1.158	0.084
MaintainSolvency	-0.883	-0.527	0.175	-0.288	0.073
Management Decisions	-0.229	0.215	-1.973	0.533	0.344
Actuary	-0.250	0.047	-0.340	-0.117	-0.152
BusinessDegree	0.488	2.318	2.110	-0.916	1.838
MathematicalUniv	0.752	-0.743	0.664	0.639	0.074
PC_FinanceActuary	0.754	0.035	-0.295	1.130	-0.168
PC_FinancialMarket	-0.007	0.514	1.024	-0.087	1.493
PC_LifeActuary	-0.829	-0.972	-0.367	0.867	1.141
PC_LifeModel	-2.118	0.173	0.316	-0.733	-0.498
PC_MgtActuary	0.370	1.182	-2.028	-0.654	0.027
PC_ModelLife	-1.244	0.474	0.418	0.474	-1.016
PC_Non-LifeActuary	0.589	-0.934	0.192	-0.901	-0.291
LifeRisk	1.513	-0.233	0.829	1.858	-1.442
ModelLife	-0.886	0.103	-0.261	0.520	-0.026
ModelNonLife	0.357	-0.933	0.113	-0.608	0.348
Non-LifeActuary	0.946	-0.341	0.460	-1.375	-2.043
Regulation	0.830	1.784	0.042	-0.331	0.534
H3_4	0.638	0.761	-1.333	-0.358	0.082
H5	-0.170	-0.203	0.356	0.095	-0.022
external	-1.127	0.953	0.868	-0.162	-0.165
Internal	0.300	-0.254	-0.231	0.043	0.044

Addendum IV

Abbreviations

AfS	Available for Sale
ALM	Asset and Liability Management
BOR	The 3 or 6 month Euribor or Libor interest rate
BSM	Black-Scholes-Merton, model for option pricing
CDO	Collateralized Debt Obligation
CDS	Credit Default Swap
CEO	Chief Executive Officer, head of the company
CFO	Chief Financial Officer (generally part of executive board)
CRD IV	Capital Requirements Directive IV (European Union Directive for Credit Organisations)
CMM	Collateral Modelling Meeting, Bank F
CRO	Chief Risk Officer (generally part of executive board)
CRR	Capital Requirements Regulation, accompanying technical document to CRD IV
HtM	Hold-to-Maturity
EBA	European Banking Authority
ECB	European Central Bank
ELA	Emergency Liquidity Assistance, an ECB mechanism to provide banks with liquidity when they cannot find it
IT	Information Technology, the people who make sure the computers work

LBS	liquidity and balance sheet team, part of Market Risk Management Department, Bank F
LCR	Liquidity Coverage Ratio, part of CRD IV requirements
LnR	Loans and Receivables
MCA	Multiple Correspondence Analysis, a data reduction tool for discreet variables
MPR	Market and Product Risk management team, part of Market Risk Management Department, Bank F
MRM	Market Risk Management department, Bank F
NPC	New Product Committee, Bank F
NSFR	Net Stable Funding Ratio, part of CRD IV requirements
PCA	Principal Component Analysis, a data reduction tool for continuous variables
PLA	Profit and Loss Analysis, a tool to prove the internal capital requirement model in insurance
OCI	Other Comprehensive Income
OIS	Overnight Indexed Swap, an indicator for the cost of borrowing for a one day period
ORSA	Own risk and solvency assessment, part of Solvency II framework on risk assessments.
SI	Solvency I (Former European Union Directive for Insurance Companies)
SII	Solvency II (European Union Directive for Insurance Companies)
SIFI	Systemically Important Financial Institution
VaR	Value-at-Risk, risk measure used in capital requirements

References

- Abélès, M. (2004). Le terrain et le sous-terrain. In C. Ghasarian (Ed.), *De l'ethnographie à l'anthropologie réflexive* (p. 35-44). Paris, France: Armand Collin.
- Agalianos, A., Whitty, G., & Noss, R. (2006). The social shaping of logo. *Social studies of science*, 36(2), 241–267.
- Arjaliès, D.-L., Grant, P., Hardie, I., MacKenzie, D., & Svetlova, E. (2017). *Chains of finance: How investment management is shaped*. Oxford, UK: Oxford University Press.
- Arnold, P. J. (2009). Global financial crisis: The challenge to accounting research. *Accounting, Organizations and Society*, 34(6), 803–809.
- Aronson, J. (1995). A pragmatic view of thematic analysis. *The qualitative report*, 2(1), 1–3.
- Austin, J. L. (1975). *How to do things with words*. Oxford, UK: Oxford University Press.
- Avrahampour, Y. (2015). Cult of equity: Actuaries and the transformation of pension fund investing, 1948–1960. *Business History Review*, 89(2), 281–304.
- Baek, I.-M., Bandopadhyaya, A., & Du, C. (2005). Determinants of market-assessed sovereign risk: Economic fundamentals or market risk appetite? *Journal of International Money and Finance*, 24(4), 533–548.
- Barth, M. E., Landsman, W. R., & Wahlen, J. M. (1995). Fair value accounting: Effects on banks' earnings volatility, regulatory capital, and value of contractual cash flows. *Journal of banking & finance*, 19(3), 577–605.
- Beaud, S., & Weber, F. (2010). *Guide de l'enquête de terrain: produire et analyser des données ethnographiques*. Paris, France: La découverte.

- Beck, U. (1992). *Risk society: Towards a new modernity* (Vol. 17). London, UK: Sage.
- Beckett, S. (1952). *En attendant godot*. Paris, France: Les Editions de Minuit.
- Bergeron, H., & Castel, P. (2016). Les habits neufs du néo-institutionnalisme? la redécouverte de l'ordre mésologique et de l'agency. *L'Année sociologique*, 66(1), 31–72.
- Berger Peter, L., & Luckmann, T. (1966). The social construction of reality: A treatise in the sociology of knowledge. *Garden City, NY: First Anchor*.
- Besedovsky, N. (2017). Financialization as calculative practice: The rise of structured finance and the cultural and calculative transformation of rating agencies. *Socio-Economic Review*, 0(0), 2-24.
- Beunza, D., & Garud, R. (2007). Calculators, lemmings or frame-makers? the intermediary role of securities analysts. *The sociological review*, 55(s2), 13–39.
- Beunza, D., & Stark, D. (2004). Tools of the trade: the socio-technology of arbitrage in a wall street trading room. *Industrial and corporate change*, 13(2), 369–400.
- Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological methods & research*, 10(2), 141–163.
- Bignon, V., Biondi, Y., & Ragot, X. (2009). An economic analysis of fair value: Accounting as a vector of crisis. *Cournot Centre for Economic Studies, Prisme*(15).
- Bijker, W. E., Hughes, T. P., Pinch, T., & Douglas, D. G. (2012). *The social construction of technological systems: New directions in the sociology and history of technology*. Cambridge, MA, USA: MIT press.
- Biondi, Y., Chambost, I., & Klee, L. (2008). La “juste valeur”, enfin une évaluation proche de la réalité. In *Petit bréviaire des idées reçues en management* (pp. 210–218). Paris, France: La Découverte.
- BIS. (2013). Basel iii the liquidity coverage ratio and liquidity risk monitoring tools. *Basel Committee, Bank of International Settlements*, January 2013.
- Blaikie, N. (2007). *Approaches to social enquiry: Advancing knowledge*. Cambridge, UK: Polity.

- Borch, C., Hansen, K. B., & Lange, A.-C. (2015). Markets, bodies, and rhythms: A rhythmanalysis of financial markets from open-outcry trading to high-frequency trading. *Environment and Planning D: Society and Space*, 33(6), 1080–1097.
- Borraz, O. (2008). *Les politiques du risque*. Paris, France: Presses de Sciences Po.
- Bourdieu, P. (1984). *Distinction: A social critique of the judgement of taste*. Cambridge, MA, USA: Harvard University Press.
- Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. sage.
- Budish, E., Cramton, P., & Shim, J. (2015). The high-frequency trading arms race: Frequent batch auctions as a market design response. *The Quarterly Journal of Economics*, 130(4), 1547–1621.
- Burawoy, M. (1979). *Manufacturing consent: Changes in the labor process under monopoly capitalism*. Chicago, IL, USA: University of Chicago Press.
- Callon, M. (1998). *The laws of the markets* (Vol. 6). Blackwell Oxford.
- Callon, M., & Muniesa, F. (2005). Peripheral vision economic markets as calculative collective devices. *Organization studies*, 26(8), 1229–1250.
- Carragee, K. M., & Roefs, W. (2004). The neglect of power in recent framing research. *Journal of communication*, 54(2), 214–233.
- Carruthers, B. G. (1995). Accounting, ambiguity, and the new institutionalism. *Accounting, Organizations and Society*, 20(4), 313–328.
- Carruthers, B. G. (2013). From uncertainty toward risk: the case of credit ratings. *Socio-Economic Review*, 11(3), 525–551.
- Carruthers, B. G. (2014). Financial decommmodification: Risk and the politics of valuation in us banks. *Unpublished manuscript. Northwestern University, Evanston/Wissenschaftskolleg zu Berlin*.
- Carruthers, B. G., & Espeland, W. N. (1991). Accounting for rationality: Double-entry bookkeeping and the rhetoric of economic rationality. *American journal of Sociology*, 31–69.
- Carruthers, B. G., & Stinchcombe, A. L. (1999). The social structure of liquidity: Flexibility, markets, and states. *Theory and Society*, 28(3), 353–382.
- Casta, J.-F. (2003). La comptabilité en «juste valeur» permet-elle une meilleure

- représentation de l'entreprise? *Revue d'économie financière*, 17–31.
- Chudik, A., & Fratzscher, M. (2011). Identifying the global transmission of the 2007–2009 financial crisis in a gvar model. *European Economic Review*, 55(3), 325–339.
- Clark, G. L. (2005). Money flows like mercury: the geography of global finance. *Geografiska Annaler: Series B, Human Geography*, 87(2), 99–112.
- Comte, A. (1852). *Cour de philosophie positive* (Vol. 1). Paris, France: Borrani et Droz.
- Connell, R. W. (1998). Masculinities and globalization. *Men and masculinities*, 1(1), 3–23.
- Crotty, J. (2009). Structural causes of the global financial crisis: a critical assessment of the new financial architecture. *Cambridge journal of economics*, 33(4), 563–580.
- Crozier, M. (1963). *Le phénomène bureaucratique: essai sur les tendances bureaucratiques des systèmes d'organisation modernes et sur leurs relations en france avec le système social et culturel* (Vol. 28). Paris, France: Editions du seuil.
- Crozier, M., & Friedberg, E. (1977). *L'acteur et le système*. Paris, France: Editions du seuil.
- Davis, G. F., & Cobb, A. J. (2010). Chapter 2 resource dependence theory: Past and future. In *Stanford's organization theory renaissance, 1970–2000* (pp. 21–42). Bingley, UK: Emerald Group Publishing Limited.
- Davydenko, S. A. (2012). When do firms default? a study of the default boundary. *SSRN*.
- Deephouse, D. L., & Suchman, M. (2008). Legitimacy in organizational institutionalism, in R.Greenwood, C. Oliver, R. Suddaby and K. Sahlin-Andersson (eds.). *The Sage handbook of organizational institutionalism*, 49-77.
- De Goede, M. (2005). *Virtue, fortune, and faith: A genealogy of finance* (Vol. 24). Minneapolis, MN, USA: University of Minnesota Press.
- de Larminat, P. (2013). Entre 'quantitatif' et 'qualitatif'. comment les investisseurs professionnels évaluent les gérants d'actifs financiers. *L'Année sociologique*, 63(1), 77–105.
- Didier, E. (2007). Do statistics 'perform' the economy? in Donald MacKenzie,

- Fabian Muniesa and Lucia Siu (eds.). *Do economists make markets*, 276–310.
- DiMaggio, P., & Powell, W. W. (1983). The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields. *American Sociological Review*, *48*(2), 147–160.
- DiMaggio, P., & Powell, W. W. (1991). *The new institutionalism in organizational analysis* (Vol. 17). Chicago, IL, USA: University of Chicago Press.
- EC. (2009). Directive 2009/138/ec of the european parliament and of the council of 25 november 2009 on the taking-up and pursuit of the business of insurance and reinsurance (solvency ii). *European Commission, Official Journal of the European Union*.
- EC. (2013). Directive 2013/36/eu of the european parliament and of the council of 26 june 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending directive 2002/87/ec and repealing directives 2006/48/ec and 2006/49 (crd iv). *European Commission, Official Journal of the European Union*.
- ECB. (2012). Financial stability review june 2012. *European Central Bank, Eurosystems*.
- ECB. (2016). Financial stability review may 2016. *European Central Bank, Eurosystems*.
- ECB. (2017). Report on financial structures october 2017. *European Central Bank, Eurosystems*.
- EIOPA. (2015). European insurance and occupational pension authority, financial stability report december 2015. *EIOPA-FSC-15-088/2015(9/12/2015)*.
- Elzen, B. (1986). Two ultracentrifuges: A comparative study of the social construction of artefacts. *Social Studies of Science*, *16*(4), 621–662.
- Engelen, E., Ertürk, I., Froud, J., Johal, S., Leaver, A., Moran, M., & Williams, K. (2012). Misrule of experts? the financial crisis as elite debacle. *Economy and Society*, *41*(3), 360–382.
- Ewald, F. (1986). *L'état providence*. Paris, France: Grasset.
- Ewald, F. (1991). Insurance and risk, pp 197-210 in Graham Burchell and Colin Gordon and Peter Miller (eds). *The Foucault Effect*, Hemel Hempstead

- UK: Harvester.
- Fama, E. F. (1965). The behavior of stock-market prices. *The journal of Business*, 38(1), 34–105.
- Fine, G. A. (1993). Ten lies of ethnography: Moral dilemmas of field research. *Journal of contemporary ethnography*, 22(3), 267–294.
- Fligstein, N. (1993). *The transformation of corporate control*. Cambridge, MA, USA: Harvard University Press.
- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative inquiry*, 12(2), 219–245.
- Foucault, M. (1990). *The history of sexuality: An introduction, volume i*. Trans. Robert Hurley. New York: Vintage.
- Foucault, M. (2012). *Discipline & punish: The birth of the prison*. New York, NY, USA: Vintage.
- François, P. (2015). La fabrique sociale d'une tabula rasa : Le lancement de solvency ii. *Working paper*, Chaire PARI Programme de recherche sur l'appréhension des risques et des incertitudes.
- François, P., & Frezal, S. (2018). Instituer l'incohérence. aléa et hétérogénéité au sein du secteur assurantiel. *Sociologie du Travail*, 60(1), 1-23.
- Friedberg, E. (1997). *Le pouvoir et la règle. dynamiques de l'action organisée*. Paris, France: Le Seuil.
- Friedberg, E. (1998). En lisant Hall et Taylor: néo-institutionnalisme et ordres locaux. *Revue française de science politique*, 507–514.
- FSB. (2013). Financial stability board, global systemically important insurers (g -siis) and the policy measures that will apply to them. (18 July 2013).
- FSB. (2016). Financial stability board, 2016 list of global systemically important insurers (g -siis). (21 November 2016).
- G20. (2009). G20 leaders statement: The pittsburgh summit. *G20 Information System*(September 24-25 2009, Pittsburgh).
- Giordano, C., & Depoorter, L. (1997). La pensée ethnologique de max weber. *Ethnologie française*, 465–478.
- Godechot, O. (2000). Le bazar de la rationalité. vers une sociologie des formes concrètes de raisonnement. *Politix*, 13(52), 17–56.
- Godechot, O. (2001). *Les traders: essai de sociologie des marchés financiers*.

- Paris, France: Editions La Découverte.
- Godechot, O. (2007). *Working rich: Salaires, bonus et appropriation du profit dans l'industrie financière*. Paris, France: La Découverte.
- Godfrey, P. C., Merrill, C. B., & Hansen, J. M. (2009). The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. *Strategic management journal*, 30(4), 425–445.
- Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Cambridge, MA, US: Harvard University Press.
- González-Hermosillo, B. (2008). *Investors risk appetite and global financial market conditions*. International Monetary Fund.
- Graham, J. R., & Leary, M. T. (2011). A review of empirical capital structure research and directions for the future. *Annu. Rev. Financ. Econ.*, 3(1), 309–345.
- Greenacre, M. (2017). *Correspondence analysis in practice*. Boca Raton, FL, USA: CRC press.
- Greenwood, R., Oliver, C., Suddaby, R., & Sahlin-Andersson, K. (2008). Introduction, in R.Greenwood, C. Oliver, R. Suddaby and K. Sahlin-Andersson (eds.). *The Sage handbook of organizational institutionalism*, 49, 1-46.
- Gupta, A., & Ferguson, J. (1997). Discipline and practice: ‘the field’ as site, method, and location in anthropology, in A. Gupta and J. Ferguson (eds.). *Anthropological locations: Boundaries and grounds of a field science*, 100, pp. 1-47. Berkeley, CA, USA: University of California Press.
- Gusterson, H. (1997). Studying up revisited. *PoLAR: Political and Legal Anthropology Review*, 20(1), 114–119.
- Hacking, I. (1999). *The social construction of what?* Cambridge, MA, USA: Harvard University Press.
- Hallett, T. (2010). The myth incarnate recoupling processes, turmoil, and inhabited institutions in an urban elementary school. *American Sociological Review*, 75(1), 52–74.
- Hallett, T., & Ventresca, M. J. (2006). Inhabited institutions: Social interactions and organizational forms in Gouldner’s patterns of industrial bureaucracy. *Theory and Society*, 35(2), 213–236.

- Hannan, M. T., & Freeman, J. (1977). The population ecology of organizations. *American journal of sociology*, 82(5), 929–964.
- Hardie, I., & Mackenzie, D. (2007). Constructing the market frame: Distributed cognition and distributed framing in financial markets. *New Political Economy*, 12(3), 389–403.
- Hasselbladh, H., & Kallinikos, J. (2000). The project of rationalization: a critique and reappraisal of neo-institutionalism in organization studies. *Organization studies*, 21(4), 697–720.
- Hellwig, M. (2010). Capital regulation after the crisis: business as usual? *Max Planck Institute for Research on Collective Goods*(2010, 31).
- Hillman, A. J., Shropshire, C., & Cannella, A. A. (2007). Organizational predictors of women on corporate boards. *Academy of Management Journal*, 50(4), 941–952.
- Ho, K. (2009). *Liquidated: an ethnography of wall street*. Duke University Press.
- IASB. (2011). *Ifrs 13*. International Accounting Standards Board, UK, London.
- Jamieson, L. (1999). Intimacy transformed? a critical look at the pure relationship'. *Sociology*, 33(3), 477–494.
- Jarzabkowski, P., Bednarek, R., & Spee, P. (2015). *Making a market for acts of god: The practice of risk-trading in the global reinsurance industry*. Oxford, UK: Oxford University Press.
- Jorion, P. (2007). *Value at risk*. New York, NY ,USA: McGraw-Hill Professional Publishing.
- Karanikolos, M., Mladovsky, P., Cylus, J., Thomson, S., Basu, S., Stuckler, D., ... McKee, M. (2013). Financial crisis, austerity, and health in europe. *The Lancet*, 381(9874), 1323–1331.
- Knight, F. H. (1921). *Risk, uncertainty and profit*. New York, NY, USA: Hart, Schaffner and Marx.
- Knorr Cetina, K. (2012). What is a financial market? global markets as microinstitutional and post-traditional social forms, in Karin Knorr Cetina and Alex Preda (eds.). *The Oxford handbook of the sociology of finance*, Oxford, UK: Oxford University Press.
- Knorr Cetina, K., & Bruegger, U. (2002). Global microstructures: The virtual societies of financial markets 1. *American journal of Sociology*, 107(4),

- 905–950.
- Kumar, M. S., & Persaud, A. (2002). Pure contagion and investors' shifting risk appetite: analytical issues and empirical evidence. *International Finance*, 5(3), 401–436.
- Lange, A.-C. (2016). Organizational ignorance: an ethnographic study of high-frequency trading. *Economy and Society*, 45(2), 230–250.
- Lebaron, F. (2008). Central bankers in the contemporary global field of power: a 'social space' approach. *The Sociological Review*, 56(1), 121–144.
- Lebaron, F. (2009). How bourdieu "quantified" bourdieu: The geometric modelling of data. *Quantifying Theory: Pierre Bourdieu*, 11–29.
- Leech, B. L. (2002). Asking questions: techniques for semistructured interviews. *PS: Political Science & Politics*, 35(4), 665–668.
- Lépinay, V. A. (2011). *Codes of finance: Engineering derivatives in a global bank*. Princeton, NJ, USA: Princeton University Press.
- Levy, J. (2012). *Freaks of fortune: The emerging world of capitalism and risk in america*. Cambridge, MA, USA: Harvard University Press.
- Lewis, M. (1989). *Liar's poker: Rising through the wreckage on wall street*. New York, NY, USA: WW Norton & Company.
- Luhmann, N. (1993). *Risk: A sociological theory*. New Brunswick, NJ, USA: Transaction Publishers.
- MacKenzie, D. (2005). Opening the black boxes of global finance. *Review of international political economy*, 12(4), 555–576.
- MacKenzie, D. (2008). *An engine, not a camera: How financial models shape markets*. Cambridge, MA, USA: Mit Press.
- MacKenzie, D. (2009). *Material markets: How economic agents are constructed*. Oxford, UK: Oxford University Press.
- MacKenzie, D. (2011). The credit crisis as a problem in the sociology of knowledge1. *American Journal of Sociology*, 116(6), 1778–1841.
- MacKenzie, D. (2015). Mechanizing the merc: The chicago mercantile exchange and the rise of high-frequency trading. *Technology and culture*, 56(3), 646–675.
- MacKenzie, D., Beunza, D., Millo, Y., & Pardo-Guerra, J. P. (2012). Drilling through the allegheny mountains: Liquidity, materiality and high-

- frequency trading. *Journal of cultural economy*, 5(3), 279–296.
- MacKenzie, D., & Millo, Y. (2003). Constructing a market, performing theory: the historical sociology of a financial derivatives exchange 1. *American journal of sociology*, 109(1), 107–145.
- MacKenzie, D., & Spears, T. (2014). The formula that killed wall street: The gaussian copula and modelling practices in investment banking. *Social Studies of Science*, 44(3), 393–417.
- MacKenzie, D., & Spinardi, G. (1995). Tacit knowledge, weapons design, and the uninvention of nuclear weapons. *American journal of sociology*, 101(1), 44–99.
- Marano, P., & Siri, M. (2017). *Insurance regulation in the european union: Solvency ii and beyond*. London, UK: Springer.
- Markowitz, H. (1952). Portfolio selection. *The journal of finance*, 7(1), 77–91.
- Matthes, J. (2012). Framing politics: An integrative approach. *American Behavioral Scientist*, 56(3), 247–259.
- McCahery, J. A., Sautner, Z., & Starks, L. T. (2016). Behind the scenes: The corporate governance preferences of institutional investors. *The Journal of Finance*, 71(6), 2905–2932.
- McDowell, L. (2011). *Capital culture: Gender at work in the city* (Vol. 65). John Wiley & Sons.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American journal of sociology*, 83(2), 340–363.
- Mikes, A. (2009). Risk management and calculative cultures. *Management Accounting Research*, 20(1), 18–40.
- Mikes, A. (2011). From counting risk to making risk count: Boundary-work in risk management. *Accounting, Organizations and Society*, 36(4), 226–245.
- Milesi-Ferretti, G.-M., & Tille, C. (2011). The great retrenchment: international capital flows during the global financial crisis. *Economic policy*, 26(66), 289–346.
- Miller, P., & Rose, N. (1990). Governing economic life. *Economy and society*, 19(1), 1–31.
- Millo, Y., & MacKenzie, D. (2009). The usefulness of inaccurate models: To-

- wards an understanding of the emergence of financial risk management. *Accounting, Organizations and Society*, 34(5), 638–653.
- Mishkin, F. S. (2011). Over the cliff: From the subprime to the global financial crisis. *The Journal of Economic Perspectives*, 25(1), 49–70.
- Mol, A. (2002). *The body multiple: Ontology in medical practice*. Durham, NC, USA: Duke University Press.
- Moreno, E. (2003). Rape in the field: Reflections from a survivor. *Taboo*, 178–201.
- Muniesa, F. (2000). Un robot walrasien. cotation électronique et justesse de la découverte des prix. *Politix*, 13(52), 121–154.
- Muniesa, F. (2014). *The provoked economy: Economic reality and the performative turn*. London, UK: Routledge.
- Muniesa, F., Chabert, D., Ducrocq-Grondin, M., & Scott, S. V. (2011). Back-office intricacy: the description of financial objects in an investment bank. *Industrial and Corporate Change*, 20(4), 1189–1213.
- Myers, S. C. (1984). The capital structure puzzle. *The journal of finance*, 39(3), 574–592.
- Nader, L. (1972). Up the anthropologist: perspectives gained from studying up. In D. Hymes (ed). *Reinventing Anthropology*, pp. 284–311. New York, NY, USA: Pantheon.
- Ndiaye, P. (2008). *La condition noire: essai sur une minorité française*. Paris, France: Calmann-Lévy.
- Ong, B. K. (2012). Grounded theory method (gtm) and the abductive research strategy (ars): a critical analysis of their differences. *International Journal of Social Research Methodology*, 15(5), 417–432.
- Orrico, L. A. (2015). ‘doing intimacy’ in a public market: how the gendered experience of ethnography reveals situated social dynamics. *Qualitative Research*, 15(4), 473–488.
- Ortiz, H. (2014a). The limits of financial imagination: free investors, efficient markets, and crisis. *American Anthropologist*, 116(1), 38–50.
- Ortiz, H. (2014b). *Valeur financière et vérité: enquête d’anthropologie politique sur l’évaluation des entreprises cotées en bourse*. Paris, France: Presses de Sciences Po.

- Ouroussoff, A. (2010). *Wall street at war: the secret struggle for the global economy*. Cambridge, UK: Polity.
- Pénet, P., & Mallard, G. (2014). From risk models to loan contracts: Austerity as the continuation of calculation by other means. *Journal of Critical Globalisation Studies*, 7, 4–47.
- Perrow, C. (1981). Normal accident at three mile island. *Society*, 18(5), 17–26.
- Petersen, A. (2002). Risk, governance and the new public health in robin buntun and alan petersen (eds.). *Foucault, health and medicine*, 189–206.
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence approach*.
- Plankey-Videla, N. (2012). Informed consent as process: Problematizing informed consent in organizational ethnographies. *Qualitative Sociology*, 35(1), 1–21.
- Poon, M. (2007). Scorecards as devices for consumer credit: the case of fair, isaac & company incorporated. *The sociological review*, 55(s2), 284–306.
- Poon, M. (2012). Rating agencies, in K. Knorr-Cetina and A. Preda (eds.). *The Oxford Handbook of the Sociology of Finance*, Oxford, UK: Oxford University Press.
- Popper, K. (2005[1959]). *The logic of scientific discovery*. London, UK: Routledge.
- Power, M. (2004). *The risk management of everything: Rethinking the politics of uncertainty*. New York, NY, US: Demos.
- Power, M. (2007a). *Organized uncertainty: Designing a world of risk management*. Oxford, UK: Oxford University Press.
- Power, M. (2007b). *Organized uncertainty: Designing a world of risk management*. Oxford, UK: Oxford University Press.
- Remolona, E. M., Scatigna, M., & Wu, E. (2008). The dynamic pricing of sovereign risk in emerging markets: Fundamentals and risk aversion. *The Journal of Fixed Income*, 17(4), 57–71.
- Renisio, Y., & Sinthon, R. (2014). L’analyse des correspondances multiples au service de l’enquête de terrain. *Genèses*(4), 109–125.
- Rhodes, M., & Apeldoorn, B. V. (1998). Capital unbound? the transformation of european corporate governance. *Journal of European Public Policy*, 5(3),

406–427.

- Richard, J. (2004). The secret past of fair value: Lessons from history applied to the french case. *Accounting in Europe*, 1(1), 95–107.
- Riles, A. (2011). *Collateral knowledge: legal reasoning in the global financial markets*. Chicago, IL, USA: University of Chicago Press.
- Roth, L. M. (2006). *Selling women short: Gender and money on wall street*. Princeton, NJ, USA: Princeton University Press.
- Roy, D. (1952). Quota restriction and goldbricking in a machine shop. *American journal of sociology*, 57(5), 427–442.
- Salter, M. B. (2008). Imagining numbers: Risk, quantification, and aviation security. *Security dialogue*, 39(2-3), 243–266.
- Sassen, S. (2001). *The global city: New york, london, tokyo*. Princeton, NJ, USA: Princeton University Press.
- Sauder, M., & Espeland, W. N. (2009). The discipline of rankings: Tight coupling and organizational change. *American Sociological Review*, 74(1), 63–82.
- Schinkel, W. (2008). *Denken in een tijd van sociale hypochondrie: Aanzet tot een theorie voorbij de maatschappij*. Kampen, The Netherlands: Klement.
- Scott, W. R. (2008). Approaching adulthood: the maturing of institutional theory. *Theory and society*, 37(5), 427.
- Sharp, G., & Kremer, E. (2006). 4. the safety dance: Confronting harassment, intimidation, and violence in the field. *Sociological methodology*, 36(1), 317–327.
- Sherer, P. D., & Lee, K. (2002). Institutional change in large law firms: A resource dependency and institutional perspective. *Academy of Management journal*, 45(1), 102–119.
- Sjostrom Jr, W. K. (2009). The AIG bailout. *Wash. & Lee L. Rev.*, 66, 943.
- Sophocles. (2008). *Antigone*. trans. Gerard Koolschijn, Amsterdam, The Netherlands: Atheneum.
- Spears, T. C. (2014). Engineering value, engineering risk: what derivatives quants know and what their models do. *Thesis, The University of Edinburgh*.
- Stark, D., & Beunza, D. (2009). The cognitive ecology of an arbitrage trading room, in D. Stark. *The Sense of Dissonance: Accounts of Worth in*

- Economic Life*, 111–147.
- Stearns, L. B., & Mizruchi, M. S. (2005). Banking and financial markets. in: Smelser, Neil J. and Richard Swedberg. *The Handbook of Economic Sociology*, 284-306, Princeton, NJ, USA: Princeton University Press.
- Svetlova, E. (2008). Framing complexity in financial markets. *Science, Technology & Innovation Studies*, 4(2), PP–115.
- Taleb, N. N. (2007). *The black swan: The impact of the highly improbable*. London, UK: Random House.
- Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research from grounded theory to abductive analysis. *Sociological Theory*, 30(3), 167–186.
- Tucker, W. T. (1965). Max weber's verstehen. *The Sociological Quarterly*, 6(2), 157–164.
- US Senate. (2010). United States Congressional Oversight Panel, Tarp and Other Government Assistance for AIG. *Senate Hearing 111-809, May 26, 2010. Washington: 2010. Government Publishing Office..*
- Van der Zwan, N. (2014). Making sense of financialization. *Socio-economic review*, 12(1), 99–129.
- Vaughan, D. (1997). *The challenger launch decision: Risky technology, culture, and deviance at nasa*. Chicago, IL, USA: University of Chicago Press.
- Vaughan, D. (1998). Rational choice, situated action, and the social control of organizations. *Law and Society Review*, 23–61.
- Wansleben, L. (2012). Financial analysts, in Karin Knorr Cetina and Alex Preda (eds.). *The Oxford handbook of the sociology of finance*, Oxford, UK: Oxford University Press.
- Wax, M. L. (1980). Paradoxes of "consent" to the practice of fieldwork. *Social Problems*, 27(3), 272–283.
- Weber, M. (1978). *Economy and society: An outline of interpretive sociology*. Berkeley, CA: University of California Press.
- Williams, K. (2000). From shareholder value to present-day capitalism. *Economy and Society*, 29(1), 1–12.
- Wynne, B. (2002). Risk and environment as legitimatory discourses of technology: reflexivity inside out? *Current sociology*, 50(3), 459–477.

- Zaloom, C. (2004). The productive life of risk. *Cultural Anthropology*, 19(3), 365–391.
- Zelizer, V. A. (1978). Human values and the market: The case of life insurance and death in 19th-century america. *American journal of sociology*, 84(3), 591–610.
- Zuckerman, E. W. (2000). Focusing the corporate product: Securities analysts and de-diversification. *Administrative Science Quarterly*, 45(3), 591–619.

