



Dividend policy, irrationality approaches and behavioral corporate finance : theory and evidence

Sana Charbti

► To cite this version:

Sana Charbti. Dividend policy, irrationality approaches and behavioral corporate finance : theory and evidence. Business administration. Université Bourgogne Franche-Comté; Université de Tunis El Manar, 2020. English. NNT : 2020UBFCG003 . tel-02936213

HAL Id: tel-02936213

<https://theses.hal.science/tel-02936213>

Submitted on 11 Sep 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



NNT : AAAAUBFCYXXX (numéro à préciser lors du second dépôt)

**DOCTORAL THESIS OF THE ESTABLISHMENT OF THE UNIVERSITY OF BURGUNDY FRANCHE-COMTE
PREPARED AT THE IAE DIJON AND THE UNIVERSITY OF TUNIS EL MANAR**

Doctoral School n°593

DGEP- Droit, Gestion, Sciences Economiques et Politiques

Specialized doctorate in management sciences

By

Mme SANA CHARBTI

**Dividend Policy, Irrationality approaches and Behavioral Corporate Finance: Theory and
Evidence**

Thesis presented and defended at "Dijon ", on "26/05/2020 ".

Composition of the Jury

M. Aubert Nicolas	University Professor at University of Aix-Marseille - IAE AIX President
Mme Girerd-Potin Isabelle	University Professor at University of Grenoble Alpes - GRENOBLE (IAE) Reporter
M. Maati Jérôme	University Professor at University of Lille 1 – (IAE) LILLE Reporter
M. Hervé Fabrice	University Professor at University of Bourgogne (IAE) Dijon Supervisor
Mme Poincelot Evelyne	University Professor at University of Franche-Comté Co –director
M. Naoui Kamel	University Professor at Tunis College of Business Co- director

List of Figures

Figure 1. Sample classified by sector	57
Figure 2. Dividend likelihood classified by sector	67
Figure 3. Sentiment for time-varying dividend demand for all sectors	70
Figure 4. Dividend decision and investor sentiment trend across sectors	72
Figure 5. Global confidence index VS European confidence index	104
Figure 6. Economic confidence in various regions	104
Figure 7. French business confidence composite over all sectors.....	105
Figure 8. CEO age differences in the French context (2000-2015)	137
Figure 9. Research models and propositions.....	147
Figure 10. Investor Sentiment Index.....	174

List of Tables

Table 1. Structure of the thesis.....	6
Table 2. Synthesis of behavioral approaches	9
Table 3. Synthesis of empirical research on dividend catering.....	44
Table 4. Summary of the measures used in the research	59
Table 5. Dividend premiums across sectors	61
Table 6. Descriptive analysis of business sectors in the French market.....	65
Table 7. Pairwise correlation matrix and multicollinearity check.....	66
Table 8. First-stage regression: investor sentiment across firm age and firm size	78
Table 9. Sectors based on firm size and firm age: descriptive analysis	83
Table 10. Dividend payment and dividend sentiment: firm characteristics controls: by sector based on firm size and firm age	84
Table 11. Dividend payment and investor sentiment by sector ³⁰	87
Table 12. Review and synthesis of empirical studies of dividend policy and CEO overconfidence	118
Table 13. Definitions of the variables	132
Table 14. Summary statistics	137
Table 15. Distribution of CEO duality	137
Table 16. Results of descriptive statistics of overconfidence proxies through dividend payout	138
Table 17. Descriptive analysis of CEO age.....	138
Table 18. Results of descriptive statistics for dividend payout.....	139
Table 19. Pairwise correlation matrix (2000-2015)	140
Table 20. Regression results for managerial overconfidence proxies and dividend corporate policy	141
Table 21. Distribution of each variable and its corresponding set	148
Table 22. Configurations leading to strong dividend payout	149
Table 24. Variables and their definitions	172
Table 25. Descriptive analysis – main independent variables.....	179
Table 26. Descriptive analysis of CEO Duality	179
Table 27. Descriptive analysis of Overconfidence Index	180
Table 28. Pairwise correlation.....	181
Table 29. Regression payout dividend, irrational biases and firm characteristics	182
Table 30. Fixed-effects quantile regression estimates for dividend payout and irrational approaches (100 bootstrapped replications)	184

SUMMARY

<i>Introductory chapter: From the Traditional Paradigm to Irrational Approaches and Payout Controversy</i>	6
<i>Chapter I: Dividend Policy, Dividend Catering Cross-Sector Analysis: Inefficient Markets</i>	6
<i>Irrational</i>	6
<i>Chapter II: Dividend Policy, Managerial Bias and CEO Characteristics</i>	6
<i>Chapter III: Dividend Policy, Irrational Approaches, and Corporate Governance</i>	6
<i>I.Introductory Chapter: From the Traditional Paradigm to Irrational Approaches and Payout Controversy</i>	7
<i>SECTION I. FROM CONVENTIONAL FINANCE TO BEHAVIORAL APPROACHES</i>	8
<i>SECTION II. IRRELEVANCE APPROACH</i>	12
<i>SECTION III. RELEVANCE APPROACH</i>	12
<i>Chapter I. Dividend Policy, Dividend Catering Cross-Sector Analysis: Inefficient Markets</i>	17
<i>SECTION I. WHY DO INVESTORS PREFER DIVIDENDS?</i>	32
<i>SECTION II. CATERING THEORY AND DIVIDEND POLICY</i>	42
<i>SECTION III. DIVIDEND POLICY BASED ON SECTOR-LEVEL DATA AND INVESTOR SENTIMENT</i>	49
<i>SECTION IV. DATA AND SAMPLE</i>	55
<i>SECTION V. ECONOMETRIC MODEL</i>	75
<i>SECTION VI. EMPIRICAL RESULTS AND DISCUSSION</i>	77
<i>Chapter II. Dividend Policy, Managerial Bias and CEO Characteristics</i>	94
<i>SECTION I. IMPACT OF OVERCONFIDENCE AND OPTIMISM ON FIRMS' DECISIONS</i> .	104
<i>SECTION II. MEASURES OF MANAGERIAL OVERCONFIDENCE IN THE FRENCH CONTEXT</i>	121
<i>SECTION III. CHARACTERISTICS OF CEO POWER</i>	126
<i>SECTION IV. BOARD SIZE AND FIRM CHARACTERISTICS</i>	127
<i>SECTION V. METHODOLOGY AND FINDINGS</i>	130
<i>Chapter III. Dividend Policy, Irrational Approaches, and Corporate Governance</i>	154
<i>SECTION I. IRRATIONAL APPROACHES</i>	160
<i>SECTION II. MARKET SENTIMENT</i>	163
<i>SECTION III. MANAGER IRRATIONALITY</i>	166
<i>SECTION IV. CORPORATE GOVERNANCE AND DIVIDEND POLICY</i>	167

<i>SECTION V. DATA DESCRIPTION AND VARIABLES</i>	<i>170</i>
<i>SECTION VI. METHODOLOGY AND FINDINGS</i>	<i>176</i>
<i>GENERAL CONCLUSION.....</i>	<i>190</i>
<i>REFERENCES.....</i>	<i>197</i>
<i>APPENDICES.....</i>	<i>230</i>

Acknowledgement

I thank God for giving me all the help, strength and determination to complete my thesis.

I would like to thank my PhD advisors, Professors Fabrice Hervé and Evelyne Poincelot, for supporting me during these past five years; they have been supportive and have given me the freedom to pursue various projects without objection. They also have provided insightful discussion about the research. My knowledge, intellectually and professionally has been enriched by working with them. I also have to thank the members of my PhD committee, Professors Isabelle Girerd-Potin; M. Jérôme Maati and M. Nicolas Aubert for their advice and suggestions in general.

I would like to thank my father, mother for all their love and support. I also thank my friends (too many to list here but you know who you are!) for providing support and friendship.

Finally I thank all my well wishers who have directly or indirectly contributed to my research work.

Overview of the Research

The question of dividends, although recurrent, continues to occupy an axiological position in recent research in Finance. The most explored areas of investigation concern in particular questions of dividend distribution policies. At this level, it is a question of research aimed at delimiting the real contours of the determinants of the decision and the amount of the dividend distributed.

The pioneering work of Modigliani and Miller (1961; 1963) Favoured the neutrality of dividends. The conventional finance has developed two approaches: the irrelevance approach Modigliani and Miller (196) that showed that dividend policy has no impact on the value of the firm and the irrelevance approach which prove that dividend has an impact on firm value (Walter (1956); Gordon and Shapiro (1956)). From all this work, it appears that the emphasis, in the determinants of the decision and the amount of the dividend, was placed on purely financial and economic considerations. Extra-financial and economic considerations were phagocytic, so psychology, temperament, attitude and intrinsic behaviour of leaders were relegated to second place in the effort to explain dividend distribution policies.

Many pieces of research have tried to provide rational explanations for the questions of why firms pay cash dividends and whether investors have a preference for firms that offer dividend-paying stocks. Studies have demonstrated that dividend policy patterns differ over time, across countries and even across sectors. In referring to La Porta et al. (2000), Shleifer (2000) and Sawicki (2009) differences in dividend policies can be explained by the legal system, corporate governance, and, more, recently investor behavior.

Indeed, by examining recent literature and referring to the most significant facts, there is a strong rehabilitation of the psychological and behavioural component in the dividend issue. Thus, the most recent research on the question of dividends gives a central place to this last component. Similarly, the award of the Nobel Prize (Richard Thaler (2017) has highlighted the irrationality in the behaviour of agents.

Such a component is protean in the literature. It is approximated by various elements such as feelings, overconfidence, optimism, pessimism, mimicry. However, since this component

reflects the subjective; a factor that varies from one individual to another, the conclusions of studies focusing on psychology have proved to be very different or even contradictory.

To reduce such heterogeneity, research then focused on profiling according to the psychology of executives and investors.

Nguyen and Schußler (2013) present two approaches: they analyze irrational managers in a context of efficient markets and present a situation in which a rational manager acts in the context of an inefficient market. They also offer recommendations for both investors and managers to enhance their decision-making.

Likewise, Baker and Wurgler (2013) divide the literature on behavioral corporate finance into two approaches: the effect of irrational investor behavior and managerial bias. They consider market timing and catering to views as a rational managerial response to mispricing and assume that managers exhibit irrational behavior, by considering optimism and overconfidence.

Starting from this premise of the importance of psychological effects in the behaviour of agents and the risks of excesses; in terms of dividend distribution and, consequently, the future of the company, some studies have insisted on the importance of governance in regulating the attitudes of managers towards dividends.

Recently, research on behavioral corporate finance underscores the importance of the Corporate governance, Market sentiment and CEO overconfidence. Indeed, Corporate governance is intended to be a tool for directing and managing a company so as to improve company success and enhance its responsibility, with the aim of considering long term shareholders. (Cheah and Lee, 2009). Investor sentiment or Market sentiment such as the Household Confidence Index as a proxy of market sentiment (Otoo, 1999; Fisher and Statman, 2003; Lemmon and Portniaguina, 2006; Qiu and Welch, 2006) which have been considered by financial specialists and speculators to gives valuable information regarding financial markets, and finally overconfidence biases which could affect as well as financial decision-making (Kahneman (2011); Malmendier and Tate 2011, Taylor and Brown, 1988 and Ahmed and Duellman, 2013).

It is in this perspective that our dissertation focuses on matchmaking research between psychological elements and dividend approach. The epistemological posture of our thesis is

part of a hypothetical deductive approach. In all research efforts and in order to clarify the legitimacy of our research work both epistemologically and in terms of research devices, empirical tests are carried out to confirm or refute the hypotheses put forward and to provide a clearer answer of research questions.

The question raised in our research is:

Could investor sentiment (market perception) and managerial bias provide key answers to dividend policy?

Such a problem refers to subsidiary questions relating to the semantic and theoretical framework inherent in dividends:

- What industry catering should say about dividend policy. Does sentiment move across sectors? Is there an overall sentiment that affects specific sectors?
- Could CEO overconfidence better explain the dividend puzzle?
- Does the matching of biased CEO managers and biased investors (simultaneously market sentiment and CEO overconfidence) better explain the behavior of dividends in France?

All these questions guided the structure of this thesis and its objectives, as well as its methodology.

Introductory chapter: **From the Traditional Paradigm to Irrational Approaches and Payout Controversy**

First, we present neoclassical theory, in which we consider that investors and managers are fully rational when a market is efficient. We then describe the controversy surrounding payout policy based on classical finance theory.

In this chapter, we consider managers and investors as rational, which assumes that they act coherently with respect to the information they receive. Therefore, according to the efficient market hypothesis, price fully reflects all the available information on a stock or equity market, which means that investors cannot beat the market.

The concept of rationality is closely related to market efficiency theory. Therefore, academic researchers affirm that rational agents aim to maximize their utility or well-being. This

concept has frequently been interpreted as meaning that self-interest is the only pursuit undertaken by a rational agent and that anything else is considered irrational.

To understand human behavior, economic and financial sciences have presumed “homo economicus” and conventional finance is based on one fundamental characteristic: rationality. Thus, human beings are presented as being perfectly rational. It is very important to have a clear understanding of the fundamentals of the financial theory of rationality. The assumption is that all individuals act rationally to increase either their pleasure or their profit. Economists argue that individuals always make rational utility-maximizing decisions based on the information they have. In this regard, information is available to investors as well as managers, so they all have full access to the information they need. Theoretically, information is a complete and accurate reflection of a company’s intrinsic value.

Chapter I. Dividend Policy, Dividend Catering Cross-Sector Analysis: Rational managers operate in an inefficient capital market: relaxing the assumption of efficient markets presumed by the Modigliani-Miller proposition (1961)¹, catering theory seeks to point to situations in which the markets are not rational and tries to clarify the causes by examining investor psychology.

We focus on investor irrationality and a rational CEO. Thus, we consider corporate decisions as a rational response to mispricing securities.

We define a CEO as rational, in line with Baker and Wurgler (2011), and a rational manager seeks to achieve three objectives:

- First, to maximize fundamental value.
- Second, to maximize the price value of the firm’s securities.
- Third, to exploit mispricing for the benefit of long-run investors.

In order to simplify this case, the rational manager supplies temporarily overvalued stock and repurchases undervalued stock by utilizing market timing and financial decision policies. The manager focuses on temporarily mispricing between fundamental value and current price equity. The empirical work of this chapter is organized as follows:

¹ Miller, M., & Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares.

- We begin our analysis by studying the impact of investor sentiment on sectors and the dividend policy among firms listed on the CAC ALL-TRADABLE French stock market index for the period 2000-2015. We examine the impact of investor sentiment categorized by sector-level data on dividend firm policy.
- We test whether investor sentiment differs across sectors.
- We then examine investor sentiment based on firm age (maturity), firm size and firm characteristics, aiming at explaining the likelihood of paying dividends among 10 different sectors.

Chapter II. Dividend Policy, Managerial Bias and CEO Characteristics. We examine the impact of the irrationality of French CEO Managers on dividend policy.

In this chapter, we define irrational or overconfident managers as individuals who underestimate the variance or risk of future events by overestimating their ability to affect firm outcome positively according to the private information they hold (De Long and Shleifer, 1991; Gervais and Odean, 2001).

We study the impact of overconfident managers, CEO characteristics and ownership structure with the aim of explaining dividend distribution and by taking into account alternative explanations, such as corporate governance. Therefore, we test whether CEO turnover could influence CEO managerial bias.

The empirical work is organized as follows:

- We use different proxies to attempt to quantify manager irrationality.
- We construct an overconfidence index.
- We scrutinize the effect of managerial overconfidence on dividend payout policy using dynamic panel regression.
- We use the fuzzy set qualitative comparative analysis (QCA) . Using a QCA algorithm offers the possibility of assessing causation by involving different configurations of causal conditions that could generate the similar outcome.

Chapter III. Dividend Policy, Irrational Approaches and Corporate Governance: We try to match approaches to irrationality to gain better understanding of corporate firms'

decisions. The mix of these two biases and their impact on dividend policy has not yet been addressed.

We combine managerial overconfidence with investor sentiment in an index (the Household Confidence Index and confidence index) and introduce institutional investors, blockholders, and board composition to better understand dividend policy.

Empirical work:

- We measure investor irrationality using the Household Confidence Index as a sentiment measure and overconfidence index (see chapter 2) as a gauge for managerial overconfidence.
- We study the effect of irrational behavior on dividend policy in France using quantile regression methods. This methodology produces a multiplicity of coefficient estimates with every set of estimates that describes the link within the dependent and the independent variables. Quantile regression provides greater detail and a more complete picture than the ordinary least squares (OLS) methodology usually used in previous studies.

The achievement of these objectives recommended that we structure the thesis on the following chapters:

Table 1. Structure of the thesis

INVESTORS		
C E O M A N A G E R	Rational	Irrational
	Rational	Introductory chapter: From the Traditional Paradigm to Irrational Approaches and Payout Controversy
	Irrational	Chapter I: Dividend Policy, Dividend Catering Cross-Sector Analysis: Inefficient Markets
		Chapter II: Dividend Policy, Managerial Bias and CEO Characteristics
		Chapter III: Dividend Policy, Irrational Approaches, and Corporate Governance

I. Introductory Chapter: From the Traditional Paradigm to Irrational Approaches and Payout Controversy

Introduction

Behavioral corporate finance is an emerging area of research so as to provide better understanding of financial and corporate decisions by studying the preferences of investors and managers. Conventional finance theory believes that all agents are fully rational, although this assumption is not true: agents are human beings and their behaviour and choices are subject to blunders and bias. As a result, several researchers have emerged as challenging the traditional paradigm. Thus, behavioral corporate finance tries to analyze the influence of the psychological effect of investors' and managers' perceptions on a corporation's financial decisions. Behavioral corporate finance is an extension of behavioral finance and holds that, as well as investors, managers can also be affected by biases that influence corporate and financial choices, for example investments and dividend decisions.

This thesis focuses on dividend policy, which is one of the major decisions in the existence of cycle life of a firm. Dividend decision is at the heart of theories of finance and continues to be one of the foremost discussed challenges in the financial literature. A dividend is a fundamental element of profitability that allows managers to attract and influence shareholders. Despite the numerous pieces of theoretical and empirical research on dividend policy, as yet, no final answer has been provided.

In the first section, we briefly review the literature and the development of finance approaches from traditional to behavioral models. The goal of our study is to examine the extent to which financial decision is affected by behavioural biases. In this section, we discuss conceptual behavioural framework patterns that forecast if irrational approaches could significantly influence capital structure decisions. We then present theories of classical finance, Modigliani and Miller (1961) and Gordon and Shapiro (1956), which describe a utopic situation in which the market is efficient and agents are fully rational.

SECTION I. FROM CONVENTIONAL FINANCE TO BEHAVIORAL APPROACHES

In conventional finance, there is a multitude of theories that do not seem to correspond to reality. For example, Modigliani and Miller (1963) suggested an optimal capital structure with 100% debt in light of the generated tax savings (a tax shield). Conventional finance tries to simplify individual behavior by the use of theories that are too standardized to claim empirical patterns. In corporate finance, for example, any decision is taken by an individual (the CEO manager) or by a group of "appropriate" individuals. For example, in corporate governance, an appropriate group would be the board of directors because behavioral biases strongly influence their decision-making.

Moreover, any decision of an individual involves a trade within his or her own behavior. Behavior is, therefore, an essential element in the understanding of individual decisions. When analyzing behavior, we find that it is the main prerogative of anthropological disciplines and social sciences, such as psychology and sociology. This type of behavioral study is also increasingly being seen in the field of finance, since researchers want to understand the decision-making of agents and to make auxiliary hypotheses in financial theory that are more realistic.

An overview of the way in which this study is based on behavioral approaches is presented in a brief summary of the various approaches in the fields of finance, accounting and management. Inspired by Charreaux (2005), Table 2 summarizes four main fields to highlight the role of behavioral approaches.

Table 2. Synthesis of behavioral approaches

	Objective	Authors
Behavioral finance	To explain market anomalies: why and how markets can be inefficient.	Shiller (1980) ² , Shleifer (2000) ³ , Thaler (2005) ⁴ , Barberis and Thaler (2003) ⁵ , Kahneman and Tversky (1979) ⁶ , Swell (2008) ⁷
Behavioral corporate finance	To examine financial decisions and corporate governance.	Shefrin (2001) ⁸ , Baker and Wurgler (2004a,b), 2011, 2013) ⁹ , Baker et al. (2004) ¹⁰ , Deshmukh et al. (2009, 2013) ¹¹ , Charreaux (2005) ¹² , Malmendier and Tate (2015) ¹³
Behavioral accounting	To analyze the failure of auditors.	Bonner and Pennington (1991) ¹⁴ , Ashton (1991) ¹⁵ , Bonner and Lewis (1990) ¹⁶
Behavioral management	To understand decision-making processes	Simon (2013) ¹⁷ , March (1987) ¹⁸ , Hogarth (1981) ¹⁹ , Bazerman (2008) ²⁰ , Lyles and Schwenk (1992) ²¹ , Williams and Anderson (1992) ²²

² Shiller, R. J. (1980). Do stock prices move too much to be justified by subsequent changes in dividends?

³ Shleifer, A. (2000). Inefficient markets: an introduction to behavioural finance. OUP Oxford.

⁴ Thaler, R. H. (Ed.). (2005). Advances in behavioral finance (Vol. 2). Princeton University Press.

⁵ Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. Handbook of the Economics of Finance, 1, 1053-1128.

⁶ Kahneman, D., & Tversky, A. (1979). Prospect theory: an analysis of decision under risk. Econometrica.

⁷ Swell, M. (2008). "Behavioural Finance", www.behaviouralfinance.net (assessed on: July 29, 2009).

⁸ Shefrin, H. (2001). Behavioral corporate finance.

⁹ Baker, M., & Wurgler, J. (2004). A catering theory of dividends. The Journal of Finance, 59(3), 1125-1165.

Baker, M., & Wurgler, J. (2011). Behavioral corporate finance: An updated survey (No. w17333). National Bureau of Economic Research.

Baker, Malcolm and Jeffrey Wurgler. 2013. "Behavioral Corporate Finance: An Updated Survey." Chap. 5 in Handbook of the Economics of Finance Vol. 2A, edited by George M. Constantinides, Milton Harris, Rene M. Stulz. North Holland: Elsevier.

¹⁰ Baker, M., Ruback, R. S., & Wurgler, J. (2004). Behavioral corporate finance: A survey (No. w10863). National Bureau of Economic Research.

¹¹ Deshmukh, S., Goel, A. M., & Howe, K. M. (2013). CEO overconfidence and dividend policy. Journal of Financial Intermediation, 22(3), 440-463; Deshmukh, S., Goel, A. M., & Howe, K. M. (2009). CEO overconfidence and dividend policy (No. 2009-06). Working Paper, Federal Reserve Bank of Chicago.

¹² Charreaux, G. (2005). Pour une gouvernance d'entreprise « comportementale » Une réflexion exploratoire... Revue française de gestion, (4), 215-238.

¹³ Malmendier, U., & Tate, G. (2015). Behavioral CEOs: The role of managerial overconfidence. The Journal of Economic Perspectives, 29(4), 37-60.

¹⁴ Bonner, S. E., & Pennington, N. (1991). Cognitive processes and knowledge as determinants of auditor expertise. Journal of Accounting Literature, 10(1), 1-50.

¹⁵ Ashton, D. J. (1991). Corporate financial policy: American analytics and UK taxation. Journal of Business Finance & Accounting, 18(4), 465-482

¹⁶ Bonner, S. E., & Lewis, B. L. (1990). Determinants of auditor expertise. Journal of Accounting Research, 1-20.

¹⁷ Simon, H. A. (2013). Administrative behavior. Simon and Schuster.

¹⁸ March, J. G., & Shapira, Z. (1987). Managerial perspectives on risk and risk taking. Management science, 33(11), 1404-1418.

¹⁹ Hogarth, R. M. (1981). Beyond discrete biases: Functional and dysfunctional aspects of judgmental heuristics. Psychological Bulletin, 90(2), 197.

²⁰ Bazerman, M. H., & Moore, D. A. (2008). Judgment in managerial decision making.

²¹ Lyles, M. A., & Schwenk, C. R. (1992). Top management, strategy and organizational knowledge structures. Journal of management studies, 29(2), 155-174.

²² Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. Journal of management, 17(3), 601-617.

I.1. Traditional Finance Versus Behavioral Finance

Behavioral finance is a relatively new field that seeks to combine behavioral and cognitive psychological theory with conventional economics and finance to provide explanations for why people make irrational financial decisions. Behavioral finance is a fairly recent discipline that seeks to mix behavioural and cognitive psychological concepts with traditional finance to bring an answer for why do individual take irrational decisions. Behavioral finance has dropped the traditional assumptions of the utility maximization expected of rational investors in efficient markets. In order to understand behavioral finance, we must first consider the traditional assumptions of efficient markets as based in neoclassical economics.

Conventional financial theory assumes that:

- Managers and investors are rational: this means that agents must act coherently with respect to the information they receive. For example, if investors anticipate that a share price is likely to increase in the future, they have to buy it or keep it, but not sell it. If a negative event occurs, investors must take the decision to sell their shares. Therefore, according to this economic theory, any rational investor buys and sells equity in order to maximize expected utility.
- As suggested by Eugene Fama (1970), price fully reflects all available information on a stock market. According to the efficient market hypothesis, the investor cannot beat the market; this means that it is impossible to outperform the overall market by, for example, purchasing undervalued stock or selling overvalued shares, so it is not possible to time the market. Consequently, no single investor can attain greater profitability than the others with the same amount of funding invested; their equal possession of information means that they can only achieve the same return.

However, in the real world, both managers and investors can be irrational. Therefore, investors and managers do not always behave like the classical decision-makers that many

financial models assume. This finding is the most important insight and common point between behavioral finance and behavioral corporate finance.

1.2. Behavioral Finance Versus Behavioral Corporate Finance

Behavioral corporate finance study the impact of investor and managerial emotional biases on firms decisions. However studies on behavioral finance focus more on the impact of investors biases on financial markets.

Behavioral corporate finance can be divided into two approaches: the first presents financial decisions as a rational response to market mispricing; the second emphasizes that even managers can be rationally bounded, which has a considerable effect on their judgment and decisions. BCF drops the traditional assumptions of the utility maximization expected of rational investors in an efficient market, as does behavioral finance. The two building blocks of BCF are cognitive psychology (how people think) and the limits of arbitrage (when the market will be inefficient).

Recent research have once approved the connection between individualism and overconfidence. Chui et al. (2010), assume that a human being in individualistic culture are more prone to be overconfident. Ferris et al . (2013) sustain the idea that a CEO who managed a firm in a country with a high level of individualism are considerably more overconfident than those in low individualistic countries.

Likewise, Baker and Wurgler (2013) suggest that market timing and catering theory could be consider as a rational managerial response to mispricing.

From this perspective, it is important to realize that dividend catering and market timing are theories based on behavioral corporate finance. Indeed, these theories address many anomalies that efficient market theory ignores. These theories contradict one of the axioms of conventional finance, which maintains that agents are fully rational and take financial decisions after having thoroughly considered all options. These theories aim to examine events and behaviors that cannot be explained by conventional finance theory.

SECTION II. IRRELEVANCE APPROACH

II.1. Modigliani and Miller (1961)

Modigliani and Miller (1961) developed the thesis that dividend policy is irrelevant and showed that dividend policy has no impact on the value of the firm in the following cases:

- A perfect capital market: no transaction costs, no taxes, risk-free investments and information are available for all investors, so investors can forecast future prices and dividends.
- Investors are fully rational: investors seek to maximize their utility regardless of the form of wealth (dividends or capital gains).

Dividend irrelevance theory has faced several problems with regard to the assumptions and arguments proposed, since the assumptions are not realistic and do not hold with reality. For example, both investors and firms have to pay income tax. Investors hardly ever gain access to the same pieces of information as do managers and, therefore, the absence of transaction costs is not possible in real-life situations. Despite the various criticisms concerning the results, however, MM (1961) asserted the oversight of dividends on firm evaluation.

Moreover, MM (1961) showed that the distribution of profits is just an unimportant detail and that the decision to pay a dividend does not affect the decisions of the company concerning investments and funding choices. They also argue that in a perfect financial market, a firm's value is affected by future earnings and the risk to its investments. Nonetheless, the thesis of the non-neutrality of the dividend policy has been advanced by several researchers.

SECTION III. RELEVANCE APPROACH

According to this approach, dividend policy has an impact on the value of a share.

III.1. Walter's Approach

Dividend policy may be considered as the definition of a rate of retention of profits. Such profits in reserve largely determine the amount of a company's internal financing. In this case, the dividend policy is a strictly financial decision insofar as it affects the overall financing of the company.

A dividend can, therefore, be considered as payment of a remaining balance, which is determined only by the investment opportunities that are available to the company. The residual approach of dividends was developed by Walter in 1956. It assigns to the dividend policy a residual role among the financial decisions of the company. It does not consider the option to distribute dividends as a major financial decision; this comes instead after the company's investment and financing decisions have been made.

Based on the assumption that distributing dividends reduces the capacity of the company to self-finance, it seems necessary in this case to privilege retained income and re-invest it in the company's projects.

- When considering the dividend as a corporate finance adjustment variable, the decision to distribute (or not to distribute) would be relatively simple. Simply a matter of comparing the expected profitability of investment projects with the cost of capital, it suits the company to prioritize using its profits to fund those projects. If, after having financed all profitable investment projects with a positive net present value in this way and a portion of the profits remains unused, the company could distribute this surplus to its shareholders in the form of a dividend. Well before turning to the market to issue equity, the firm must first use self-financing as a priority.

Walter's model: Dividends distributed to stockholders are further reinvest by the shareholders to get advanced returns. So to calculate market price per share (P) mathematically, is given by:

$$P = \frac{D + \frac{r}{ke}(E - D)}{ke}$$

Where,

P = Market price of the share

D = Dividend per share

r = Rate of return on the firm's investments

ke = Cost of equity : cost of capital of the firm

E = Earnings per share

So according to Walter's model the firm market value is the result of the expected dividends and capital gains.

Walter (1956) also suggested the residual theory, which shows that dividend policy relies on the importance of the investment opportunities available to the firm. Walter's model shows that a company can maximize the market value of its shares by choosing a specific dividend policy: if the rate of return on investments is higher than that of the market, shareholders will prefer the retention of all the benefits; otherwise, they will prefer the payment of all the benefits.

III.2. Gordon's Approach

Noting that the general conditions of perfect markets are not always met in the real world, many authors have defended the thesis of the non-neutrality of dividend policy. Gordon and Shapiro (1956) considered that the market value of a company depends on the dividend paid and its growth rate. This theory explains why dividends have an impact on market value.

One of the most significant empirical research is Gordon's (1959) work. He assumed that investors purchase stocks for three purposes: 1) dividend and income; 2) dividend; and 3) income. By deriving the connection between the factors that follow each hypothesis, he assessed the three hypotheses.

- During this year (1951-1954), he tested the above hypotheses using information from four sectors. There were eight samples and each sector had the following number of companies: chemicals: 32 ; food: 52 ; steel: 34 ; and machine tools: 46.
- Gordon tested his sample using data on cross-section prices, dividends and earnings for the companies at a time when they were used to measure the relationship between them. It was found that it was complicated to infer the first hypothesis (dividend and earnings) the existence of a logic in the pricing of common stocks, but the second hypothesis (dividend) offered the interpretation that, if growth is highly valued, the increase in the dividend with the corresponding reduction in the retained earnings will not increase the value of the share as much as when the low value is set on growth. In addition, the change in the price of a dividend can be anticipated with much better precision when the retained earnings are kept constant than when the increase comes from the retained earnings.

- As according to the third assumption (earnings), investors earn a share revenue when they acquire a share of the inventory and they can earn a cash dividend and receive the retained earnings if they sell the share since it is part of the stock value.

To defend their proposal, these authors (Gordon and Shapiro 1956) based their responses on the following assumptions:

- To increase its investments, the company must increase its retention rate by decreasing dividends.
- Investments are run in a perfect market characterized by the absence of taxes and transaction costs.
- The company retains a constant proportion of its earnings per share.
- Investors are risk averse and think dividend income is more secure than future capital gains income.

The market prices of the shares are measured as the following:

Where,

$$P_0 = \frac{D_1}{r-g}$$

P_0 : The current stock price

D_1 : The value of the next year dividend

r : The constant cost of equity capital

g : The constant growth rate

The model thus demonstrates a link between the share's payout ratio, return rate, cost of capital, and market value.

Gordon (1962, 1963) also claimed that the theory of irrelevance was wrong. He found that dividend policy and investment policy are interrelated and that investment policy can not influence a company's market value on its own and in separation from the dividend policy.

Conclusion

The remaining introductory chapter is divided into two parts: In the first part, we take a quick and somewhat simplified journey through the development from conventional finance to Behavioural finance to help us understand the roots of decision behaviour. In this part, we show that decision making cannot be considered as a rational output of our reasoning abilities and firms characteristics as it has been settled in traditional finance, but that in many cases, a human being while taking decision rely on heuristics or general rules and past experience which can lead to predictable biases and inconsistencies. People are generally influenced by their own perspectives, education, the people they mix, the religion they belong to and the media they access and so on, consequently, we can conclude that decision making may not be a rational output which is the central premise of Behavioural corporate finance.

In the second part, an attempt was made to present the main theoretical models and their empirical tests dealing with the dividend issue in the context of the perfect market. This literature review of the dividend issue under the assumption of a perfect market essentially shows that:

- The dividend policy does not have a direct influence on the firm's value (Modigliani and Miller (1961).
- Companies are very reluctant to lower the usual dividend distribution level and prefer to distribute a stable distribution level, or, if necessary, gradual increases in the dividends paid (Linter 1956).
- The empirical heads of the models developed under the assumption of a perfect market are unable to provide a perfect and unanimous explanation for the dividend distribution behaviour of companies.

Chapter I. Dividend Policy, Dividend Catering Cross-Sector Analysis: Inefficient Markets

“The market timing and catering approach views managerial financing and investment decisions as rational managerial responses to securities mispricing.”

(Baker and Wurgler, 2013, pp. 352-407)

Abstract

Very little research has been published in the realm of the behavioral models of dividends in Europe, and what empirical results do exist are not in line with those found in the US, Canadian and British markets, where dividend catering is obviously in place.

However, when it comes to the French market, dividend catering is limited and more mixed. Although this hypothesis was rejected by some studies, such as those by Osobov and Denis (2005), Ferris et al. (2009) and Kuo et al. (2013), it was accepted by Anouar and Aubert (2017). Accordingly, future studies should focus more on the influence of investor behavior on dividend policy. Twenty years ago, dividends were more heavily taxed than capital gains and, for that reason, a corporation that did not pay dividends was perceived as more interesting to taxable individual investors than comparable companies that paid a dividend. That's not the situation anymore. The issue to be asked at this point is why managers support dividend policy, even though there is no major tax advantage between capital gains and dividend in European nations, including France?

A recent report by Henderson Global Investors (2015²³) showed that France is the country that has devoted the most dividends to shareholders. Indeed, French companies recently paid about \$47 billion; and are thus ranked first in the euro area and fourth in the world. The free cash flow rate is high in France and yet the following questions remain unanswered: Why would French management firms with a high degree of self-financing support a dividend policy rather than investment opportunities? Why do French firms pay more dividends? Do investor demands influence dividend policy? Do investors who prefer dividends have a strong effect on the pricing of securities? How can we explain the behavior of French companies toward dividend policies across sectors based on industry premium sentiment measures? It is clear that the answers to the above issues are not obvious and explain the huge number of research that have been undertaken to date.

In an effort to explain the topics above, the focus of this study is mainly on explaining the behavior of French companies toward dividend policies among the different sectors based on industry dividend premiums using logistic analysis of data from 2000-2015. Although our

²³ Is an independent asset manager specialising in active management which offer financial report in order to help clients achieve their long term financial goal. (<https://www.snl.com>)

main focus is on cash dividends, this thesis also proposes an examination of the impact of dividend catering cross-sector analysis on dividend policy. This thesis adds to the literature on behavioral corporate finance and contributes to the field by studying the effect of industry sentiment on dividend policy. It also sheds light on the importance of sector-level data in explaining some of the variations in dividends. We find no evidence for the catering hypothesis in the French market, so it is not surprising that we find investor sentiment to be an insignificant determinant of dividend policy. Therefore, we introduced an interaction term between investor sentiment and firm size and firm age to test whether a small and young firm is more prone to sentiment (Baker and Wurgler, 2007). The results show that all the coefficients of the interaction term and investor sentiment in small and young firms (PDinSmallYoung) are very similar and not significant.

We next examined whether sectors divided across firm age and firm size would give a better explanation of dividend policy and investor sentiment in France. We examined four portfolios formed by size and age: SYF = Sectors with Young Firms; SOF: Sectors with Old Firms; SSF: Sectors with Small Firms; and SBF: Sectors with Big Firms, in order to test the effect of sentiment on industry portfolios and to examine the types of sector that are more sensitive to investor sentiment. The regression analysis showed that for industry sectors, firms initiate dividends when the dividend sentiment is stronger. This result provides support for catering theory and shows that French managers dealing with industry firms cater to investors' time-varying demand for dividends. Therefore, we confirm that sector-specific sentiment is a more appropriate measure for testing the catering theory of dividends. Our hypothesis is mainly confirmed for the industrial sector. Our findings indicate that industry is the single sector that—alone—captures the significance of investor sentiment in predicting dividend policy likelihood. To the best of our knowledge, this study is the first to test dividend catering within sectors.

Keywords: Behavioral corporate finance, dividend policy, sector-specific sentiment, industry cluster.

Introduction

Many studies have attempted to have a reasonable explanation as to why companies are paying dividends. Do investors have stock dividend payers preference? In the same vein, surveys show that over time, across nations and even across industries, dividend policy patterns vary. Referring to La Porta et al. (2000), Shleifer et al. (2000), Sawicki (2009), Herberg et al. (2011) and Kuo et al. (2013), the dividend policy variations can be understood by the legal system, corporate governance and, more lately, investor behaviour.

Conceptual and empirical studies may have tried to clarify the dividend policy. There is no common agreement on the factors influencing dividend payment, however. Companies have long been distributing dividends to shareholders, but there is still debate among the scientific community about the incentive for this corporate choice.

Why do dividends remain a puzzle?

Black (1976 p.5) found no conceivable answers to why firms cater for cash dividends. To quote the author, “the harder we look at the dividends picture, the more it seems like a puzzle, with pieces that just don’t fit together”.

The dividend is a crucial decision for financial managers and is also considered polysemy, since it may reflect a number of different meanings. On the one hand, firms distribute dividends to reward shareholders and to encourage other investors to buy new equities at high prices. On the other, not paying a dividend to shareholders can be considered a signal that the company is very confident about the future and that the corporation is attracting new investments. A dividend is a double-edged sword in the way that it can have two completely different meanings, depending particularly on investors’ and managers’ perceptions. There is a strong interaction between investment, financing and dividend decisions. A dividend could be considered a result of investment and finance policy.

The finance market has an interest in explaining the functions and organization of the different operations between investors and managers. In contrast, corporate finance has always attempted to relate a firm’s decisions about the company to the value of the firm.

These decisions are generally divided along two axes: investment decisions, which relate to the employment of the funds of the company and include the achievement of projects, and

financing decisions, which relate to the collection of the funds necessary for investment and the dividend policy.

The concept of dividend distribution translates the choice that a company must make into a decision between:

- Distributing profits to shareholders in order to pay for their participation in capital.
- or
- The constitution of reserves in order to fund business growth opportunities.

Although these decisions are highly desirable on the part of the company, they are unfortunately antagonistic: all increases in reserves are made to the detriment of dividends, and vice versa, even if this conflict is reduced by the fact that the accumulation of capital in the form of reserves is a source of long-term gain. The context of decision-making and financial reporting is mostly influenced by several factors, such as the personal characteristics of individual managers, the internal organizational context and environmental factors (Schneider and De Meyer, 1991). In addition, based on a review of previous research published between 1981 and 1992, Rajagopalan et al. (1993) identified environmental, organizational and decision-specific factors as the most influential determinants related to decision-making.

Based on the above analysis, we can conclude that the factors influencing the decision-making process can be divided into four groups: the characteristics of the decision-maker, the characteristics of the decision, the quality of the environment, and the organizational context. The characteristics of the decision-maker have been considered by some researchers in their attempts to explain the decision-making process. For example, Barabe (1996) took the academic cursus (business school, engineering school, self-made success), the first technical function exercised (marketing, science, technical, etc.) as well as the duration of the mandate as factors influencing the style of decision-making.

Both physical and social factors within the environment of a firm that are located outside the borders of the organization are taken into account when taking decisions (Duncan, 1972). This constitutes the most-cited variable in the previous research seen as exercising a significant influence on the characteristics of decision-making. Organizational factors, such as the structure, size, previous performance and characteristics of the top management

team, have a significant influence on the characteristics of decision-making (Rajagoplan et al., 1993).

Lebas (1995) defines the performance of the company as crucial when discussing the decisions of managers to allocate resources under their responsibility. For example, dividends can depend on the level of self-financing of the company (the greater the cash flow, the more a priori they can distribute but, if the company has future growth and investment opportunities, they prefer to keep their cash flow for financing new projects). According to Myers and Majluf (1984), in the case of informational asymmetry, firms prefer to fund their investments by self-financing, rather than by external funds. If this is the case, cash flow will not be used to finance dividends.

The measure of performance is often seen as the only factor in the assessment of a firm. However, we note that quantitative measures based on financial accounting criteria have generated many criticisms. The first criticism is based on the difficulty of comparing the yields of accounting firms, given the use of accounting principles and standards that are different from one sector of activity to another. A second criticism focuses on the nature of accounting and financial data, which are essentially based on historical data. In addition, these criteria do not take into account risk, which constitutes an important dimension (M.J.Brouwmann, P. Friskoff ;1987.).

The sectoral dimension is of prime importance. However, it is essential to choose a field in which to invest in order to ensure the sustainability of a company and maximize the wealth of investors. It is possible that not all investors have the same preferences industry-wise. Investors have different expectations in terms of dividend relative to each sector level because they carry the idea that some sectors distribute more dividends than others. The policy of dividend distribution, while affecting the company's financing strategy, is justified more by the attitudes and preferences of investors than by the needs of the company. Investors who rely on cash dividends to sustain themselves will prefer stocks that have a regular dividend policy. The companies that fall into this category are those that have reached a fairly high level of maturity in their life cycle, such as the oil and gas industry. The market and revenues are regular for the companies in that industry and their need for growth is moderate.

The main originality of the work by Agbodjo and Martinez (2012) is in highlighting the importance of sector-level data in analyzing the relevance of accounting performance indicators. To our best knowledge, this is the first study in the French context. Thus, categorization of performance indicators by industry might be of importance to investors and CEO managers alike. This categorization helps investors in their decision-making process and the CEO in creating firm value; it also helps the regulatory authority in defining potential future regulations concerning the measurement of whether a firm's value has been created or destroyed.

From the same perspective, some authors have shown relevant criteria related to industry factors (sectors). Some authors find that key factors in emerging sectors can be used as a basis for financial decision-making, (M. Porter, 1991). Indeed, the evaluation of environmental strengths, weaknesses, opportunities and threats is the essential condition of environmental management. (Daft and Weick, 1984; Smircich and Stubbart, 1985). Therefore Environmental uncertainty can be assessed objectively through sector study (Porter, 1980) but considered differently by different executives. (Duncan, 1972). The perception of environmental unpredictability and institutional control influences the decision to make between proactive and reactive strategic behavior (Anderson and Paine 1975) Daft and Weick, 1984; Dutton and Duncan, 1987). For example, when dealing with uncertainty and ambiguity, executives react differently. Some managers will actively interpret their environment, while others will choose to do so in a passive way.

Milliken (1987) noted that when faced with an uncertain environment, executives tend to spend more time and money in environmental analysis and forecasting in order to be more confident and have a solid knowledge of the situation. This proactive behavior assumes, however, perceptions of control. At the organizational level, managers' behavior determines their proactiveness or reactivity in analyzing the environment (Daft and Weick, 1984). Accordingly, Johnson et al. (1993) suggested that firm performance depends on the environmental context. Chakravarthy (1986) also postulated that the structure of the industry or sector of activity influences the strategy and performance of a company. In the same vein, DiMaggio and Powell (1983) proposed that in describing homogenization dynamics isomorphism is the most significant idea. Isomorphism enables us to define the process that causes one unit in a population to resemble the other units that face the same

environmental circumstances. This strategy indicates that organisational features are gradually changing to be consistent with the environment's dominant characteristics. In this context, DiMaggio and Powell (1983) identify three key processes - coercive, normative and mimetic - by which institutional effects are disseminated through a field of organizations. These mechanisms underline structural isomorphism (similarities) as an important consequence of both a competitive and an institutional process. Although all organizations take shape under the pressure of their institutional aspect, certain types of firm are more affected by this institutional factor than by others. DiMaggio and Powell (1983) identified the "organizational aspect", or sector, as a new level of analysis which is particularly suited to the study of the institutional process.

The above research has documented that the environmental context and the industry level at which a firm operates affect its decisions, as well as its performance. Indeed, Mackay and Phillips (2005) examined the significance of sector to economic and financial choices at the firm level and confirmed that the capital structure of a company depends on its capital-labor ratio, the actions of other companies in the sector, and the outcomes of its comparative achievement from one sector to another.

Guo and Leinberger (2012) used the theory of pecking order to study 250 firms in Pennsylvania between 1988 and 2007. The findings show that firms' financial choices varied among different sector types. Equity financing stayed a last resort for new capital for all sector organizations of companies, although consumer production and retail / wholesale sectors tended to opt for debt funding as they sought new capital for asset development, and high-tech sectors and services tended to prefer internal financing to external financing to promote their development.

Kayhan and Titman (2007) noted that the history of companies significantly influences the composition of capital in a manner that persists over time, sometimes for as long as ten years. Capital structures usually move toward more targeting debt rates over longer periods of time, however, in line with the trade-off theory.

Empirical researches²⁴, show that the financial decision of a company is driven by its characteristics and the kind of the industry where it's belong to. In addition, assets

²⁴ Smith, M., & Liou, D. K. (2007). Industrial sector and financial distress. *Managerial Auditing Journal*, 22(4), 376-391.

tangibility, operating profitability, company size and tax structure also affect the financial approach of a company.

The type of industry impacts a company's capital structure, which in turn impacts dividend payouts. It is therefore anticipated that the sort of industry and the sector in which a company works would have an important impact on the policy of corporate dividends. Different types of varying sectors affect the cash flow of companies, which in turn impacts dividend policy. For instance, while manufacture businesses require machinery and equipment, this sort of asset is not essential to the services sector. The manufacturing industry is capital-intensive, while the services sector is labor-intensive, and there is a need for more financing to finance capital investment than to pay for staff. It is therefore expected that service firms will have higher dividend payouts than manufacturing firms. Several studies have empirically investigated the relationship between industry type and dividend policy. (Bowen et al., 1982; Bradley et al., 1984; Kester, 1986; Baker, 1988; Harris and Raviv, 1991; Dempsey et al., 1993; Richardson et al., 2002; Gill et al., 2010; AL Shabibi and Ramesh, 2011; Subramanian et al., 2011).

The nature of the sector to which a firm refers has a significant impact on its dividend policy. Emery et al. (2004) stated that, in the US, Differential sector appears to have an effect on dividend payment policies. Therefore, industries, containing large firms, may adopt a consistent dividend policy, as opposed to industries involving small firms, for which policies are uncertain and uneven (Barclay et al., 1995; Lloyd et al., 1985). Smaller firms seem to have limited resources (internal funds) to finance their projects and, for this reason, are less likely to pay dividends to their shareholders. It is better for them to take a conservative approach to dividend payouts.

In addition, previous surveys have shown that high-profit companies are more likely to pay dividends (Jensen et al., 1992 ; Han et al., 1999 ; Fama and French, 2002). Industries that include firms that are characterized by earnings stability may formulate a more consistent policy with regard to dividends than those with an uneven flow of income. Michel (1979) assessed the presence of a connection between the dividend policy of a company and the classification of its sector and whether this connection is specific to the sector. The sample

Thim, C. K., Choong, Y. V., & Nee, C. S. (2011). Factors affecting financial distress: The case of Malaysian public listed firms. *Corporate Ownership and Control*, 8(4), 345-351.

covered 13 sectors, with 34 companies selected randomly from 1967 to 1976. Considering that important differences in the size of the companies included in the sample were discovered, a dividend policy review was conducted on the impact of size and industry classification. The findings stated that classification of the sector is a significant determinant of dividend policy, rather than the size of a company.

Baker and Powell (2000) focused their research on a survey reporting the opinions of several New York Stock Exchange (NYSE) business managers on variables that influence dividend policy. This 1997 survey was compared to an earlier survey by Baker et al. (1985). They set out certain criteria for companies to be included in the survey: the companies surveyed should have been listed on the NYSE by 1994, the company's primary business could be classified under a Standard Industrial Classification (SIC) code, the company should have been included in the COMPUSTAT 1996 version, and the company should have paid a dividend at least once between 1994 and 1995. The researchers received 603 answers from the sectors of production, wholesale / retail and services. The results indicate that the variables most influencing dividend policy are current and anticipated future income and previous dividend patterns. The findings of Baker and Powell (2000) are very comparable to those of Baker et al. (1985). Therefore, the authors' main conclusion is that the factors influencing US corporate dividend policy do not change significantly over time but the industry type affects the importance CEO managers attach to certain factors that influence dividend policy. The authors, however, thought that some industry-based distinctions between the two studies had declined over the period of time.

Baker et al. (2001) surveyed CEOs of National Association of Securities Dealers Automated Quotations (NASDAQ) listed firms. The authors used a questionnaire based on Baker et al. (1985), Farrelly et al. (1986) and Baker and Po well (2000) survey with few modifications. The questionnaire was split into three parts: the first section asked CEOs to classify variables by order of significance when determining their dividend policy; The second included dividend policy management and background data on the CEOs and their firms; and the third requested that the respondents specify their level of compliance with certain dividend policy statements in particular. The authors established specific criteria for companies to be included in the survey: the company's shares must have been traded on NASDAQ and paid a quarterly dividend in the 1996-1997 calendar year. The survey was based on the 188

questionnaires that were returned. The returned questionnaires were then divided into two groups: financial companies (finance, insurance, and real estate) and non-financial companies (agriculture, communications, electricity, fishing, forestry, gas, production, transportation, and hygiene services). The results indicated that the most significant variables influencing NASDAQ listed companies' dividend policy were past dividend patterns, income stability, and present and anticipated future income levels.

Baker and Powell (2000) indicate that companies listed on the NYSE also regarded the above-mentioned variables important in establishing their dividend policy. The results corroborated those found in Lintner (1956). It should be observed that not every company connected to each of the variables the same level of importance. Differences in significance between financial and non-financial firms have been recognized. This indicates that the kind of sector could have an effect on the policy of corporate dividends.

Singhania (2005) examined dividend payment trends in a sample of 590 firms listed on the Bombay Stock Exchange for the period 1992-2004. The academic noted a decrease in the number of companies that declared dividends during the study period and linked this to the dual taxation of dividends. However, the average dividend payment showed a substantial rise over the same period. In addition, the author noted a fluctuation in dividend payments across firms and across sectors, which ranged from 25% to 68%. Companies in sectors such as petrol and gas are considered to have stable profits and therefore a more stable dividend policy than those with volatile revenue streams.

As claimed by Allen and Michaely (2003), Baker (2009) and DeAngelo et al. (2009), rational theories that consider dividends as a way to mitigate problems between the agent stockholders and CEO (agency theory) and to alleviate information asymmetry (signaling theory) have low explanatory power with empirical evidence. The reasons for dividends still being considered a puzzle can be attributed to psychological factors, tax-related matters and asymmetry of information.

Another factor is that the salience of institutions does not exclude voluntarism. For example, Greenwood et al. (2002) developed a model of institutional change in six phases which take into account the phenomena of institutionalization and deinstitutionalization when considering the role of the actors, their margin for maneuver and their strategic capabilities. This model may, for example, make it possible to understand the mechanisms by which a

new technology is adopted or rejected by a sector of activity. Some researchers (Demil et al., 2001; Garud et al., 2002; Tellier, 2003) have, therefore, revealed how companies such as “Intel” and “Sun” could, by virtue of their dominant position, contribute to establishing new rules in their sector.

However, we can see that the decision to either distribute a dividend or maintain self-financing is based on a set of indicators of varying degrees of complexity, since this is related to performance, profitability and sector-level data.

There is a disparity in taxation between dividends and capital gains. This difference in taxation has, on the one hand, an impact on the behavior of firms in the area of the distribution of the dividends and, on the other, the orientation of the choice of a portfolio of shares for investors. It is appropriate to describe the disparities in taxation between dividends and capital gains that have emerged from the taxation system in France, where dividends are taxed for the first time as a tax on corporations and, for a second, in respect to a tax on shareholders’ revenues.

Therefore, we would like to point out that dividends and taxes are no longer a powerful explanation for the dividend puzzle. In the US in 1976, firms paid about 43% of their earnings to the Treasury (\$111 billion in taxes) and then paid out \$31 billion in dividends; investors were thereby subject to additional taxes based on personal income (Miller and Scholes, 1978). Miller and Scholes (1982) have shown that there are several complex strategies that have allowed investors to avoid taxes. Thus, in perfect capital markets, all taxes can be avoided by investing in tax-free institutions, such as insurance companies or pension funds.

The puzzle remains with regard to why managers support a dividend policy, even when there is no big tax advantage between capital gains and dividends in European countries, including France.

Despite all the above attempts, the paying of dividends remains an unsolved puzzle.

Empirical and theoretical research by behaviorists suggests that sentiment proxies may be one of the recent potential explanations for numerous puzzles reported in the literature (Baker and Wurgler, 2007). Researchers can gain a sense of enthusiasm for a market and for corporate decisions by asking investors about their beliefs and preferences.

Examples of behavioral finance research include the following. The Bearish Sentiment Index published by Investors Intelligence, an investment service based in the US, was used by Solt and Statman (1988). The index sheds light on the ratio of bearish advisers to the total number of investment advisors. Clarke and Stateman (1998) argued that market movement has proved to have a strong influence on investors: high returns in the short run are associated with a move from a pessimistic to an optimistic state. A bull market leads to decreased volatility and an increase on future stock return. Therefore, the behavioral view could also be considered a further explanation of corporate finance decisions. The behavioral approach provides insights that managers pick the right time to sell their shares in order to take advantage of stock prices when compared to fundamental value (Lamont and Stein, 2006).

Given that behavioral finance has resolved many of the anomalies in market finance, it would be very interesting to apply this to corporate finance. In other words, adopting a behavioral approach and sector-level data could be very useful in our attempts to answer the following question: why do firms mainly in France pay dividends?

There are two possible approaches: the first is that of Baker and Wurgler (2004 a). According to their catering theory, irrational investors categorize firms into dividend-paying and non-dividend-paying. These investors pay a premium (above the fundamental value) for dividend-payers. The catering theory of dividends suggests that firms initiate a dividend when investors overestimate dividend-paying firms.

The second approach, which has not been very widely explored, introduces a sectoral dimension. The sectoral dimension can be analyzed according to neo-institutional theory: companies mimic behavior in terms of the dividends of competitors in the same sector. Peng and Xiong (2006) show that limited attention is paid to catering-learning behaviour; that is, attention-constrained investors pay more attention to market-to-book and sector-level aspects than to company-specific factors. For instance, some firms changed their name during the internet bubble to include dot.com without any central change in their strategies. Because of their name change announcements, these firms gained a substantial abnormal return (Cooper et al., 2001), suggesting that investors pay limited attention to company-specific data.

We considered it interesting to examine the link between dividend decisions and investor behavior (investor irrationality) based on sector-level data. There is a lack of exploration in the behavioral corporate finance literature of the probability of paying a dividend, especially in the French market, as well as the psychological factors that act as determinants in pushing a firm to cater for dividends. Although much of the research has led to inconclusive results, we intend to provide more evidence to better understand the distribution of earnings through a behavioral approach to finance in the case of the French market.

Many variables that were significant in the context of the US market, as well as past literature, could be added to our research to increase the explanatory power of models, such as a sector-level data explanation for dividend catering, stock market liquidity, and life cycle theory. The majority of the existing financial literature is implicitly based on the assumption of an efficient financial market. However, behavioral corporate finance research replaces the traditional rationality assumption with more evident behavioral foundations. Thus, we examined the validity of the catering hypothesis after adjusting the dividend policy for key determinants, such as profitability, leverage, cash flow, growth opportunities, firm age, firm size, and investor sentiment (investor sentiment based on sector-level data). We then highlighted a set of behavioral explanations for investors' preferences regarding dividends.

We present a dividend policy study through a purely behavioral approach, based primarily on psychological components that characterize investors, in order to give new momentum to the research. The current research contributes to the literature by studying corporate finance, particularly dividend policy, by updating surveys drawn from the catering theory of dividends. This research fills the literature with a number of gaps.

The first way this research fills a gap in the literature is by examining dividend policy across sectors, as distinct kinds of company can be anticipated to vary plausibly in their policies on dividend payment. It was also observed that there are very few, if any, studies comparing dividend policy variations in the sector. The second way, to our best knowledge, is that previous research has only focused on dividend policy across macro-level characteristics. Furthermore, this research aims to test the effect of investor preference for dividends on asset price dynamics across sectors by examining the catering theory of dividends across industries.

THIS CHAPTER PRESENTS A PILOT STUDY TO FIND THE ANSWER TO WHAT INDUSTRY CATERING SHOULD SAY ABOUT DIVIDEND POLICY. DOES SENTIMENT MOVE ACROSS SECTORS? IS THERE A GLOBAL SENTIMENT THAT AFFECTS SPECIFIC SECTORS?

The first chapter is organized as follows. Section 1: Why do investors prefer dividends? Section 2: Catering theory and dividend policy; Section 3: Dividend policy based on sector-level data; Section 4: Data and sample; Section 5: Methodology; and Section 6: Empirical results and discussion.

This first chapter is an attempt to extend the catering theory of Baker and Wurgler (2004a) and Li and Lie (2006). Most of the earlier research focused on the dividend policy determinants and the effect on stock price. The time trends in dividend payments have been studied by a few academics. The empirical proof of the existence of catering for dividends is rather inconclusive. We explore the determinants of dividend payment decisions in the French market within different sectors by adding several variables relating to investor sentiment and firm characteristics, taking into account market imperfections in order to analyze dividend policy and value creation.

Statement of the Problem

In reviewing the literature, it was noted that there is disagreement between the results of previous studies on dividend policy. For this reason, future research studies should be conducted to provide better understanding of distribution decisions, particularly where markets are not efficient. This gap needs to be addressed, as the question that should be investigated at this level is whether investor sectoral sentiment provides the key answers to dividend policy.

Many articles have attempted to explain why companies are distributing dividends and why shareholders like them. We summarize the financial determinants of dividend payments in this chapter, taking into account taxes, signaling theory to mitigate information asymmetry, client effect and agency theory. Therefore, we relax one of the perfect capital market's assumptions. The dividend policy issue is becoming harder to understand. The introduction of market imperfection could affect the theory of irrelevant dividends. Therefore, if dividends are important, they may interact with other firms' corporate decisions. Consequently, there might be many reasons why dividends matter.

SECTION I. WHY DO INVESTORS PREFER DIVIDENDS?

Dividends represent a return for investors who put their money at risk in a corporation. Dividend policy is therefore of concern to managers as various investors have distinct views and opinions on dividends and capital gains.

I.1. Bird-in-Hand Theory

Gordon (1963) and Lintner (1962) developed this hypothesis as a response to the theory of dividend irrelevance suggested by Modigliani and Miller (1961). The bird-in-hand theory suggests that when making stock-related choices, dividends are important and investors prefer dividends to future capital gains. From this perspective, shares with a high dividend are disliked by investors and consequently command a higher market price because high dividends increase stock value. Dividends are valued differently than retained income (or capital gains) in a world of uncertainty and imperfect information. Investors prefer money dividends ' "bird in hand," rather than future capital gains' "two in the bush." Increasing dividend payments can then be linked to company value rises.

Gordon (1963) and Lintner (1962), shareholders are highly risk averse and prefer a safe return, so receiving a dividend quickly is less risky than a future capital gain. As a result, investors and stockholders seek the highest return possible and pursue to increase firm value that delivers high dividends.

Empirical literature revealed that dividend policy factors could be split into two groups: inner and external factors. Internal variables are shareholder expectations (dividend or capital gains preferences) and shareholders ' fiscal condition. External factors are related to the overall economy, legal restrictions, and entries in the capital market, macroeconomics problems like growth, stability . Baker and Powell (1999) suggest that specific industry and future earnings are found to be one of the most significant determinant of dividend policy. They found that dividend is affected not only by internal variables, but also by external variables.

I.2. Clientele and Tax Effect

According to MM (1961), Under certain circumstances, the pre-existing dividend-client effect hypothesis could play a part in dividend policy. They pointed out that individual investors ' portfolio decisions may be affected by certain market imperfections, such as transaction

costs and differential tax rates, in favoring various mixes of capital gains and dividends. MM asserted that these imperfections could lead investors to select securities that would reduce these costs. MM called investors' tendency to attract a certain sort of dividend-paying inventory a "client dividend effect." Nonetheless, MM argued that although the client effect may alter the dividend policy of a company to attract certain clients, each client is "as good as another" in a perfect market. Therefore, there is no impact on firm valuation; that is, dividend policy remains irrelevant. In reality, investors often face distinct tax procedures for revenue from dividends and capital gains and incur expenses when trading securities in the form of transaction costs and inconvenience (influencing portfolios). For these factors, and based on the circumstances of distinct investors, taxes and transaction costs may generate clientele investors, such as clientele induced by tax minimization and clientele induced by transaction costs, respectively.

Another possible dividend clientele effect is related to risk clienteles. Hence, based on the risk factor, dividends may attract a certain clientele of investors (see for example, Pettit, 1977 and Scholz, 1992). Miller and Scholes (1982) revisited the conclusion of Litzenberger and Ramaswamy (1980) and criticized their concept of dividend yield in the short term (monthly). Indeed, Miller and Scholes (1982) proposed that studies using a short-term definition of dividend yield are inadequate to detect the effect on stock returns of differential tax treatment for dividends and capital gains. In addition, Miller and Scholes (1982) asserted that data bias caused a positive yield-return relationship. The reason for this argument was that the information effect of dividend omissions was ignored by Litzenberger and Ramaswamy. An announcement of dividend omissions (perceived as bad news) can lead to an upward bias in the dividend yield coefficient as it reduces the zero-yield dividend class return. Miller and Scholes (1982) tried to correct the bias in information and then re-run the tests of Litzenberger and Ramaswamy. They found that there was no statistically different coefficient of dividend yield than zero. Like Miller and Scholes, Hess (1981) found similar results. In his research, during the period from 1926 to 1980, Hess tested the relationship between monthly stock returns and dividend yield. He noticed mixed results and came to the conclusion "my work reinforces the findings of Miller-Scholes study...it lends further empirical support to the original M&M proposition" (p. 453).

As noted earlier, the fiscal situation of shareholders is one of the influences that most determine dividend policy. When firms pay dividends, shareholders must pay income tax on those dividends. Indeed, if investors and shareholders operate in countries in which the tax on dividends is lower than the capital gains tax, investors will have a preference for dividends and corporate managers will decrease the dividend payout ratio. Thus, the tax effect will not only influence shareholder preference, but also corporate earnings. Casey and Dickens (2000) suggested that investor preference is a function of tax incentives and that this taxation has an impact on corporate earnings, as well as investors' preferences.

Dividend policy can reflect investor heterogeneity. Each payout may attract a certain type of investor. Therefore, a change in the payout can lead to an alteration in the ownership structure. This is one of the reasons that investors want different dividend yield taxation.

Dong et al. (2005) conducted a survey with a panel of Dutch investors in order to study their preferences and firms' dividend payout policy based on different theories: signaling, agency cost, free cash flow and taxes. They highlighted that investors will always have a preference for a dividend rather than a capital gain, even if the dividend taxation is higher than capital gains taxation.

Elton and Gruber (1970) studied the clientele effect by examining firm value over the ex-dividend period. They concluded that investors have no preference for dividends and, when capital gains taxation is low, they prefer a capital gain rather than a dividend. Thus, dividend policy is influenced by taxation.

Desbrières (1988), when considering the same model used by Elton and Gruber (197), provided similar evidence of a clientele effect in the French market. Despite differences in taxation regulations, the research supports the suggestion that the majority of shareholders prefer capital gains in order to avoid tax penalties that would affect them if they opted for dividends.

Mori (2010) proposed that the tax-saving issue is linked to the distribution of intertemporal consumption. He describes that corporate investors prefer high-dividend-paid stocks when marginal capital gains tax rates are greater than dividends. On the other side, he points out that some investors would prefer low-dividend-paying stocks to high-dividend-paying stocks since they have low current cash flow needs. He concludes also that investor demand for

dividends is not explained by the classical “tax rate clientele effect” but by the “tax amount clientele effect”.

In the same vein, by considering the shift in clientel demographics, Lee (2011) investigated the time-varying demand for dividend-paying companies. He performed multivariate regression and found that the only important determinant of dividend premium is population variation, represented by an annual shift in the older-to-younger ratio. His finding supports evidence for investor sentiment, signaling theory, agency cost, tax clienteles, business cycle fluctuations, time trends and demographic structure.

Armstrong and Haffmeister (2012) analyzed the change in the taxation of US dividends for qualified public utility shares, evaluating the performance of the ex-dividend date before, during and after a change in tax law. Empirical results show that both multiply clients and signal marginal investors who determine the ex-dividend date price of these stocks. However, some authors do not regard the clientele effect as a rational explanation for dividend policy. For example, DeAngelo et al. (2004) found that dividends paid in the US over the 1978-2000 period did not disappear but had increased and become more concentrated. They further report that the clientele effect and signaling hypothesis were not the most crucial determinant factors of corporate dividend policy.

In the latest research, the relationship between tax preference and dividend yield on the Swedish stock market was examined by Dahlquist et al. (2014). Four domestic tax clients were evaluated: tax-neutral (A), business and individual (B), investment funds (C), and partnerships (D). They found that tax-neutral (A), investment funds (C) and partnerships (D) behaved according to the customer tax hypothesis of the dividend. When it comes to businesses and individuals (B), the findings are ambiguous. However, the impact on tax income and stock market valuations is small because dividends and capital gains tax rates are tiny and most investors do not pay tax on such revenue. They also found that foundations preferred dividend-paying stocks.

As can be seen, an explanation based on clientele effect and tax effect does not seem able to fully explain dividend payout policy. This is why some authors seek other explanations. The following subsections address theories related to signaling theory and information asymmetry.

I.3. Signaling Theory

Economically, the signaling model for the function of education is mainly due to Spence (1974 a, b) and Riley (1975), who presented a situation in which a potential employer does not know the skill level of individual workers and has to choose between two types: more productive workers and less productive workers. Asymmetrical information is available regarding the productivity of workers. Since employers are unable to observe the productivity of a potential worker, they use educational qualifications to predict output. One implication of the model is that greater pay is received by more trained employees because education offers them with credentials rather than abilities obtained. In other words, the number of years of schooling reflects an educational qualification that predicts worker productivity. Thus, educational qualifications are considered a visible signal of an invisible productive worker.

Dividend signaling theory was set in the early 1970s, with the main argument that asymmetric information exists between executives of a company and outside investors. Managers may have more details about the expected profitability of a company that investors can not see. Many authors, such as Watt (1973), Miller and Rock (1985), Noe and Rebello (1996), La Porta et al. (2000), Aivazian et al. (2003) and Asem & Alem (2015), provide evidence that since there is informational asymmetry between insiders (managers) and outsiders (shareholders), firms tend to distribute dividends as relevant information about their prospects to the financial market.

Consequently, dividend policy is used as a signal of a company's profitability forecast. Heinkel (1978) originally suggested an asymmetrical model of information, suggesting that a cash dividend is a function of firm value. The model is based on two hypotheses: (1) the number of companies with strong anticipated profitability is restricted; and (2) the company value volatility is negatively associated with expected profitability. Under the asymmetric information framework, cash dividends mean the anticipated cash flows of companies; therefore, companies with greater dividends are regarded to perform better than those with reduced dividends. These signals are used by investors to create their investment choices and to value the stocks of companies. Bhattacharya (1979) developed this study line with a two-period model in which executives and shareholders do not have an agency problem. Managers decide to invest in a business opportunity at the start of the first

period and have complete information about the anticipated profitability that is unknown to external investors. Managers also promise to pay investors a certain proportion of dividends at this stage in time. When the payoff created by the investment is less than the committed dividend amount at the end of the first period, firms need external funds for the second period, and transaction costs are incurred. Managers can, therefore, signal the value of a business opportunity to investors in stock markets by paying a big dividend for the first period and the company can prevent transaction costs resulting from external financing. Bhattacharya (1979) suggested from this model that companies decide to pay cash dividends as a signal to outsiders, irrespective of the dividend's tax disadvantage.

The theory of dividend signaling was endorsed by John & Williams (1985) and Miller & Rock (1985), but they clarified the theory using distinct arguments. John and Williams (1985) stated that information about future results disclosed by corporate audits is unreliable, as it does not fully demonstrate future lucrative investment possibilities for companies. Companies can interact properly with outside investors only by paying cash dividends or issuing new stocks due to imperfect information on the anticipated profitability of companies. A dilution of proportional ownership is not useful to present stockholders when private information about future profits of companies is favorable. As a consequence, insiders acting in favor of current shareholders may choose to distribute dividends rather than sell new stocks. Through these signals, outsiders are persuaded to offer greater prices for stocks corporations. In this situation, while dividends have a greater tax rate than capital gains, dividend tax disadvantages are compensated for by rises in stock prices, while insiders preserve their fractional ownership.

Miller and Rock (1985) presented using a two-period model that cash dividends contain information about anticipated earnings; however, they interact indirectly with outsiders and do not need to represent a deliberate strategy of managers of companies to convey information about future results. Managers invest in a company project at the start of the first period in which the anticipated profitability is not observed by external investors. The project produces income for both dividend payments and investment for the second period at the end of this period. Investors can not have income and future investment information. The project produces income again at the end of the second period. Dividend declarations

therefore only provide investors with the missing information on the present earnings of corporations. Then these gains are used to predict future income.

Ambarish, John, and Williams (1987) discussed John and Williams' (1985) signaling equilibrium model and developed an effective model of the association between dividend payment, investment as well as new share issuance. They asserted that an efficient signaling equilibrium in the past models maximized the wealth of stockholders among all possible equilibria because companies have distinct marginal advantages of avoiding ownership dilution. The new model states that the CEO can interact with outsiders by combining two kinds: the first is dividend payment and disclosed investment; the second is dividend payment and new equity issuance. Analyzing this model, Ambarish et al. (1987) developed two primary characteristics: the first is that there is a favorable link between the declaration of dividends and the stock price for companies distributing cash dividends when there is a fixed investment; Secondly, if companies pay fixed dividends, the impact of an investment declaration or new net shares is negative for those with higher information, primarily from existing assets, and positive for those with higher information, primarily from investment possibilities.

In addition, Bar-Yosef and Huffman (1986) developed an incentive signaling model assuming that owners of companies have a managerial reward-penalty system to guarantee precise signals from announcements made by executives. They asserted that the dividend payout is an increasing function of future cash flow under an appropriate equilibrium for dividend policy.

Stulz (1990) examined firms' financing policies with atomic stockholders and argued that the predictability of dividends over expected cash flows is higher for underinvestment and overinvestment firms than for those with maximized value. An empirical research by Koch and Shenoy (1999) supports this argument. According to Stulz's argument, their results demonstrate a distinct U-shaped relationship between Tobin's q and the predictability of dividend-based information. Furthermore, Eades (1982) and Rozeff (1982) suggested cash dividends as a signal of the uncertainty of anticipated cash flows, with the implication that companies with higher cash flow variability are more difficult to finance future company activities. Bar-Yosef and Huffman (1986) asserted that significant differences in dividend payout ratios across sectors could be explained by differences in exposure to industry risk.

They created a model suggesting that the dividend payout ratio is a function of cash flow volatility and noticed a negative link between the payout ratio and the cash flow risk level. While prior studies examined the effect on dividend policy of the unsystematic risk of cash flows, Kale and Noe (1990) proposed a model in which dividends are seen as a sign of both the systematic and unsystematic uncertainty of the company cash flows. This model presents an unsystematic risk dividend signaling theory and suggests that the cash dividend has a negative relationship with cash flow market risk.

More recently, Forti and Schiozer (2015) attempted to investigate why the banking sector has the largest payout ratios among other industries. They investigated whether Brazilian banks used dividends to signal to their debt holders about asset quality and liquidity. They also concentrated on the role of institutional investors and wholesale markets in banking finance (Oliverira et al., 2015) and the creditor's request for information (Peek et al., 2010). Their results are consistent with the notion that financial markets influence dividend. They point out that banks boost dividends during the 2008 financial crisis to signal asset quality and liquidity reduces the lending ability of banks.

In the latest research, Esquada (2016) examined the relationship between signaling hypothesis, corporate governance, as well as the dividend policy impact. In addition, the research examined the change in dividend policy of US firms-cross-listed emerging market companies based on signaling, market segmentation, and liquidity hypotheses to analyze fluctuations in such firms' equilibrium dividend policy. The research found that companies, where insiders can affect the decision-making process, are more likely to use dividend rises and initiations as a sign of an optimistic financial corporate future.

I.4. Agency Theory

Berle and Means (1932) originally set up the agency theory to describe the effect on contemporary corporations of the gap between ownership and control. An agency relationship is described as an arrangement whereby agents execute some service on behalf of principals delegating decision-making power to agents (Jensen and Meckling, 1976). The agency problem emerges from the asymmetry of information between principals and managers. Although agents are not the owners of the company resources, but these resources can be managed and controlled by the agents. Consequently, agents tend to make strategic decisions in their own interests, rather than maximizing the wealth of

principals. There are two kinds of agency problems, according to Jensen and Meckling (1976): (1) the conflict of interest between executives and shareholders; and (2) the conflict of interest between stockholders and bondholders.

The literature demonstrates that the conflict of interest between executives and shareholders causes the two sides: agency costs. According to Jensen and Meckling (1976), the agency cost of the organization includes expenses of surveillance, bonding, and residual loss. First, the expenses of surveillance or monitoring are incurred by shareholders in decreasing the activities of executives who profit themselves rather than principals. Second, executives incur bonding expenses to ensure that they do not engage in conduct that harms the welfare of shareholders. Lastly, the residual loss is the divergence between the executive's decisions and those that maximize the wealth of shareholders.

Easterbrook (1984) claims that, besides monitoring expenses, the agency costs arise from the issue of risk aversion. With diverse portfolios, shareholders can eliminate non-systematic risk and expect executives to make company choices as preferred risk at the cost of bondholders. The private interests of executives, however, are considerably linked to their companies. Managers will lose their employment and related advantages when companies demonstrate reduced profitability or go bankrupt. Managers therefore tend to be risk-averse and carry out low-risk projects with reduced yields than riskier undertakings. In addition, Rozeff (1982) and Jensen (1986) argued that the excessive funds accessible to executives are another cause of agency cost. If the cash flow of a company exceeds that needed to fund lucrative company projects, corporate managers are encouraged to invest in projects with negative net present value.

Previous financial literature has disclosed that high dividend payouts mitigate the agency problem by reducing managers' free cash flow (Grossman and Hart, 1980). Other studies conclude that distributing high dividends could discipline executives by decreasing the free cash flow that could be spent on loss-making projects. Dividend policy can therefore play a vital role in aligning managers' interests with shareholders' interests. CEOs distribute dividends to ensure that they do not use surplus money for personal advantages and to eliminate issues with overinvestment (Rozeff, 1982; Easterbrook, 1984; Jensen, 1986; Jensen et al., 1992; Alli et al., 1993; DeAngelo et al., 2004).

Finally, companies can pay dividends in order to attract institutional investors. Since legal constraints (e.g. the prudent man rule, as mentioned in Brav and Heaton, 1998) keep dividends attractive to institutional investors, the distribution of dividends may be a suitable way to attract institutional investors.

In the same vein, La Porta et al. (2000) find that one of the agency conflict's main remedies is law. Their paper relates to the law and finance literature and explains how legal systems influence dividend policy. They provide evidence that, in a country with weak shareholder protection, and in civil law countries (such as France), corporations pay high dividend payouts as a substitute for legal protection (Djankov et al., 2008).

Both institutional investors and dividends have relevant power over corporate policies, particularly when it is related to agency conflicts (Chang, Kang and Li, 2016). In recent research, Chang et al. (2016) confirm that monitoring institutions will use dividend payouts as a tool to mitigate a firm's agency problems.

Although several researchers have conducted multi-country studies and employed theories based on seeking a rational explanation for why firms distribute dividends, why investors have a preference for dividend-paying stocks remains a puzzle. Despite significant research in this field, a complete understanding of corporate dividends has not yet been achieved (Brav et al., 2005). Moreover, for the same companies, none of the theories are testable. For example, referring to agency theory, the distribution of dividends is a way to mitigate a firm's agency conflicts and overinvestment. It assumes that companies have a surplus cash flow, CEOs pay their shareholders dividends, and this payment depends on their economic position as well as their needs for growth. Companies decide whether or not to pay a dividend and decide on the technique, type and amount to be distributed. The nature of a company's assets was also reported as a dividend determinant (Aivazian et al., 2003; Allen and Michael, 2003). According to Scott (1977), companies with a large percentage of tangible assets are more leveraged, which, in turn, positively or negatively affects dividend payments, depending on whether there is a substitutable or a complementary relationship between dividends and debts. Size has also traditionally been regarded among the dividend determinants, and prior proof suggests that bigger companies pay greater dividends. (Fama and French, 2001; Osobov and Denis, 2005, 2008).

After reviewing the literature, we can conclude that rational explanations and theories based on agency and signaling theory, clientele and tax effect, cannot fully explain dividend payout policy. Since this case remains unresolved, recent research has shown a growing interest in behavioral approaches (irrational investors and managers' bias, such as overconfidence) in order to better explain dividend policy (Baker and Wurgler, 2013).

This issue is discussed in depth in this section, first considering Baker and Wurgler's (2004a) initiated catering theory.

SECTION II. CATERING THEORY AND DIVIDEND POLICY

Baker and Wurgler (2004a) have developed a dividend catering model. Irrational investors classify firms into dividend-paying and non-dividend-paying firms. These investors pay a premium for dividend-payers (above the basic value) and directors can use free cash flow to pay dividends or reinvest in the company's future long-term development.

Managers are therefore faced with a trade-off between short-term catering for investors (paying dividends to maximize present market prices but destroying long-term development) and reinvesting in development (i.e. not catering for dividends but maximizing fundamental long-term value). In addition, Baker and Wurgler (2004a) claim that a dividend premium expresses the feeling of risky for non paying growth companies as opposed to secure dividend payers. Catering to investors is perceived as a rational response to mispricing, in contrast to the assumption of efficient markets presumed by Modigliani and Miller (1961). The catering theory indicates that when investors overestimate dividend-paid companies, companies initiate a dividend.

Baker et al. (2004) divide the literature on the two approaches into investors' bounded rationality and managers' bounded rationality. The first approach supposes that the market is inefficient due to investor sentiment, which causes mispricing or misevaluation. Rational managers must exploit this mispricing or the disconnection between fundamental value and current price through corporate decisions, such as investment, dividend catering, or repurchasing shares. In the second approach, overconfident managers interacting with rational investors can make the wrong decisions, which can lead to undervaluing firm value. Since arbitrage is limited, there will not be a good opportunity to exploit.

Several empirical studies that focused on why firms dividend cater supported the notion that dividends disappear when the stock price goes up and tend to reappear after a crash in the stock price. In addition, Brown and Cliff (2005) and Baker and Wurgler (2007) have shown that investor sentiment measured by dividend premium could be considered as a constrain predictor of future stock returns. This proxy is a significant determinant of corporate value (Baker et al.,2009).

Baker and Wurgler (2004a), Li and Lie (2006) and Osobov & Denis (2008) examined dividend policy in six nations: the US, UK, Canada, Germany, France, and Japan. They tested several hypotheses regarding why firms pay dividends and concluded that dividend catering is not the first explanation of dividend policy decisions.

In contrast with Osobov and Denis's (2008) findings, Von Eije and Megginson (2008) highlight that there is no evidence for dividend catering. Von Eije and Megginson (2008) studied the evolution of dividends involving 15 European countries, including France, from 1989 to 2003. They report that a propensity to pay a dividend has a negative impact on growth opportunities in common law and is positively linked in civil law. In France, for example, they found that models of agency costs offer a better knowledge of dividend return payout policy than the theory of catering. An interesting approach was taken by Kuo et al. (2013), who show that dividend catering applies only in common law, as documented by Ferris et al. (2009).

In the same vein, the impact of catering incentives on the propensity to pay dividends across different nations was examined by Ferris et al. (2009). Their results show the importance of cross-sectional variations in explaining the catering dividends. They found that the coefficient of premium dividend is positive and significant for nations of common law and positive and no significant for nations of civil legislation (e.g. France). Their findings show that only in common law countries a catering effect occurs (La Porta et al., 2000).

Another key element in setting dividend payout policy is risk. Hoberg and Prabhala (2009), for example, show that risk explains up to 40% of the disappearance of US dividend firms, and that catering becomes insignificant after controlling for risk.

A synthesis of the empirical research on dividend catering is shown in Table 3.

Table 3. Synthesis of empirical research on dividend catering

Author and publication date	Context	Empirical methods	Empirical findings	Evidence of catering
Baker and Wurgler (2004 a, b)	US	Fama-MacBeth (1973) procedure; historical articles from the financial press.	Catering theory is the most relevant explanation for the decline in dividend payment in the US market. They identify four waves of dividends that appear and disappear, strongly associated with their premium variable for dividends. A review of the economic press ' historical papers indicates that companies could cater for demand-driven by sentiment. Dividends tend to vanish in growth stocks during pronounced booms and reappear in such stocks after crashes.	Yes
Li and Lie (2006)	US	Multinational logistic regression	Authors extend the significance of catering theory to changes in dividend levels: increases and decreases. The authors claim that Baker and Wurgler's theory (2004a) can only offer an explanation for dividend initiation and omission. Li and Lie (2006) also report a link between dividend premium and returns announcement. Their findings reveal that investors react by placing a higher market valuation on companies that consider a dividend premium in their payout decisions.	Yes
Ferris et al. (2006)	UK	Logistic regression analysis of a company's dividend payment choices	Aggregate data from 1998-2002 and validate catering theory.	Yes
Neves and Torre (2006)	Eurozone countries: Austria, Belgium, Finland, France, Germany, Greece, Italy, Ireland, Luxemburg, the Netherlands, Portugal and Spain	Panel data methodology	Results indicate that investor sentiment affects the payout ratio of Eurozone countries after controlling for company characteristics eg: free cash flow, leverage, income, tangible fixed effects, and size. Therefore, the authors provide evidence supporting the presence of a psychological component revealing investors' preference and the desire of CEO managers to cater for and fulfill investors' preference for dividend-paying stocks.	Yes
Ferris et al. (2009)	International data: 23 countries	Logistic regression with clustered standard errors	Confirm that executives in common law countries react rationally to investor demand for dividends. In comparison, firms do not follow the investors ' preference for dividends in civil law nations (including France).	Yes
Ramadan (2015)	Jordanian market	Applies to all listed companies of Amman Stock Exchange an unbalanced pooled cross-sectional time-series OLS regression model.	Aims to test whether traditional dividend policy determinants influence Jordanian stock market dividend premiums. The results demonstrate the validity of the theory of dividend catering.	Yes

Baker and Kapoor (2015)	International data: India, Indonesia, US, Canada		The authors use a study based on 500 companies listed on India's National Stock Exchange (NSE) to compare dividend policy in India with Indonesia, the US and Canada. They point out that the most probable reasons for cash dividends are the signaling theory, the company life cycle, and the theory of catering.	Yes
Anour and Aubert (2017)	France	Panel data methods	The dividend premiums are calculated at the level of the market and the company. The market demand for dividends measured by dividend premia has been found to have an impact on the decision to initiate, continue or omit to pay dividends and the decision to raise dividends.	Yes
Julio and Ikenberry (2004)	US	Fama-MacBeth methodology	They investigate the option of investor preferences being "catered" by executives for dividends that have no clear financial logic foundation. Although some of the results may be interpreted as supporting the hypothesis, the proof is not convincing when regarded as a whole. It was not found that the dividend-paying stock "premium" market is increasing at about the moment that more firms either begin or resume their dividend payouts. In this premium, they also find other jumps that are not associated with significant dividend activity rises. The latest dividend-paying stock premiums could also represent a "rational" investor preference for dividends based on factors such as tax, maturity, and governance.	No
Osobov and Denis (2008)	International data: six countries, including France	Logit regression	Investigate the dividend policy determinants in six nations, including France, from 1994 to 2002 and do not find evidence for the catering hypothesis of dividends outside the United States.	No
Von Eije and Megginson (2008)	International data: including France	Logistic regression on panel data	Find no systematic effects in EU firms of a country-specific catering variable, suggesting that catering is not a significant factor affecting European dividend payment policies.	No
Hoberg and Prabhala (2009)	International data	Fama and MacBeth (1973) time-series averages of annual cross-sectional logit coefficients.	After monitoring for systematic and idiosyncratic risks, dividend catering allows explaining little bit dividend payments.	No

Kuo et al. (2013)	International data: 18	Following Fama and French (2001), they apply	The authors point to the extra role of liquidity, risk, and catering in describing the	No
-------------------	------------------------	--	--	----

	countries	logit regression to test the role of liquidity and risk in the probability of paying dividends.	dynamics in a propensity to pay dividends for a very large sample of 18 nations from 1989 to 2011, including the United States, France, and the United Kingdom. Their findings confirm that incentives for catering persist in nations of common law and not in nations of civil law. They also conclude that after risk adjustment, there is no proof of dividend catering (Hoberg and Prabhala, 2009).	
Baker, Saadi, Dutto and Ghandi (2007)	Canada	Managers from a sample of 291 Canadian companies listed on the TSX stock-paying dividend were surveyed about their dividend opinions.	The study's aim was to examine managers' understanding of dividend policy. The results indicate that the most appropriate variables affecting dividend policy are signaling and life cycle, instead of catering theory, according to the opinions of the executives.	No
Tsuji (2010)	Japanese electrical industry	Time-series and logit models	The findings reveal that Japanese managers do not cater to dividends for shareholders in this industry. The dividend premium is not a determinant.	No
Turner et al. (2011)	International data	Times series and logit model	The authors show that dividend catering can only explain a little of the variation in the dividend initiation rate over time.	No

Source: Author

The various points of view and conclusions identified above confirm, once again, that dividends remain an open issue, whether appearing or disappearing. Empirical research shows that proof of the existence of catering for dividends is somewhat inconclusive, but mainly in France.

Empirical evidence for dividend catering is confirmed in the US, Canadian and British markets and there are mixed results for the French market. Osobov and Denis (2005) and Ferris et al. (2009) reject this hypothesis and accept it once (by Anouar and Aubert, 2017).

What makes our study original is that several studies have examined the determinants of payout decisions in multi-country studies and markets taking into account many factors, such as legal protection (Countries of civil law and common law), firm characteristics, and the dividend premiums pertaining to each country (dividend catering). Indeed, study on dividend catering was based on a country-specific catering variable's systematic effects. As a result, and to our best knowledge, this is the first study to focus on dividend catering on a sector-specific level. To achieve this aim, we propose a dividend model that incorporates a variable at the sector-level as a proxy of the catering effect.

The aim of this research is to show the importance of sector-level data among market sentiment in order to explain some of the variations in dividend payments.

Catering incentives are mainly based on investors' demand for dividends, limited arbitrage, and categorization. This argument is discussed in depth in the following section.

II.1. Investor Sentiment

Investors are subject to sentiment, according to an inefficient market hypothesis.

Therefore, since sentiment is unpredictable, Barberis et al. (1998) present a framework that explains how investor beliefs lead either to overreaction or underreaction, depending on the news. Sentiment is not just a phenomenon observed by skilled traders, but emotion can also impact traders in their decision-making while trading in equity, bond and derivatives markets in a way that deviates from rational behavior (Fenton-O'Creevy et al., 2011). Hence, recent research on behavioral finance presents a heated debate of investor sentiment, and evidence of asset misevaluation by investors. Baker and Wurgler (2007) emphasize the significant effect of investor sentiment on stock market equity.

According to Broihanne et al. (2004), all behavioral phenomena that could explain how investors form opinions when assessing securities are included in the word "investor sentiment." The contribution of these models is essential to show that information, whether private or public, has a different impact on agents due to behavioral biases. Investor sentiment is defined by Baker and Wurgler(2007) as the propensity to speculate and/or trade on a faith about future cash flow or risk not supported or defended by the facts to hand.

A more specific definition is offered by Brown and Cliff (2004) and combines the feelings of investor optimism and excessive pessimism. Intuitive emotions represent market participants' expectations relative to a norm, according to these writers: a bullish market is when a (bearish) shareholder expects yields to be above (below) average, whatever "average" may be. Baker et al. (2012) find that investor sentiment plays an important role in the volatility of the international market and produces predictability of returns with overreaction corrections.

Many studies, including Fisher and Statman (2000), Brown and Cliff (2004, 2005) and Qiu and Welch (2004), concentrated on the connection between the US market's shareholder

sentiment and stock returns. Studies by Zouaoui et al.(2011), Albouy et al. (2010) and Broihanne et al. (2004) can be mentioned on the French market.

Detailed analysis of the annual Global Investor Sentiment Survey from Franklin Templeton represents reactions from 11,500 people from 23 nations. The study was provided to 501 individuals in France, the panel of participants is mixed, representing all the areas of France. The average age is 48 and the minimum investment amount is € 20,000.

The French Investor Sentiment Survey (2015)²⁵ reveals that:

- 56% of French investors expected a positive performance from the French market in 2015, against 52% in 2014, reflecting renewed optimism.
- French investors had higher expectations than the previous year of stock performance: 38% expected a moderate rise in the market, and 18% a sharp rise in asset prices.

Sentiment may influence the finance market, as well as corporate finance, in resolving a different dilemma. Much of the conceptual and empirical studies on behavioral finance has tried to explain stock markets and crises through investor sentiment (Siegel, 1992; Baur et al., 1996; Baker and Wurgler, 2006, 2007; Zouaoui et al., 2011). Later studies provide evidence that investor sentiment could also influence corporate decisions (Baker and Wurgler, 2004a).

Therefore, many studies, such as that by Rashid et al. (2013), highlight the impact of market demands on corporate decisions and emphasize the existence of dividend catering theory and the significance of investor sentiment in explaining dividend policy. Another latest research focuses on the sentiment of investors as a proxy for dividend news market response. Vieira (2014) finds that market reaction is more susceptible to dividend rises when sentiment rises on the UK market, and that market response is less susceptible to dividends decreases when sentiment rises on the French market, but does not find any proof for the Portuguese market.

²⁵ <https://www.franklintempletonme.com>

Behavioral finance, given the above, is based on two criteria: the irrationality of investors and limited arbitrage. We describe what is arbitrage in the section below and why the literature on behavioral finance heavily argues that arbitrageurs are unable to correct mispricing induced by investor sentiment.

II.2. Limited Arbitrage²⁶

The outcome of market sentiment and limited arbitrage is mispricing. Arbitrage is the consequence of market inefficiencies. Indeed in an efficient market there will be no arbitrage opportunities. The main idea of why do investors cannot exploit arbitrage opportunities is that the strategies set up to correct mispricing could be both risky and costly to investors.

SECTION III. DIVIDEND POLICY BASED ON SECTOR-LEVEL DATA AND INVESTOR SENTIMENT

III.1. Dividend Policy and Sector-Level Data

Another factor used in the literature to clarify the dividend policy variation is sector-level data. With regard to financial research on corporate finance, some authors believe that the importance of economic sectors has an impact on a financial firm's decisions, as the difference in the nature of economic activities needs different funds for the various operational activities. This makes corporate decisions more important for firms with a greater need for funds to finance operational activities that will have a different impact on their dividend policy.

Empirical studies yield few and mixed findings on the evidence of the effect of industry-level data on dividend policy. Lintner (1956) stated that the sort of sector may affect the policy of corporate dividends. Mature and well-established manufacturing companies are more probable than newly developed service companies to pay a dividend. He found that firm and industry growth prospects, as well as a firm's earnings and the cycle in the variation in investment opportunities, are significant variables influencing the dividend policy of a company. Indeed, he notes that there may be a positive correlation between the dividend policy of companies belonging to the same sector. He explains that firms generally imitate and adopt the lead regarding other firms in the same industry. In the same vein, In selecting

²⁶ Shleifer and Vishny (1997) show that there are situations where there is limit d'arbitrage in which theories in traditional finance fail to explain and can be better understood using behavioural and psychological aspect.

their target payout ratios, Marsh and Merton (1987) recommend that companies observe industry practice. In addition, in the period 1960-1970, Michel (1979) found statistically significant differences in dividend payout policies among 13 industries. Baker (1988) updated the data in Michel's work (taken from 1977-1988) and confirms the industry effect on dividend payout policy. Due to the same investment opportunities, the Conference Board (1971) also stated a connection between dividends and industry classification (Michel and Shaked, 1986, pp. 365-366).

Michel, A. (1979) confirms that the dividend policy of a company is consistent with the sector in which it works. Companies in high-growth sectors are more likely to maintain funds for future investment than those in mature, saturated sectors. Emery et al. (2004) focused on U.S. industrial and basic materials sectors aimed at offering reduced dividend payouts than utilities. It was therefore conjectured that patterns of corporate dividends and policies on dividend payouts could differ across industries. Similarly, according to Porta et al. (2003), different sectors may be at different stages of maturity and growth, which may strongly influence their policies on dividends. Thus, taking into account the activity sector as a control variable allows us to avoid some of the possible bias (Bozec and Laurin, 2004). Some studies, however, conducted by Rozeff (1982), Dempsey et al. (1993), Howe and Shen (1998) and Frankfurter and Wood (2003), have not been able to define a substantial connection between industry type and dividend policy.

III.2. Importance of Sector-Level Data in Investor Sentiment

As investor demand for dividends differs over time (Baker and Wurgler, 2004b), one option is that dividend preference and dividend demand may differ not only across companies and nations (Baker and Wurgler, 2004a, b ; Li and Lie, 2006 ; Osobov and Denis, 2008 ; Ferris et al., 2009; Hoberg and Prabhala, 2009; Kuo et al., 2013 ; Baker and Kapoor, 2015 ; Anouar and Aubert, 2017), but also across sector level.

The sector should be considered an instrument of decision-making. Sector studies are used by investors and managers to respond to a variety of needs. For example, investors need to measure the risk they face when they invest in a company. To do this, investors and managers need to know the companies and the environments in which they operate. The sectoral dimension is increasingly taken into account by managers, since the microeconomic approach is incomplete. A company's financial decisions have much to gain from operating

based on intra-sector comparison since accounting for the specific characteristics of the activity leaves an imprint on the economic structure of firms belonging to the same activity industry. As a result, while it is clear that corporate profitability and its financing and investment policies owe much to internal factors, the character of its economic environment is far from negligible and significant in its decision-making process to both shareholders and executives.

Among the indicators that make it possible to identify a (growth, promising, driver) sector quickly are the following:

- Increase in the number of companies in the industry.
- The turnover of companies in the sector.
- The commercial margin of firms in the sector.
- It has also recently been possible to add investor sentiment, broken down by industry category.

Investor sentiment is better measured across sectors of activity. The originality of our research lies in studying the relevance of investor sentiment pertaining to the demand for dividends by industry category. Indeed, to our best knowledge, this is the first research in this sense relative to the French market. Thus, the identification of investor sentiment by sector of activity is likely to be of interest to the various actors in the financial market: it facilitates the information and decision-making process for investors and allows managers to better understand the expectations of their investors in terms of dividend distribution for the purpose of maximizing the value of their firms.

It is essential to understand whether differences in companies' dividend policies of firms are expressed by the variations in investor sentiment characterizing each sector of activity. The study of investor sentiment based on the sectoral dimension consists of building opinion regarding the attractiveness of the sector of activity. Sectors offer reasonable options and information that allow investors to invest properly in the market.

The sectoral dimension is of prime importance. However, it is essential to choose a field in which to invest in order to verify the sustainability of the company and maximize the wealth of investors. It is possible that not all investors have the same preferences in terms of industry. Investors have different expectations in terms of dividend relative to each sector

level because they carry the idea that some sectors distribute more dividends than others. Although it affects the company's financing strategy, the policy of dividend distribution is justified more by the attitude and preferences of investors than by the needs of the firm. Investors who rely on cash dividends to sustain themselves will prefer stocks that have a regular dividend policy. Companies that fall into this category are those that have reached a fairly high level of maturity in their life cycle, such as those in the industrial sector and in oil and gas (Lintner, 1956). Their market and revenues are regular and their need for growth is moderate.

One of the most important factors in prototype theory is the use of organization, such as the categorization of information. Many investors, particularly institutional investors, use a prototypical classification approach to categorize firms into dividend-payers and non-payers to better process information (Baker and Wurgler, 2004a). Referring to the work of Barberis and Shleifer (2003), some investors care about whether a firm distributes dividends and put dividend stock payers in a separate investment category. Categorization simplifies the processing of information. It allows investors as well as managers to distinguish between two types of company: actors that distribute dividends and those that do not.

Dividend stock differs from non-dividend stock. Each investor that owns stock will periodically receive a portion of the company's earnings in the form of a dividend payout. The two main types of dividend payout are cash dividends and stock dividends, the more common being cash dividends. Each firm sets its own dividend policy: some have paid dividends for decades (such as Total SA and AT&T), others have never paid dividends (Google in the US; and Acteos, Ubisoft Entertainment, Artprice.com, NicOx, Transgene, Valneva and Hubwoo in France).

Yakov and Li (2003) noted that the participation of institutional investors (pension funds, mutual funds, and insurance firms) in the assets of the most profitable firms is increasing and clarified this finding by the fact that such investors have tangible and intangible methods to know the businesses that are doing well. One of the factors why firms distribute dividends is that these firms are less risky, according to scholarly studies. In the most famous financial press, this notion is prevalent.

Graham and Dodd (1951) clarified that companies are distributing dividends because shareholders prefer to receive a certain and secure dividend rather than self-financing. Some

investors prefer dividend-payers who give them back cash because it is perceived much safer than stock market volatility. Some investors, therefore, see dividends as a signal of a company's growth investment opportunities, so they prefer non-dividend-paying companies because they assume that the companies have retained income to finance lucrative future projects. Mullainathan (2002) defined "categorical inference" as changing a company from one category to another, which can not happen without having an impact on investor opinions and preferences. Investors use this approach to better evaluate and understand the policy of the company. The above inductions lead us to another explanation: the investor's decision relies on principle not only on risk aversion (bird in hand) but also on the general perception of the growth prospects of a company.

Finally, based on studies conducted by Thaler and Shefrin (1981) and Shefrin and Statman (1984), we find that investors prefer dividend shares to reduce the interest conflict between shareholders and managers. Consequently, there are several explanations about why investor preferences or uninformed dividend demand changes.

In contrast, there are investors who are looking for capital gains from growing companies and, for this group of investors, dividends are undesirable. Companies in this category come from the high-tech sectors. In the early 1990s, biogenetics, as well as internet companies, was an example of a sector with high potential growth. Throughout the 1980s, Apple, for instance, did not distribute any dividends. Furthermore, some investors are more likely not to stick with specific stocks but to first consider trending sectors in order to make better investments.

One of the aspects that we would like to point to in this section is the importance of sector classification for dividend policy. As a market tends to go through rotations, investors need to be in touch with promising and unprofitable industries. Sectors tend to remain for weeks, months, and sometimes years in their corresponding trends. Investors should focus on examining the general market significance of "hot" industries.

Classification of the sector organizes companies into industrial groups based on comparable economic markets manufacturing procedures, goods or behaviour. Finding the "gauge industry" is one of the most significant operations that investors can undertake because it provides them with an indication of when a industry may approach its peak. Consequently, the gauge will alter over time. Today's high-tech share-leading industry may not exist after

just a few years. For instance, if in 2001 Dell investors had been told that by 2007 Apple would become the hottest consumer player in the technology sector, they would have probably disregarded the information as far-fetched.

Stocks and industries that are hot today could eventually be replaced by different companies that will be able to find better ways to do business tomorrow, and then that new firm will become the goal of investors' desires. The notion of classification is based on a cognitive process used by a key organization to group objects and stuff representing the finest copy.

Rosh (1978) regarded this prototypical approach and enables us to categorize and classify firms. This concept allows us to study a group of companies that have at least one property in common with the prototype.

In the light of investors' demands varying over time, investors sometimes prefer a company that distributes dividends and sometimes not. Barberis and Shleifer (2003) suggested a model to explain the effect of investment style on financial markets and asset valuation. The basic assumption is that each investment style managers meet expresses a need of the investors. Therefore, classifying firms into categories, such as growth, small cap and technology stocks, which are risky for many investors, offers labels that often seem to tell investors everything they need to know about how to act. A theoretical view of categorization implies that people understand and categorize concepts in terms of implicit theories or general ideas about these concepts (Markman, 2003).

Categorization is based on complex mental representations of these concepts.

It seems appropriate to take account of investor sentiment on the basis of sector-level data in order to fully understand the financial decisions of the firms concerned. Based on the methods used by Baker and Wurgler (2006) and Baker et al. (2012) in their analysis of the equity market, Deeney et al. (2015) built a similar oil sentiment index that measured oil market sentiment. They compared the performance of a basic model before and after the inclusion of the oil sentiment index, and the findings reveal that sentiment impacted oil prices as well as the equity market recognized in prior empirical research (Simon and Wiggins III, 2001; Baker and Wurgler, 2006; Whaley, 2000, 2008). They also found that sentiment has explanatory power when explaining WTI and Brent crude oil prices. They suggest that sentiment exists in the oil market since there is a need for speculation and

there is asymmetrical information between oil producers and other market participants. Their study expanded the notion of sentiment to the energy market.

Referring to Balcilar et al.'s (2015) findings, Islamic equity sectors exhibit positive risk exposure with respect to shocks in the conventional global market. Islamic consumer services, oil and gas, and technology sectors exhibit a negative risk exposure during crash periods.

More recently, Narayan et al. (2017) argued that investors can gain considerably by investing in certain sectors. They examine investors' behavior on the NYSE based on the performance of dynamic trading strategies, regardless of the different portfolios in all sectors, using a mean variance framework. They conclude that the performance of dynamic strategies is much more impressive in some sectors than in others. Moreover, they suggest that investors should carefully choose the sectors in which they invest, in accordance with their preference for investments. They reveal that returns on dynamic trading strategies in certain sectors, such as technology and hardware, electricity, household, finance, travel and banking, are relatively high compared to investments in other sectors.

In addition, Peng and Xing (2006) showed that investors paying limited attention to firm characteristics leads to catering learning behavior. In other words, investors allocate more attention to market-to-book ratio and sector-level data than to firms' specific characteristics. This study suggests that firms differ in their dividend policy as a result of their characteristics, investor sentiment and the industry.

In line with the literature above, we developed a proxy for investor dividend sentiment among firms in different industries to explore an explanation of corporate dividend policy. The testable hypothesis is as follows:

H1: Sector-specific sentiment has different impacts on firms' dividend policy.

SECTION IV. DATA AND SAMPLE

This research examines the empirical determinants of dividend payout policy among French listed companies operating in 10 distinct industries.

Based on information provided by the Industry Classification Benchmark (ICB), we identified 10 sectors. However, we had no specific expectations regarding the sign of the variables.

Our research aims to examine the global French dividend policy trend across 10 sectors between 2000 and 2015. We aimed to test the catering theory of dividends and the effect of financial firms' characteristics on the dividend decision (i.e. to pay or not to pay).

First, this investigation attempted to develop a set of assumptions regarding whether investor sentiment measured by sector dividend premium has an impact on dividend payment decisions. In accordance with the ICB, we divided firms into 10 sectors. We took the sample companies from the CAC ALL-TRADABLE Index. We gathered all the accessible information for each of the companies between 2000 and 2015. The data sources for the study were Datastream, Worldscope, Thomson, and financial and annual reports. We also considered various websites to complete the data.

- **The research question:** Could dividend catering studied using sector-level data provide fresh insights into dividend behavior?
- **The objective:** To examine the effect of investor sentiment in explaining the likelihood of companies paying dividends across 10 industries.

IV.1. Sample Selection

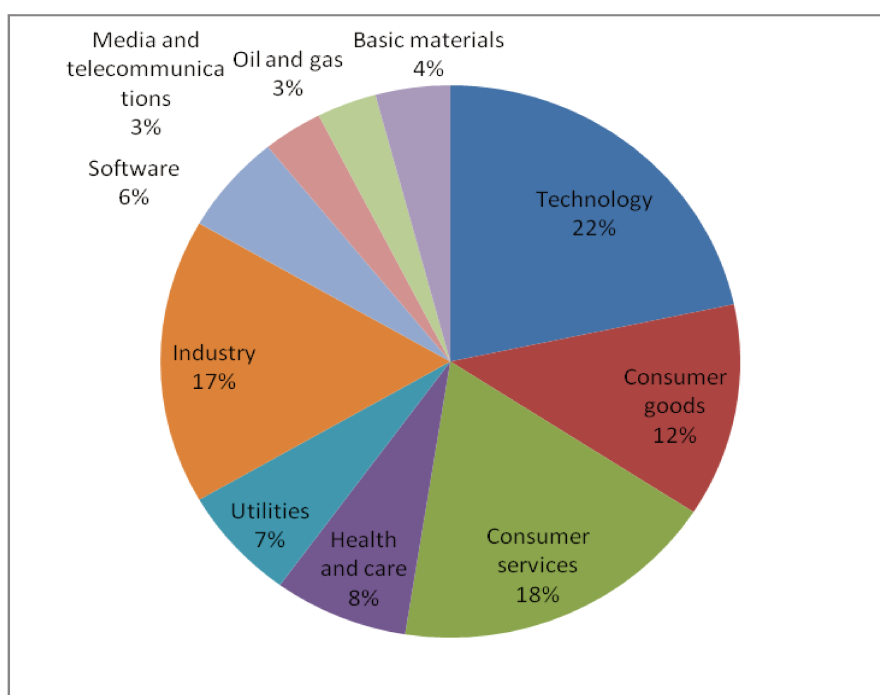
We were following the guidelines of the ICB. ICB offers a extensive industry analysis framework. It classifies firms into 10 industries: technology, consumer goods, consumer services, health and care, utilities, industry, software, telecommunications, oil and gas, and basic materials.

We excluded financial firms. Our sample consisted of 120 firms belonging to 10 different sectors, or 1,920 company-year observations. Moreover, to emphasize the representativeness of our sample, we now present a descriptive analysis by sector.

IV.1.1. Sample categorized by sector

Figure 1 indicates our sample's sector distribution, after omitting financial institutions, according to the ICB system. Our sample comprises 10 sectors. Therefore, we conclude that our sample seems representative of all sectors.

Figure 1. Sample classified by sector



Source: Author

IV.2. Definitions of Variables

The choice of variables was made as part of our empirical validation in accordance with empirical work on the dividend policy determinants.

IV.2.1. Dependent Variable

We used the following measure of dividend policy:

Dividend decision payment: The likelihood of paying a dividend. Dummy variable: in accordance with Baker and Wurgler (2004a), A company-year observation shall be counted as a payer if it has an ex-date positive dividend per share equal to 1, and equal to 0 if it has not paid it. This yardstick shows the evolution of dividend policy but does not explain the payout distribution. The main idea is that managers cater to dividend preferences.

In the meantime, if stock prices are overvalued, investors prefer dividend-payers to non-dividend-payers. Managers thus have an incentive to initiate and provide their shareholders with dividends. On the other hand, when a market underprices stocks, CEO managers have to cut dividends.

IV.2.2. Independent Variables

Investor sentiment toward dividend across sectors: Lintner (1956) indicated that there may be a positive correlation between the dividend policies of companies belonging to the same sector. As a result of the same investment opportunities, the Conference Board (1971) also noticed a connection between dividends and industry (Michel and Shaked, 1986, pp. 365-366). As indicated by Dhanani (2005, p. 1635): Companies may tailor their dividend policies to suit the specific circumstances in which they operate within the industry. For example, companies in high-growth industries can curb their dividend-based strategies in an attempt to retain funds for additional investment compared to those in mature, saturated industries.

Baker and Wurgler (2004a) argued that when the market looks favorably on companies paying dividends, companies tend to initiate dividends. Indeed, it could be discussed that investors are placing a measure of sentiment on getting dividend premiums and that this is the primary reason, besides making a profit. So why do investors prefer dividend-paying stocks to non-paying stocks? Empirical evidence of what is known as dividend catering has produced controversial results. For example, Baker and Wurgler (2004a, b), Li and Lie (2006), Ferris et al. (2006 b), Neves (2006), Ferris et al. (2009), Jain et al. (2009), Kale et al. (2012) and Baker and Kapoor (2015) provide evidence to support catering theory. In contrast, findings presented by Julio and Ikenberry (2004), Hsieh and Wang (2006), Bulan et al. (2007), Chay and Suh (2008), Von Eije and Megginson (2008), Osobov and Denis (2008), Hoberg and Prabhala (2009) and Vieira (2014) Dispute on the theory of catering incentives.

The main focus of considering this variable is to compute the investor sentiment toward dividends across industries.

Investor sentiment across industries: We calculated investor sentiment as having a unique value for one year for all firms in the same sector, not forgetting that this value varies yearly and reflects the time-varying demand of investors for dividends in the 10 sectors. In one year, the catering effect of all firms in the same sector is measured in the same way. We use

an equally weighted average market-to-book ratio (see Table 5 for more details). For each sector, we calculate a specific investor sentiment. No previous study examined investor sentiment with respect to dividends within sector. On the basis of this observation, we did not have any specific expectations as to the signs of these variables.

Table 4. Summary of the measures used in the research

Hypothesis: H1: Sector-specific sentiment has different impacts on firms' dividend policies.	
Variables	Measures
Dependent variables	
DIV	Dividend payment variable: A dummy variable that is equal to 1 if a firm pays a dividend in year t and 0 otherwise.
Independent variables	
Sector dividend premium PD Sectoral	In line with Baker and Wurgler (2004a, b), the dividend premium is defined as the difference between the average market-to-book value ratio of dividend-paying and non-dividend payers for all firms included in the same sector in each year. ²⁷
Control variables	
MBT	Ratio of the market value of assets to the book value of assets, where the market value of assets is the book value of assets plus the market value of equity minus the book value of the equity.
GA	Growth opportunities: asset growth rate (AG): asset growth rate between year t and t-1.
CASHFLOW	Measured as the ratio of pre-tax profit plus depreciation to the book value of total assets (Deshmukh et al., 2013).
PROFITABILITY	Net margin: this value is the income after taxes for the fiscal year divided by total revenue for the same period.
LEV	Measured as the ratio of total debt scaled by book value to total assets.
FIRM SIZE	Measured by the natural logarithm of the book value of total assets (Fama and French, 2001).
FIRM AGE	Defined as the number of years since the firm's incorporation and calculated as observation year minus incorporation year.
PD IN SMALL YOUNG	An interaction term for investor sentiment on small and young firms.
SSF	Sectors that have firm size (mean) below the median firm size are aggregated and defined as Sectors with Small Firms.

²⁷ The dividend premium varies from year to year. During the period 2000-2015, it remained the same for each year for companies dealing in the same sector. This premium does not change in the same way for all sectors. This definition is illustrated in the figures (Figure 3. Sentiment for time-varying dividend demand for all sectors).

SBF	Sectors that have firm size (mean) above the median firm size are aggregated and defined as Sectors with Big Firms.
SYF	Sectors that have firm age (mean) below the median firm age are aggregated and defined as Sectors with Young Firms.
SOF	Sectors that have firm size (mean) above the median firm age are aggregated and defined as Sectors with Old Firms.

Table 5. Dividend premiums across sectors

	Technology			Consumer goods			Consumer services			Health and care			Utilities			Industry			Software		
	Payers	Non-payers		Payers	Non-payers		Payers	Non-payers		Payers	Non-payers		Payers	Non-payers		Payers	Non-payers		Payers	Non-payers	
	EW/MB	EW/MB	P^D-ND	EW/MB	EW/MB	P^D-ND	EW/MB	EW/MB	P^D-ND	EW/MB	EW/MB	P^D-ND	EW/MB	EW/MB	P^D-ND	EW/MB	EW/MB	P^D-ND	EW/MB	EW/MB	P^D-ND
1999	8,73	8,23	0,51	3,71	1,74	1,97	3,90	2,49	1,42	3,84	0,71	3,13	3,91	4,59	-0,69	2,08	1,17	0,91	4,53	7,90	-3,37
2000	9,55	7,04	2,50	3,03	4,12	-1,09	2,73	4,40	-1,67	3,68	1,14	2,54	6,13	2,62	3,51	3,25	0,96	2,29	5,50	2,55	2,94
2001	3,85	2,39	1,46	2,64	1,71	0,93	2,84	2,12	0,71	3,78	1,33	2,45	5,27	4,01	1,26	1,65	1,42	0,23	2,70	1,16	1,54
2002	1,31	0,33	0,98	2,25	9,53	-7,28	1,88	1,53	0,34	3,42	1,29	2,13	2,20	2,31	-0,11	1,25	1,24	0,01	1,64	1,09	0,55
2003	1,72	3,24	-1,52	2,35	0,00	2,35	1,92	1,51	0,41	3,55	1,61	1,94	2,58	0,00	2,58	1,97	5,75	-3,79	2,03	17,82	-15,79
2004	2,01	4,51	-2,50	2,22	1,17	1,05	2,02	3,43	-1,41	3,92	2,65	1,26	2,69	0,00	2,69	2,19	3,65	-1,46	2,78	4,47	-1,69
2005	2,47	-1,87	4,34	2,64	-1,18	3,82	2,07	4,09	-2,02	3,89	2,67	1,22	2,80	2,22	0,58	1,91	3,80	-1,89	2,90	4,22	-1,33
2006	2,30	3,90	-1,60	2,77	3,10	-0,33	2,70	5,73	-3,03	3,72	3,48	0,25	3,18	2,74	0,44	2,69	3,11	-0,42	2,58	2,79	-0,21
2007	1,84	2,69	-0,86	2,51	10,91	-8,40	2,68	3,60	-0,92	4,55	2,48	2,07	2,64	1,96	0,68	2,47	2,70	-0,24	2,09	2,71	-0,62

2008	1,02	1,60	-0,59	1,33	3,61	-2,28	1,26	1,80	-0,54	2,51	1,03	1,48	1,29	0,46	0,83	1,17	2,32	-1,15	0,87	0,93	-0,06
2009	1,22	2,10	-0,88	1,79	1,72	0,06	1,61	2,46	-0,84	2,80	0,69	2,11	1,59	0,46	1,13	1,58	2,16	-0,58	1,40	1,14	0,26
2010	1,34	1,81	-0,47	2,18	1,81	0,37	1,60	2,42	-0,82	2,32	0,80	1,52	1,62	0,55	1,07	1,70	1,75	-0,05	1,32	1,31	0,00
2011	1,15	1,28	-0,12	1,60	3,74	-2,14	1,29	-0,24	1,54	1,83	0,55	1,28	1,08	0,45	0,63	1,71	0,85	0,87	1,29	1,01	0,28
2012	1,18	1,28	-0,10	1,73	2,17	-0,44	1,36	2,67	-1,31	2,02	0,47	1,54	1,08	0,28	0,80	1,21	1,25	-0,05	1,11	1,03	0,08
2013	3,09	1,97	1,12	2,11	2,40	-0,29	2,04	1,32	0,72	2,45	0,89	1,57	1,45	0,38	1,08	1,66	1,86	-0,20	1,75	1,39	0,36
2014	1,54	2,61	-1,06	2,09	3,18	-1,09	2,22	1,25	0,97	2,58	1,06	1,52	1,45	0,43	1,02	1,99	2,61	-0,61	2,10	1,14	0,96

	Media and telecommunications			Oil and gas			Basic materials		
	Payers	Non-payers	p^{D-ND}	Payers	Non-payers	p^{D-ND}	Payers	Non-payers	p^{D-ND}
	<i>EW/MB</i>	<i>EW/MB</i>		<i>EW/MB</i>	<i>EW/MB</i>		<i>EW/MB</i>	<i>EW/MB</i>	
1999	11,53	0	11,53	1,47	0	1,47	2,95	1,37	1,58
2000	17,36	0	17,365	1,12	0	1,12	0,938	0	0,938
2001	9,42	0	9,425	1,12	0	1,12	3,336	0	3,336
2002	4,63	0	4,63	1,405	0	1,405	-1,472	0	-1,472
2003	6,255	0	6,255	1,585	0	1,585	2,2	-0,4	2,6
2004	4,735	0	4,735	1,885	0	1,885	1,6075	-0,52	2,1275
2005	3,9	0	3,9	1,81	0	1,81	1,515	0,56	0,955
2006	3,14	0	3,14	1,935	0	1,935	1,6325	2,55	-0,9175
2007	2,66	0	2,66	1,74	0	1,74	2,0925	3,16	-1,0675
2008	1,89	0	1,89	0,795	0	0,795	1,32	0,82	0,5
2009	2,27	0	2,27	0,98	0	0,98	1,37	2,02	-0,65
2010	2,41	0	2,41	1,075	0	1,075	1,455	1,63	-0,175
2011	1,55	0	1,55	0,755	0	0,755	1,4475	0,58	0,8675
2012	1,44	0	1,44	0,73	0	0,73	1,4725	1,05	0,4225
2013	2,32	0	2,32	0,77	0	0,77	2,1175	1,81	0,3075
2014	2,36	0	2,36	1,1	0,42	0,68	1,9025	1,01	0,8925

IV.2.3. Control Variables

The control variables that might also influence firms' dividend decisions are as follows (see Table 6):

Market-to-book ratio: the ratio of the market value of assets to the book value of assets, where the market value of assets is the book value of assets plus the market value of equity minus the book value of equity.

Cash flow: measured as the ratio of pre-tax profit plus depreciation of the book value of total assets (Deshmukh et al., 2013).

Profitability: net margin. This value is the income after taxes for the fiscal year divided by the total revenue for the same period.

Leverage: measured as the ratio of total debt to total asset.

Firm size: represented by the total assets owned by the firm and measured as the natural logarithm of total assets.

Firm age: defined as the number of years since the firm's incorporation and calculated as observation year minus incorporation year.

IV.3. Descriptive Statistics

This section describes the statistical proprieties of the different variables for all sectors and then for each sector. These statistics include the mean, median, maximum, minimum and standard deviation. The statistical proprieties of the dividend payments based on the categorical data sets of the study are presented below.

The statistical results are presented in Table 6 for the most important business sectors in the French market.

Descriptive statistics

Table 6 summarizes the descriptive statistics for our sample. The mean for dividends is 68%, suggesting that the majority of French firms are stock payers during the sampling period.

Table 6. Descriptive analysis of business sectors in the French market

	count	Mean	p50	Sd	min	Max	Skewness	kurtosis
DIV	1920	0.68	1.00	0.47	0.00	1.00	-0.77	1.59
PD	1920	0.15	0.22	2.33	-15.78	17.36	-.045	18.08
CASHFLOW	1920	0.10	0.07	0.11	-0.08	0.44	1.64	5.97
MTB	1920	2.26	1.73	1.78	0.44	7.62	1.68	5.40
PROFITABILITY	1920	0.03	0.04	0.08	-0.23	0.15	-1.67	6.33
GA	1920	0.07	0.04	0.17	-0.22	0.51	0.86	3.91
LEV	1920	0.27	0.22	0.25	0.00	1.00	1.56	5.23
FIRMSIZE	1920	13.39	13.06	2.27	9.64	17.33	0.19	1.96
FIRMAGE	1920	45.22	30.00	41.91	1.00	193.00	1.66	4.88

Variable	Modality	Frequency	Percent	Cum
DIV	0	616	32.08	32.08
	1	1,304	67.92	100.00
Total		1.920		100.00

Multicollinearity analysis

We used the coefficients of the bivariate correlations to examine the multicollinearity between the explanatory variables. The hypothesis is as follows:

H0: There is a significant correlation between the variables.

H1: There is no significant correlation between the variables.

Table 7. Pairwise correlation matrix and multicollinearity check

	DIV	PD	CASHFLOW	MTB	NM	GA	LEV	FIRMSIZE	FIRMAGE	VIFs
DIV	1.00									
PD	-0.04*	1.00								1.03
CASHFLOW	0.13***	0.07***	1.00							1.46
MTB	-0.14***	0.14***	0.17***	1.00						1.16
PROFITABILITY	0.25***	-0.05**	0.31***	0.04*	1.00					1.19
GA	-0.01	0.01	0.15***	0.20***	0.11***	1.00				1.07
LEV	0.11***	0.03	0.40***	-0.06**	0.09***	-0.00	1.00			1.29
FIRMSIZE	0.35***	-0.02	-0.11***	-0.19***	0.12***	-0.11***	0.15***	1.00		1.35
FIRMAGE	0.31***	-0.03	-0.02	-0.23***	0.10***	-0.10***	0.18***	0.40***	1.00	1.30

Note: This table presents pairwise correlation coefficients. The variance inflation factors (VIFs) are based on the common sample of 1,920 firm-year observations. Asterisks indicate significance at the 10% (*), 5% (**), and 1% (***) levels.

As shown in Table 7, other than asset growth, All independent variables are statistically significantly associated with the dependent variable, which is likely to support at least some of the assumptions that these independent variables interact with the dividend policy. This evidence confirms that to mitigate potential bias induced by variable omission, it is appropriate to include these independent variables in our empirical models.

Table 7 also shows that none of the coefficients of correlation between the independent variables are greater than the value of 0.80. As proposed by Damodar (2004), multicollinearity will not be a significant problem for multiple analysis unless the correlation coefficients between regressors exceed this level. This is verified by the inflation variance factors (VIFs) calculated to identify multicollinearity among our models' independent variables. Chatterjee and Hadi (2006) proposed that a VIF value greater than 10 would normally be regarded as an indication of collinearity problems. As shown in Table 7's last column, the VIF values are all lower 2, well below 10's cut-off value. This proof indicates that multicollinearity in our empirical models is unlikely to be an issue.

After reviewing Table 7, we can state the following.

Dependent variable:

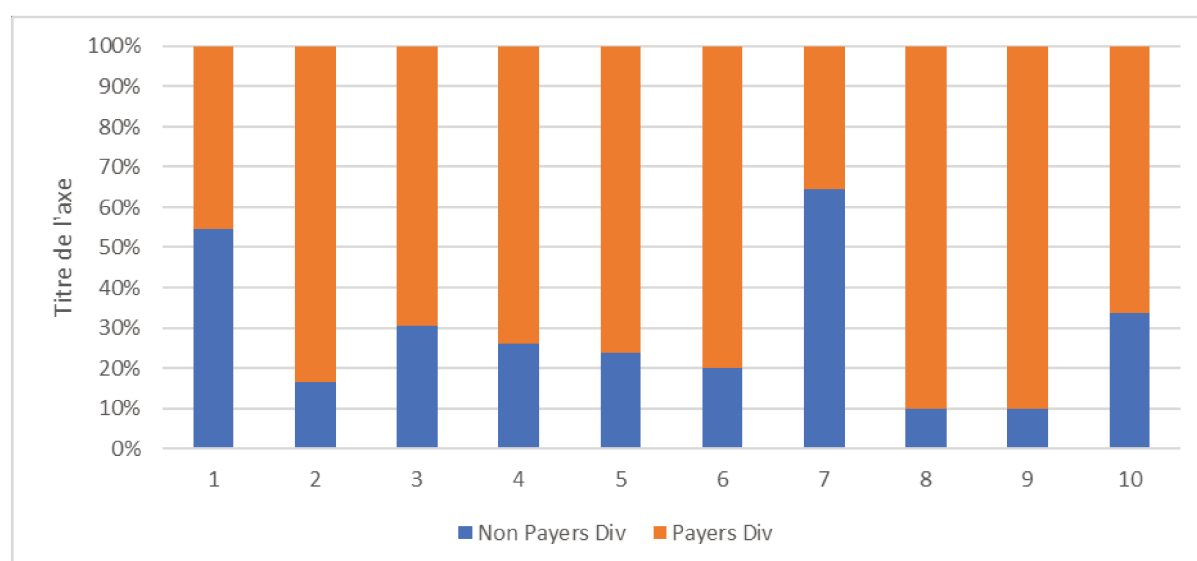
Y_{it} : Dividend payment decision

Our sample has been categorized into dividend-payer companies and non-dividend-payer companies. The chart below (Figure 2) shows that most of the sample firms are dividend-payers (67.92%), which is consistent with recent studies of the Investor Global Index that demonstrate that French firms have recently tended to pay more dividends. The percentage of firms that pay dividends to their stockholders is more important than those that do not pay.

According to the Henderson Global Investment Index (2015), France is considered to have contributed more dividends to shareholders in the euro area (\$47 billion in 2015). To further enhance our study, we examined the payment of dividends by French companies across 10 sectors to provide greater understanding of French dividend-paying behavior.

How can we explain the high likelihood of dividend stock payers in France?

Figure 2. Dividend likelihood classified by sector



Dividend payers: the percentages of dividend-paying and non-dividend-paying firms: Sector: 1 = technology; 2 = consumer goods; 3 = consumer services; 4 = health and care; 5 = community services; 6 = industrial sector; 7 = software; 8 = mobile and telecommunications; 9 = oil and gas; 10 = basic materials.

Figure 2 shows that throughout the 2000-2015 sample era, the majority of French companies paid dividends to shareholders: telecommunications (90%), oil and gas (90%), consumer goods (83.62%), industrial (80.09%) and utilities (76.25%) are the most significant and consistent sectors to pay dividends. Our statistical analysis shows that large sectors or

industries are more likely to distribute dividends to their shareholders (Lintner, 1956; Dhanani, 2005).

We find that, particularly for the two technology and software sectors, the percentage of companies that do not pay dividends is higher than firms in other sectors. This result is due to high-technology and software firms often being characterized by high-growth investment opportunities, which leads them to show a preference for investment rather than dividend distribution. Therefore, sectors such as oil and gas, industrial companies and utilities include firms that are involved in heavy manufacturing, which tends to have high leverage and high dividend payouts. This pattern of dividend payouts is explained by the same factors that affect capital structure decisions: regulated companies and firms with steady cash flow and stable assets tend to have high leverage and a high payout policy. However, firms operating in volatile sectors or which must make high-risk discretionary investments in new technologies have low debt and very small dividend payouts.

Sample characteristics related to investor sentiment within different sectors

According to Baker and Wurgler (2004a), a dividend premium proxy reflects investor sentiment toward dividend-payers. This suggests investor preference for dividend changes. This variable allows us to better understand the link between investor sentiment by sector of activity and dividend distribution policy. Based on Baker and Wurgler's studies (2004a, b), we constructed a new sector dividend premium proxy using data broken down by industry categorization. The industry dividend premium is defined as the difference between the average market-to-book value ratios of dividend-paying and non-dividend-paying firm for all companies included in the same sector in each year (see Table 5). The goal was to measure the impact of investor sentiment on the likelihood that a company is a dividend-payer within different sectors. We wondered about the relevance of this measure in France.

Figure 3 shows that the dividend premium is not stable over time and shows a time-varying demand for dividends within different sectors. An investor sentiment proxy is a challenging and controversial measure because it has a subjective and idiosyncratic character. The most effective way to test the reliability of a sentiment proxy is to study its alignment with bubbles and crashes over the study period. As highlighted by Baker and Wurgler (2007, p. 17), "the best evidence that the index generally succeeds in capturing sentiment is simply that it lines up fairly well with the anecdotal accounts of bubbles and crashes".

Figure 3 illustrates the evolution of dividend premium by sector from 2000 to 2015. We note that the dividend premium reached its highest level during 2001 and 2007. This coincides with the stock market crash linked with the Dot.com bubble and to the subprime crisis. Figure 3 plots the lagged dividend premium across sectors.

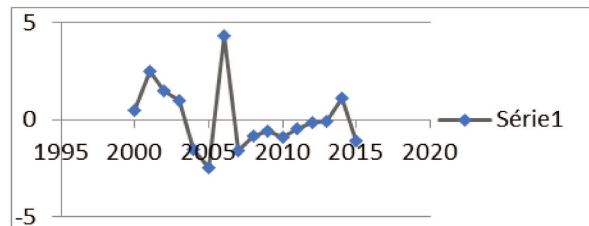
The results of the descriptive statistics show **investor sentiment within sectors** calculated by the difference in logarithm between market-to-book firm payers and market-to-book firm non-payers by sector. This variable does not exceed the value of 17.36, a minimum of -15.78, an average of 0.15, and a standard deviation of 2.33.

Graphical evidence

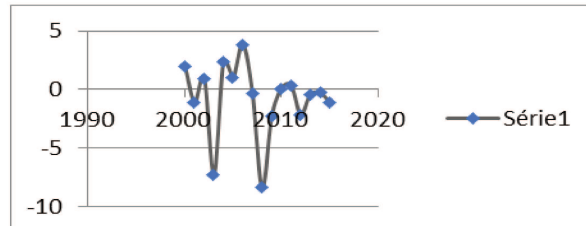
We begin our empirical analysis by a graphical investigation of whether time-varying dividend trends or the preference of investors (Figure 3) relates to the pertinence of this measure in France when explaining dividend payment decisions. Moreover, in the second part (Figure 4) of our analysis, we present both graphs together with the time-varying demands of investors for dividends and dividend likelihood across different sectors.

Figure 3. Sentiment for time-varying dividend demand for all sectors

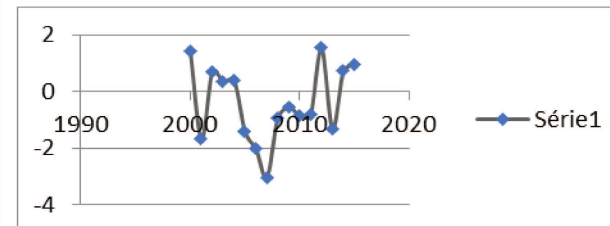
Graph 1: Dividend Time varying demand for the Technology sector



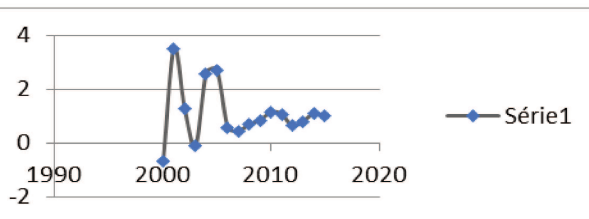
Graph 2: Dividend Time varying demand for Good Consumer sector



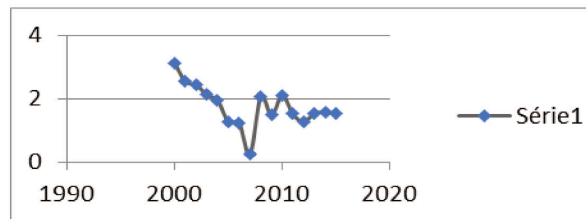
Graph 3: Dividend Time varying demand for Consumer service sector



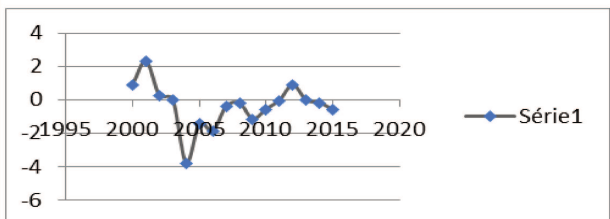
Graph 4: Dividend Time varying demand for the Health and Care sector



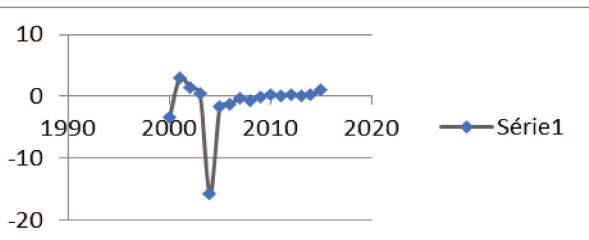
Graph 5: Dividend Time varying demand for Utilities sector



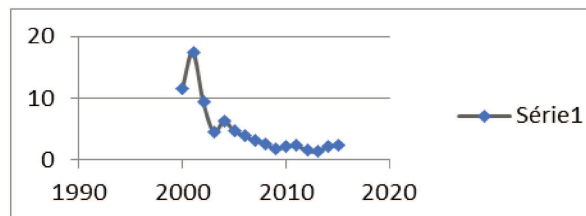
Graph 6: Dividend Time varying demand for Industrial



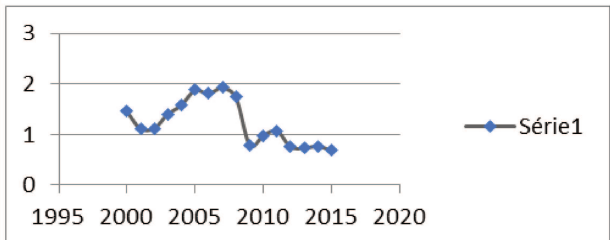
Graph 7: Dividend Time varying demand for the software sector:



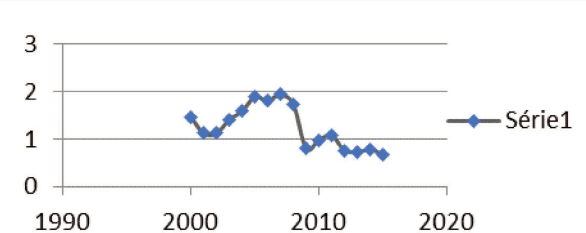
Graph 8: Dividend Time varying demand for Telecommunication sector:



Graph 9: Dividend Time varying demand for Oil and Gas sector



Graph 10: Dividend Time varying demand for Basic Materials sector

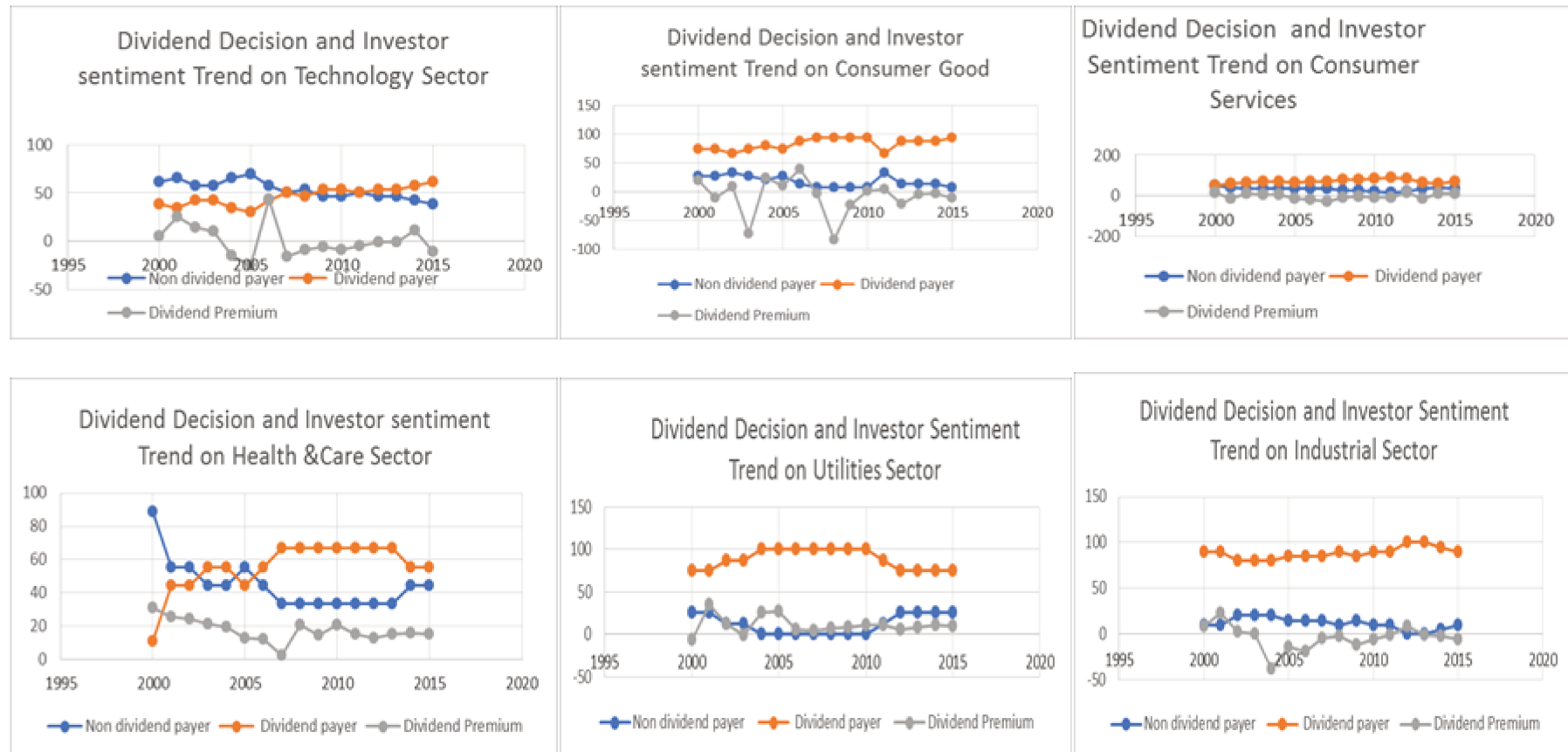


1) Sample characteristics related to control variables

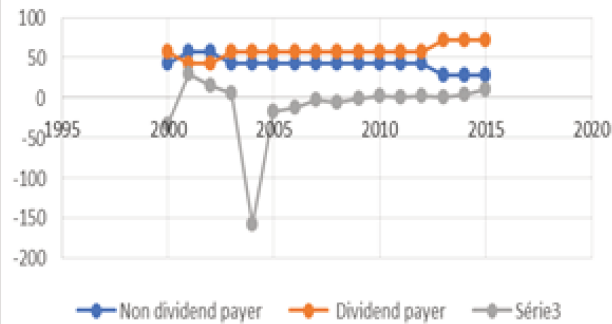
- Cash flow: Descriptive statistics show that the cash flow ratio of French companies does not exceed 0.44, with a minimum of -0.08 (technology), an average of 0.10 and a standard deviation of 0.11.
- MTB: shows a maximum of 7.62, a minimum of 0.44, with a mean value of 2.26.
- Profitability: Descriptive statistics indicate that the earnings ratio does not exceed 0.15 (mobile and telecommunications sector: Iliad), with a minimum of -0.23 (mobile and telecommunications: Vivendi), an average of 0.03 and a standard deviation of 0.08.
- Growth assets: Displays a maximum of 0.15, a minimum of -0.22, with a mean value of 0.07.
- Leverage: Descriptive statistics show that French companies often make use of debt and the debt ratio does not exceed 1.00 (mobile and telecommunications) for highly indebted companies, with a minimum of 0.00 (technology), an average of 0.27 and a standard deviation of 0.25.
- Firm size: Shows a maximum of 17.33, a minimum of 9.64, an average of 13.39, a median of 13.06 and a standard deviation of 2.27.
- Firm age: ranges widely between 193 years and 1 year. The mean for firm age is 45.22, with a median of 30 and a standard deviation of 41.91.

Figure 4 presents the dividend decision and investor trend across sectors from 2000 to 2015 in order to assess if there is any relationship between investor sentiment and the probability of a dividend decision.

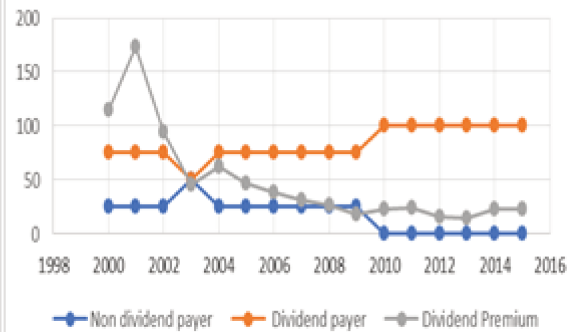
Figure 4. Dividend decision and investor sentiment trend across sectors



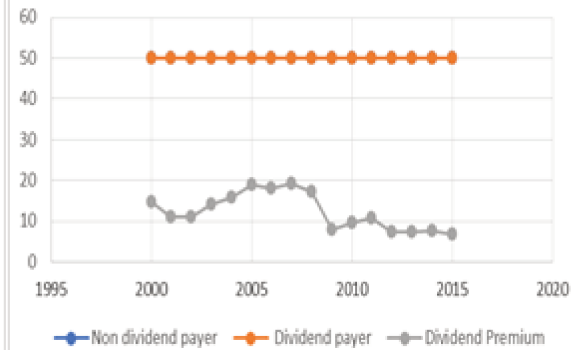
Dividend Decision and Investor Sentiment
Trend on Software Sector



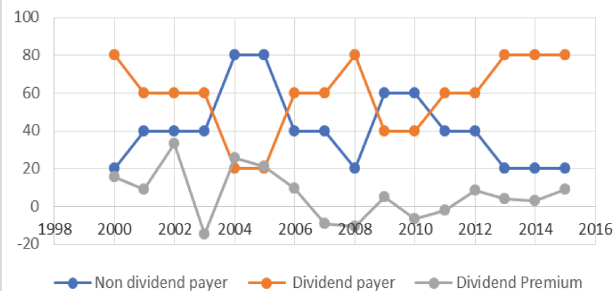
Dividend Decision and Investor Sentiment on
Media and Telecommunication Sector



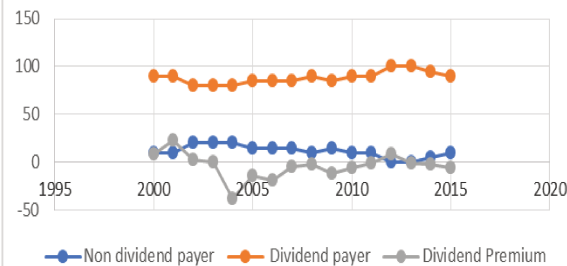
Dividend Decision and Investor Sentiment
Trend on Oil & Gas Sector



Dividend Decision and Investor Sentiment
Trend on Basic Materials Sector



Dividend Decision and Investor Sentiment
Trend on Industrial Sector



The graphic analyses illustrate the evolution of the dividend distribution decision and investor sentiment. We note that in the sectors of technology, health and care, industrial, software, media and communication, there is a common trend, either upward or downward, particularly during one half of the study period. We also find that the investor sentiment trend and the evolution of the decision to distribute dividends are related. This makes it possible to highlight the preference of investors for companies distributing dividends.

For some sectors (consumer goods and utilities, for example) investor sentiment is linked more with the evolution of the variable that translates the non-distribution of dividends. Consequently, this expresses the demand of investors for non-dividend-paying companies.

In the other sectors, we find no connection between sentiment and decisions to distribute a dividend. This preliminary graphical analysis is not definitive regarding the sentiment-dividend relationship and will be checked later in the empirical analysis.

In order to categorize sectors into subclasses or groups based on similar properties, we classified sectors into homogeneous clusters based on firm size and maturity (firm age) dimensions. According to Baker and Wurgler (2004a) and Mullainathan (2002), investors could use categorization to better assess and understand corporate decisions. This makes it possible to highlight the contribution of each sector in explaining the relationship between a specific sentiment sector and firms' dividend policy.

Statistical tests

The signed-rank test of Wilcoxon was used to examine whether the mean investor sentiment between dividend-paid companies and non-dividend-paid companies is different. If the t-test requirements for two independent samples are not met, the non-parametric Wilcoxon rank-sum test can often be used to test whether two independent samples are taken from ordinally distributed populations. In place of the two independent samples t-test, the Wilcoxon rank-sum test (or Mann-Whitney test) can be used. The main idea behind this test is to compare the investor sentiment mean for the two sets of corporate groups (dividend-paying stocks and non-dividend-paying stocks) and see if they differ substantially from each other.

The following null hypothesis was used for this test:

- H0: The mean of investor sentiment is equal for dividend stock payers and non-dividend stock payers.
- H1: The two observations (population) are not equal.

We reject the null hypothesis ($p\text{-value}=0.062$). Therefore, from a practical point of view, this implies that the mean of investor sentiment is not equal for dividend stock payers and non-dividend stock payers.

Furthermore, we used the Kruskal-Wallis H test to verify whether there are statistically significant differences in investor sentiment means between different sectors. This test aims to examine the variability of investor sentiment across sectors. We used the following hypothesis:

H0: Assumes that the mean for investor sentiment is the same for all sectors.

H1: At least one of the sectors has a different mean for investor sentiment.

We reject the null hypothesis at any conventional level of significance [$\chi^2(9)$ with $\text{ties}=544.669$; $p\text{-value}=0.0001$]. Therefore, we assume that investor sentiment is significantly different across at least one sector. This hypothesis is checked in the regression analysis.

This suggests that in French dividend policy, catering can play a significant role. This result justifies the use of industry clusters in our analysis.

SECTION V. ECONOMETRIC MODEL

We investigated whether dividend payout decisions are related to investor sentiment for dividend-paying firms based on different sectors. According to the catering theory of dividends, managers pay a dividend to shareholders when the market puts a high price on dividend payers compared to non-payers. The market must punish managers who do not meet the prevailing investor preference. A logistic model, as used in quantitative methodology, was used to test this theory. Thus, we proposed the introduction of the sentiment variable defined by the sector dividend premium (Baker and Wurgler, 2004a) to test whether investor demand within sectors has an asymmetrical effect on the decision of French CEOs to distribute more dividends.

We carried out a model logistic regression panel. The dependent variable was a dichotomous variable that assumed a value of 1 if a company pays a dividend in a year and 0 otherwise.

V.1. Logistic Regression Model

The cross-sectional model of logistic regression did not capture the impact of time as a variable factor in corporate decisions to initiate dividends. We used a logit data methodology to evaluate the effect of time series financial variables and investor sentiment on the dividend payment preference. For capturing the dynamics of variables based on two dimensions, this data method has an advantage over cross-sectional data: the cross-section and the time series.

Besides, panel data provide us with an efficient econometric estimate by increasing the number of data points (Hsiao et al., 1995). Otherwise, each cross-section has the same number of time-series observations and the data are displayed as an unbalanced sample pool (Wooldrige, 2002).

The formulation of the logistic regression multivariate is as follows:

$$\text{Log} = \beta_0 + \beta_i X_{it} \quad (1)$$

In equation 1, the firm year dependent variable is a dichotomous variable that assumes the value of 1 if a company pays dividends and 0 otherwise. X_{it} is the control variables vector as described in section IV.2.3. There is a binary response for each individual 'i' in the population and y_{it} applies to each sample year.

First regression:

Inspired by Kuo et al. (2013), we employed a logistic regression that takes the following form:

$$\text{Div}_{it} = \beta_{1t} \text{INVESTOR}_{it} + \beta_{2t} \text{MBT}_{it} + \beta_{3t} \text{ASSETSGROWTH}_{it} + \beta_{4t} \text{LEVERAGE}_{it} + \beta_{5t} \text{CASH FLOW}_{it} + \beta_{6t} \text{FIRM AGE}_{it} + \beta_{7t} \text{FIRM SIZE}_{it} + \beta_{8t} \text{PROFITABILITY}_{it} + \varepsilon_{it} \quad (1)$$

[i = 1,.....,120] ; [t = 2000,.....2015] ; [β_{it} : Parameter to be estimated.]

ε_{it} : presents the error term.

The following empirical regression model is based on hypotheses defined in previous sections.

SECTION VI. EMPIRICAL RESULTS AND DISCUSSION

In the French context, this study tries to shed light on the issue of dividend policy. It also fills a gap in the literature by looking at investor preferences across sectors, as distinct industries can be expected to vary plausibly in terms of dividend payment policy and investor dividends demand dividends. In addition, it has been observed that in dividend policies there are very few studies comparing sector differences. In order to test if investor sentiment and industry effect have any impact on corporate dividend decisions in France and to examine a potential industry catering effect, we examined whether dividend sentiment predicts a firm's dividend policy. If elevated dividend sentiment increases the demand for dividend-paying stocks, we expected PD to have a positive (negative) impact on the probability of being a dividend payer. For this reason, and to gain a more tangible sense of an investor sentiment concept, we considered a regression approach, which allowed us to understand how firm age and firm size interact with sentiment in dividend payout policy (see Table 8).

We ran the estimation equation (2).

$$Div_{it} = \beta_{1t} PD_t + \beta_{2t} MBT_{it} + \beta_{3t} GA_{it} + \beta_{4t} LEV_{it} + \beta_{5t} CASH\ FLOW_{it} + \beta_{6t} FIRM\ AGE_{it} + \beta_{7t} FIRM\ SIZE_{it} + \beta_{8t} PROFITABILITY + \varepsilon_{it} \quad (2)$$

The results presented in Table 7 report the estimates from baseline regression with independent variables, which include the firm characteristic variables advanced by Fama and French (2001) and investor preference initiated by Baker and Wurgler (2004a).

Table 8. First-stage regression: investor sentiment across firm age and firm size

	Fixed effect estimator	Random effect estimator	Investor sentiment in young firms	Investor sentiment in small firms	Investor ²⁸ sentiment in small and young firms
	model1	model2	model3	model4	model5
VARIABLES	DIV	DIV	DIV	DIV	DIV
PD	-0.00	-0.02	-0.03	-0.05	-0.06
	(0.06)	(0.06)	(0.08)	(0.08)	(0.07)
CASHFLOW	6.87***	7.12***	7.12***	7.14***	7.11***
	(1.82)	(1.63)	(1.63)	(1.63)	(1.63)
MTB	0.20***	0.13**	0.14**	0.14**	0.14**
	(0.07)	(0.06)	(0.06)	(0.06)	(0.06)
PROFITABILITY	-6.43***	-4.58***	-4.59***	-4.56***	-4.52***
	(1.74)	(1.65)	(1.65)	(1.64)	(1.64)
GA	-0.37	-0.23	-0.24	-0.24	-0.26
	(0.61)	(0.58)	(0.58)	(0.58)	(0.58)
LEV	-2.45***	-2.29***	-2.29***	-2.29***	-2.30***
	(0.83)	(0.71)	(0.71)	(0.71)	(0.71)
FIRMSIZE	1.31***	1.00***	1.00***	0.99***	0.99***
	(0.26)	(0.16)	(0.16)	(0.16)	(0.16)
FIRMAGE	2.95***	2.71***	2.71***	2.70***	2.70***
	(0.56)	(0.41)	(0.41)	(0.41)	(0.41)
PDinYoung			0.02		
			(0.13)		
PDinSmall				0.07	
				(0.13)	
PDinSmallYoung					0.16
					(0.16)
Constant		-20.60***	-20.61***	-20.55***	-20.56***
		(2.41)	(2.41)	(2.41)	(2.41)
Observations	992	1,920	1,920	1,920	1,920
Number of id	62	120	120	120	120
Wald chi2	165.50***	115.61***	115.65***	115.98***	116.63***

Note: This table reports empirical results from estimating Eq. (2). Specifically, column 2 reports the results obtained from the fixed-effects estimator (within-groups estimator). Column 3 presents the results obtained from a random-effects method. Estimations gained from the interaction between investor sentiment and firm age/size are reported in column 4 and column 5. Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***) levels.

²⁸ We also repeat the regression in columns 3, 4 and 5 for big and old firms. However, we find that coefficients for investor sentiment in all specifications are insignificant.

We took unobserved effects into account, by using common estimation methods for panel data, such as fixed-effects (FE) and random-effects (RE). A Hausman test was performed to distinguish between approaches to FE and RE. We find that the test's null hypothesis can not be accepted at any standard significance level [Chi-sq (8)=0.0077 ; p-value=0.000 . We, therefore, used the FE method to control for time-invariant unobserved characteristics across companies. To verify the robustness of our results across various econometric analysis methods and to make it easier to compare our results with those of previous appropriate research, In this study, empirical models were also estimated using alternative estimators, including an estimator of random effects.

As reported in all the columns (Table 8), we find no evidence to support the industry dividend catering hypothesis in the French market. This result is consistent with Osobov and Denis (2005), who revealed that when shareholders exercise strong pressure on managers, especially in common law countries (such as Canada and the UK), there is evidence of dividend catering but with very little significance. However, in civil law countries (for example, Germany, France and Japan), catering theory is rejected. Meanwhile, shareholders put a low level of pressure on managers. In accordance with a lack of evidence of catering, Baker, Saadi, Dutta and Ghandi (2007) and Tsuji (2010) have shown in survey research that managers do not take into account investors' demands when making decisions on dividend initiations and the studies argue that catering cannot explain a firm's payout behavior. Despite Anouar and Aubert (2017) finding dividend catering in firm payout behavior in France, we find no evidence of an industry dividend catering effect.

To go beyond the scope of previous analysis, we also introduced an interaction term between investor sentiment and firm size/age. In order to capture the impact of sector-specific investor sentiment on dividend payout policy for small and young firms, we employed three different proxies to measure investor sentiment changes across firm size and firm age. As reported in the work of Baker and Wurgler (2006), sentiment is most influential on firms that are difficult to value. Therefore, in a more recent study, Baker and Wurgler (2007) stated that sentiment is more of an issue for newer, smaller, more volatile, unprofitable and non-dividend-paying stock. With reference to these studies and in order to investigate whether younger and smaller firms are more prone and sensitive to sentiment, we introduced a moderator variable to control for firm size and firm age. We defined our

proxies as follows: investor sentiment in small firms (PDinSmall) takes a PD value when the firm is small ($\text{size} < 13.06$) and 0 otherwise; investor sentiment in young firms (PDinYoung) takes a PD value when the firm is young ($\text{age} < 30$) and 0 otherwise; investor sentiment in small and young firms (PDinSmallYoung) takes a PD value when the firm is small and young ($\text{age} < 30$ and $\text{size} < 13.06$) and 0 otherwise. Thus, theory²⁹ indicates that stocks of some companies that are newer, smaller, more volatile, more unprofitable, non-dividend-paying, distressed, or with extreme growth potential, and companies with similar features are likely to be more influenced by a change in investor sentiment.

As shown in table 8 above, all the coefficients of the interaction term (investor sentiment in small firms [PDinSmall]; investor sentiment in young firms [PDinYoung]; and investor sentiment in small and young firms [PDinSmallYoung]) are very similar and not significant. However, our study differs slightly from those of Baker and Wurgler (2006, 2007).

As shown in Table 8, the cash flow ratio ($\beta = 6.87$; $\beta = 7.11$) is positive and significantly related with dividend likelihood. According to Jensen's (1986) free cash flow hypothesis, if a company has an excess of cashflow that was not consumed by a project with a positive net present value (NPV), In order to maximize their wealth and reduce the possibility that this fund might be wasted on NPV projects, it is better to return the excess cash to shareholders. Therefore, the author confirms that high cash flow leads to higher dividend payments, which is one way to avoid managers overinvesting. In the same vein, Black (1976) suggested that managers pay dividends to their shareholders to alleviate possible problems of overinvestment. Jensen and Meckling (1976) confirmed that asymmetrical information between insiders (managers) and outsiders (investors) may lead to agency costs. One of the tools for reducing outsider expropriation is to decrease the cash flow available by dividends and share repurchases.

Therefore, we noted that cash flow was correlated positively to dividend payment. Paying cash back to shareholders reduces the firm's internal cash and leads managers to search for external financing. The agency explanation for dividends has been advanced by several studies, for example, Rozeff (1982). In addition, Easterbrook (1984) stated that dividends

²⁹ The results offered by Baker and Wurgler (2007) suggest that when sentiment is estimated to be high, stocks that are attractive to optimists and speculators are younger, smaller, unprofitable, non-dividend-paying, high volatility, extreme growth, and distressed stocks—which tend to earn relatively low subsequent returns. Conditional on low sentiment, however, these cross-sectional patterns attenuate or completely reverse.

can be used to reduce the free cash flow available to managers. In this way, shareholders can monitor CEOs at less cost and prevent managers from acting out of self-interest.

The market-to-book ratio coefficient is positive and significant in the full models as in all other tested models ($\beta=0.20$; $\beta=0.40$) at 1% and 5%, respectively. The higher the market-to-book ratio, the greater the probability that firms will initiate (or continue) payment of dividends. No significant relationship has been found between asset growth and investment opportunity variables and dividend decisions. However, divergences in the evidence have been observed regarding the market-to-book variable and dividend payout policy. Amidu and Abor (2006) suggests that the market-to-book ratio is negatively correlated to dividend payment, whereas some studies have found that the market-to-book ratio is positively correlated to dividend payout policy (Anouar, 2013;³⁰ Marfo-Yiadom and Agyei, 2011; Gul et al., 2012; Priya and Nimalathasan, 2013).

The leverage coefficient is very significant in the full models ($\beta=-2.45$; $\beta=-2.30$) at the 1% significance level. This negative association supposes that debts have a negative effect on the probability of dividend payments. In addition, while some academic researchers have noted that leverage is significant and inversely related to dividend policy, firms with relatively less debt have greater financial slack to pay more dividends (DeAngelo and Masulis, 1980; Rozeff, 1982; Jensen et al., 1992; Wei and Xiao, 2009).

There is a negative link between profitability and dividend payout decisions, whereby the profitability coefficients ($\beta=-6.43$; $\beta=-4.52$) are significant at the 1% level. The result shows a statistically significant and negative link between the profitability of a company and its dividend payout decision (Gupta and Banga, 2010; Zhao, 2014; Maladjian and Khoury, 2014). This finding, however, is contrary to prior empirical results, which found a positive relationship between dividend payment and company profitability, according to the signaling theory. Companies have been found to pay shareholders dividends to communicate their excellent financial performance (Chang and Rhee, 1990; Ho, 2003).

Therefore, firm size shows a positive and significant dividend payment relationship. This suggests that large-sized firms tend to pay more dividends, attributable to large firms having

³⁰ Anouar (2013) stated that the probability that firms distribute dividends to shareholders is positively associated to a high market-to-book ratio.

easier access to external financing and relying less on internal capital. In addition, big companies tend to pay dividends as they have better access to capital markets and it seems easier for them to raise funds at reduced expenses, enabling more dividends to be paid by this kind of firm. The evidence is confirmed by the findings of Barclay et al. (1995), Holder et al. (1998), Fama and French (2001), Grullon and Michaely (2002) and Al-Malkawi (2007), which noted that larger companies have greater agency problems and could, thus, pay higher dividends in order to mitigate such costs.

Consistent with Von Eije and Megginson (2008), the results report that firm age is positively related to dividend payout policy, as predicted by the life cycle theory.³¹ Hence, we extended our study by categorizing our 10 sectors into four large sectors based on firm size and firm age. The second-stage regression was conducted to examine whether sectors divided across firm age (maturity) and firm size would give a better explanation of dividend policy and investor sentiment in France. Therefore, we performed four subsample tests. We classified our sample into four portfolios: sectors that have a firm size (mean) below the median firm size were aggregated and defined as Sectors with Small Firms (SSF); sectors that have a firm size (mean) above the median firm size were aggregated and defined as Sectors with Big Firms (SBF); sectors that have a firm age (mean) below the median firm age were aggregated and defined as Sectors with Young Firms (SYF); and sectors that have a firm size (mean) above the median firm age were aggregated and defined as Sectors with Old Firms (SOF) (see Table 9).

³¹ The firm life cycle hypothesis of dividends is in light of the thought that as a firm matures, its capacity to generate cash overtakes its ability to find gainful investment opportunities and projects. Eventually, it becomes ideal for those firm to distribute their free cash flow back to shareholders. Bulan, Subramanian and Tanlu (2007) found that companies initiate dividends after achieving maturity in their life cycle. DeAngelo et al. (2006) stated that the likelihood that a firm will distribute dividends is significantly related to the mix of (internally-) earned capital and (externally-) contributed capital in its capital structure.

Table 9. Sectors based on firm size and firm age: descriptive analysis

	Firm Size		Firm Age	
	Mean	Median	Mean	Median
Sect1: Technology	12.57	13.06	25.96	30
Sect2: Consumer goods	14.18		57.23	
Sect3: Consumer services	13.38		49.72	
Sect4: Health and care	12.06		29.50	
Sect5: Utilities	15.18		66.95	
Sect6: Industrial sector	14.22		61.95	
Sect7: Software	11.42		17.35	
Sect8: Mobile and telecommunications	14.49		50.75	
Sect9: Oil and gas	14.27		60.75	
Sect10: Basic materials	12.49		38.1	

Note: Sectors that have a firm size (mean) below the median firm size are aggregated and defined as Sectors with Small Firms (SSF); sectors that have a firm size (mean) above the median firm size are aggregated and defined as Sectors with Big Firms (SBF); sectors that have a firm age (mean) below the median firm age are aggregated and defined as Sectors with Young Firms (SYF); and sectors that have a firm size (in mean) above the median firm age are aggregated and defined as Sectors with Old Firms (SOF).

Table 10. Dividend payment and dividend sentiment: firm characteristics controls: by sector based on firm size and firm age

	SYF	SOF	SSF	SBF
	model6	model7	model8	model9
VARIABLES	DIV	DIV	DIV	DIV
PD	-0.001	-0.03	0.08	-0.11
	(0.10)	(0.08)	(0.09)	(0.09)
CASHFLOW	8.07*	6.65***	10.41***	4.28**
	(4.62)	(1.80)	(2.56)	(2.07)
MTB	0.35***	0.00	0.26***	0.00
	(0.12)	(0.08)	(0.10)	(0.09)
PROFITABILITY	-6.83*	-3.90**	-8.07***	-1.35
	(3.74)	(1.97)	(2.62)	(2.23)
GA	-0.30	-0.14	0.00	-0.51
	(0.94)	(0.75)	(0.78)	(0.90)
LEV	-1.75	-3.12***	-1.19	-4.28***
	(1.32)	(0.89)	(0.97)	(1.17)
FIRMSIZE	1.11***	0.87***	1.29***	0.78***
	(0.40)	(0.18)	(0.28)	(0.19)
FIRMAGE	3.67***	2.10***	3.32***	1.60***
	(0.94)	(0.45)	(0.64)	(0.52)
Constant	-26.53***	-16.00***	-26.83***	-13.18***
	(4.72)	(2.94)	(3.72)	(3.15)
Observations	672	1,248	1,072	848
Number of id	42	78	67	53
Wald chi ²	43.44***	64.47***	73.41***	46.81***

Standard errors in parentheses

Note: This table reports empirical results from estimating Eq. (2) for different levels of firm age and firm size. Specifically, column 2 reports the results obtained from Sectors with Young Firms. Column 3 presents the results obtained from Sectors with Old Firms. Estimations gained from Sectors with Small Firms and Sectors with Big Firms are reported in column 4 and column 5, respectively. Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***) levels.

Estimations for Sectors with Young Firms (SYF): We have taken into account unobserved effects by the application of common estimation methods for panel data, such as FE and RE. A Hausman test was conducted to make a distinction between FE and RE approaches. The null hypothesis of the test can not be accepted at any conventional level of significance[Chi-sq (8)=31.41; p-value=0.0001]. As a result, we used the FE approach to monitor time-

invariant unobserved characteristics across companies. Unfortunately, in this case the Hausman test was not the only way of testing which estimator is more appropriate in any given situation. For our case, we did not take into account the results given by the Hausman test since we stated that the results obtained by the random-effects method are better. In addition, we find that the between variation of the panel is stronger than for the within variation.

Thus, for Sectors with Old Firms (SOF), We also used common estimation techniques for panel data, such as FE and RE. A Hausman test was done to distinguish between FE and RE methods. The null hypothesis is accepted at any conventional level of significance [Chi-sq (8)=2.57 ; p-value=0.958]. Therefore, we employed the RE approach. Hence, for Sectors with Small Firms (SSF) (column 4), we find that the null hypothesis is rejected at any conventional level of significance [Chi-sq (8)=43.03; p-value=0.0000]. We would usually apply the FE approach but for this particular case we chose RE methods, which gave us a better result. Last, for Sectors with Big Firms (SBF), according to our results, we find that the null hypothesis is accepted at any conventional level of significance [Chi-sq (8)=1.18; p-value=0.996]. Therefore, we applied the RE approach.

In summary, according to our regression analysis, we employed an RE approach for all our regressions relative to the sectors (SYF; SOF; SSF; SBF). This confirms that there is no specific individual effect. Since categorical variables are well defined (sectors) in this case, the group effect is best thought of as random because we only used a subset of a sample of the entire population. This means that the likelihood of paying dividends cannot be explained by a specific individual firm effect but by a random-effects model. This brief outline suggests that a group effect is random and that a random-effects model is more appropriate for use in our case study.

Results of our regression provide no evidence of sector-specific sentiment and its impact on dividend policy. In each category of industry, investor sentiment has no significant impact on dividend payout, even if this sentiment varies between sectors.

Column 2 reports the results obtained from Sectors with Young Firms (SYF): we find that the probability that a company pays a dividend to shareholders is positively linked to a high **market-to-book ratio**, **firm size**, **firm age** and **high cash flow**; while it is negatively related to **profitability**. These results are consistent with Grullon et al. (2002), who argued that

younger companies with more investment opportunities but lesser profitability are more likely to pay dividends than older ones. The latter prefer the retention of earnings to the distribution of earnings, because their savings in transaction costs exceed the costs of the agency.

Column 3 reports the results obtained from Sectors with Old Firms (SOF): dividend stock payer likelihood is positively related with **cash flow, firm size** and **firm age**, but negatively linked with **profitability** and **leverage**. DeAngelo et al. (2006) examined the life-cycle hypothesis with listed firms on the US market and noticed that the earned/contributed capital mix is positively associated with the likelihood of a dividend payment. Osobov and Denis (2008) investigated the likelihood of paying dividends in developed markets and proved supporting evidence of the impact of profitability, firm size, investment opportunities and the earned/contributed capital mix on decisions concerning distributing or not distributing dividends. As a result, maturity is assumed to have a positive relationship with the likelihood of paying dividends. In line with DeAngelo et al. (2006) and Grullon et al. (2002), more mature firms are more likely to have residual cash flows and therefore are more likely to offer a dividend.

Column 4 reports the results obtained from Sectors with Small Firms (SSF): the likelihood that managers pay a dividend is positively related to **cash flow, market to book, firm size** and **firm age**. However, it is negatively related to **profitability** and **leverage**.

Finally, the last column (**Column 5**) reports the results obtained from Sectors with Big Firms (SBF) and shows that dividend-paying probability is highly related to **cash flow, firm size** and **firm age** and negatively associated with **leverage**. As a result, firm size has significantly positive impacts on the likelihood of dividend payments. In addition, firms with higher profitability are more likely to have residual cash flows after financing their investment projects ; as a result, dividends are more likely to be distributed. In addition, bigger companies can raise external resources to finance investment possibilities more easily on capital markets as they are well established and have a strong reputation (Chang and Rhee, 1990; Holder et al., 1998). This means that bigger companies are incurring lower transaction costs for external financing and are more likely to pay dividends.

Therefore, to test the possible effect of industry on dividend policy and industry investor sentiment, the estimation of equation (2) was run and the results are presented in Table 11.

Table 11. Dividend payment and investor sentiment by sector³⁰

	(1)	Marginal effect
Variables	Industrial sector	
PD Sectorial	0.683**	0.011**
	(0.306)	(1.81)
CASHFLOW	18.34**	0.578***
	(7.163)	(3.11)
MTB	0.0588	-0.019**
	(0.329)	(-2.06)
PROFITABILITY	-8.647	-0.101
	(6.262)	(-0.43)
GA	-0.441	0.088
	(2.424)	(1.37)
LEV	-5.234*	-0.087**
	(2.691)	(-2.55)
FIRMSIZE	2.004**	.0208***
	(0.918)	(3.27)
FIRMAGE	3.653**	.0436***
	(1.513)	(3.31)
Constant	-31.41**	-0.326***
	(13.85)	(-3.49)
Observations	320	320
Number of id	20	20

Standard errors in parentheses: *** = $p < 0.01$; ** = $p < 0.05$; * = $p < 0.1$

The regression analysis reported in Table 11 confirmed the previous non-parametric tests mentioned earlier. For the industry sectors, we find that firms initiate dividends when the dividend sentiment is stronger. This result provides support for catering theory and shows that French managers dealing with firm industry cater to investors' time-varying demand for dividends.

Our results indicate that investor sentiment significantly influences dividend payout policy for some industry groups (industrial). The significant influence of investor sentiment on dividend payout policy is sensitive to industry characteristics.

For the sector level, we find that sentiment regarding the industrial sector has the predominant impact on dividend payout policy. This preliminary result is indicative of distinct relationships between firm dividend decision and sentiment at the sector level.

Therefore, we confirm that sector-specific sentiment is a more appropriate measure for testing the catering theory of dividends. Our hypothesis is mainly confirmed within the industrial sector. Our findings indicate that industry is the single sector that—alone—captures investors' sentiment significance in predicting dividend policy likelihood.

Table 11 above shows that sector attributes explain the relationship between sentiment and corporate firm decision. The nature of the products of this sector, the markets they serve, and the business models they represent impose restrictions on their assessment and expectations about companies' past and future dividend policy. These assessments and expectations are related more to the fundamental characteristics of a sector than specific firm characteristics as a whole.

In addition, the empirical findings show that cash flow and firm size are significantly and positively related to the likelihood that managers will pay a dividend. However, the result indicates that profitability and leverage are significantly and negatively related to dividend policy for the industrial sector. Emery et al. (2004) pointed out that the diversified, industrial and basic materials sectors in the US tend to have reduced dividend payments than the utilities sector. It is therefore conjectured that corporate dividend behaviors and dividend payout policies may differ across sectors (Michel, 1979; Baker et al., 1985; Baker and Powell, 2000).

Hence, the type of sector in which a firm operate has a significant impact on its corporate dividend policy. The various characteristics related to the industry affect a firm's cash flow and the latter influences the firm's subsequent dividend decisions.

This finding argues the importance of sector-specific sentiment in a corporate firm decision, mainly dividend payout policy. We conclude that the industrial sector is more prone to sentiment than other sectors. Nevertheless, this result is not consistent with the "hard

value” argument suggested by Baker and Wurgler (2007). Hence, this result can be interpreted as individual investors being subject to asymmetrical information problems when valuing the firms in which they invest. More internal information is available to firms. Consequently, our findings report lower levels of information asymmetry and less uncertainty in valuing stocks in the industrial sector. Expectations and investor preferences are also more accurately reflected in stock valuations in the industrial sector than in others. Thus, in big and old sectors, such as industrial firms, investor sentiment is a key and significant determinant of dividend policy.

For this industry, the results show that firms with high cash flow ($\beta=18.34$; $p\text{-value}=0.010$) tend to pay high dividends to their shareholders. In addition, firm size ($\beta=2.004$; $p\text{-value}=0.029$) and firm age ($\beta=3.653$; $p\text{-value}=0.016$) have a positive and significant relationship with the likelihood of paying dividends. However, leverage ($\beta=-5.233$; $p\text{-value}=0.052$) is significantly and negatively related to dividend payout policy. A likely explanation of this is that managers operating in industrial firms are more likely to pay dividends. These results are consistent with the existing literature.

Marginal Effect³²

In the regressions below, we use partial derivatives of the response variable to calculate conditional marginal impacts with regard to the interest predictor. In this case, since we have a response variable of 1 or 0, marginal effects reflect changes in the response probabilities of 1.

In addition, in all logit and tobit models, the marginal effects (financial significance) of the independent variables were also calculated to provide further interpretations of the estimation coefficients (statistical significance). The marginal effects show each independent variable's marginal impact on the dependent variable of other independent variables' mean values.

The dependent variable is the fraction of dividend payers in t as a percentage of surviving non-payers from $t-1$. The results report that the coefficient for investor sentiment is significantly positive at the 5% level. The coefficient of the sentiment variable can be interpreted as follows: an increase in the likelihood of a dividend distribution of 1%

³² To eliminate the impact of outliers, we winsorized the control variables at the 5th and 95th percentile levels.

increases by 1.1 percentage points of probability that investors value dividend-paying stocks more. This evidence suggests that investor sentiment, on a stand-alone basis, is a strongly predictor of dividend payment.

The coefficient of the cash flow variable can be interpreted as follows: an increase in cash flow of 1% increases by 57 percentage points the likelihood of dividend distribution. Therefore, an increase in the market-to-book ratio of 1% decreases by 1.9% percentage points the likelihood of dividend distribution. Hence, an increase in firm size of 1% increases the likelihood of dividend distribution by 2.08% percentage points. Finally, a growth in firm age by 1% upgrades the probability of dividend payer stock by 4.36% percentage points.

Conclusion

Dividend policy has a long history of corporate finance development and has a number of explanations. This chapter provided a new approach to investigating dividend policy and new evidence of dividend catering policy across sectors. This study discusses whether sector-specific sentiment can shed more light on the likelihood of a dividend policy.

As a result, deviations in share prices from fundamental values may be used to support tactical corporate decisions (Ritter, 2003). Irrational investors suffer from swings of over-optimism and over-pessimism can cause mispricing. This means that rational managers should attempt to cater for dividends when the firm is overpriced and omit dividends when the firm is underpriced (Baker and Wurgler, 2004a, 2013).

Our empirical study is part of this research perspective on dividend policy and catering theory. For this, we have adopted a biased approach. Contrary to Baker's conclusions, we found no evidence for the catering hypothesis in the French market. In fact, investor sentiment is insignificant determinant of dividend policy. The results are in line with Osobov and Denis (2008) and Von Eije and Megginson (2008) and, therefore, this finding is inconsistent with Anouar and Aubert (2017).

In our opinion, such a result can be explained by various considerations such as the managerial profile of French managers known for their very high level of training, the capital structure and financial profile of French firms, the sizes of the firms in the sample, the composition of the Board of Directors, the age of entry and the entrenchment of derigents.

To differentiate the effects of these considerations, we have tested if small and young firms are more prone to sentiment (Baker and Wurgler, 2007). Thus we introduced an interaction term between investor sentiment, firm size and firm age. The results showed that all the coefficients of the interaction term and investor sentiment in small and young firms (PDinSmallYoung) are very similar and not significant.

This result is justified, in our opinion, by a relatively homogeneous sample in terms of size and age and by the fact that the size of the company depends more on its growth strategy than on its age, younger firms may have larger sizes

We next examined whether sectors divided across firm age and firm size would give a better explanation of dividend policy and investor sentiment in France. Therefore, we performed

four subsample tests and divided our sample into four portfolios: SYF (Sectors with Young Firms); SOF (Sectors with Old Firms); SSF (Sectors with Small Firms); and SBF (Sectors with Big Firms).

We examined whether dividend sentiment in an industry predicts firms' dividend policy across sectors. Large and old sectors are better able to engage in dividend policy. Those sectors, therefore, pay more dividends since they have fewer investment opportunities than smaller ones, including firms with high-technology intensity. Small and young sectors are characterized by high investment opportunities. Consequently, they prefer to use their internal resources for future investment projects, instead of dividend distribution.

The regression analysis showed that, for the industrial sectors, firms initiate dividends when the dividend sentiment is stronger. This result confirms dividend catering, which predicts that CEO managers rationally distribute dividends to shareholders when the demand for dividends from investors is high. This result provides support for catering theory and shows that French managers dealing with firm industries cater to investors' time-varying demand for dividends. Therefore, we confirm that sector-specific sentiment is a more appropriate measure for testing the catering theory of dividends. Our hypothesis is mainly confirmed for the industrial sector. Our findings indicate that industrial is the single sector that—alone—captures the significance of investors' sentiment in predicting dividend policy likelihood.

This result can be justified by the fact that the industrial sector is based on heavy investments, mature companies that are resistant to various shocks, do not have a significant debt repayment constraint and need capital. It is therefore seeking to attract new investors and build shareholder loyalty. Sentiment based dividend distribution is the main vector for attracting new investors, which confirms the catering theory.

This area remains relatively unexplored in the French market and further research is needed to provide additional support for the behavioral dimension by proposing other significant proxies of mispricing and taking into account a greater number of independent variables in a single model. Therefore, we contribute to the literature in several ways. First, our findings add to the literature on behavioral corporate finance, and specifically to the emerging literature on the relationship between investor sentiment and dividend policy in France.

Sentiment do not significantly interfere in the decision to distribute dividends, only the industrial sector remains and by its distinctive features sensitive to the sentiment factor finally said feelings are not conditioned by the age and size of the company and therefore do not affect the distribution decision, contrary to the conclusions of Backer and W 2007. In other words, we believe that the French are in charge and are not very sensitive to catering theory, with the exception of the industrial sector.

Second, the findings reinforce the importance of sector-specific sentiment in explaining the likelihood of dividend payout only in industrial sectors. However, the results failed to display any significant results for the rest of the industries in France.

Chapter II. Dividend Policy, Managerial Bias and CEO Characteristics

“The best test of good governance is to pay good dividends.”

(Lim Hua Min, 2004, Chair of Phillip Securities)

Abstract

The second chapter considers the determinants of French firms' dividend policy by examining managerial overconfidence and corporate governance from 2000 to 2015. The analysis incorporates the corporate governance and the CEO characteristics that have been identified as having an impact on the relationship between overconfidence and dividend payment policy. (Deshmukh et al., 2013; Alghazali et al., 2015). The findings show that the influence of CEO overconfidence on the decision to pay a dividend is significant in France. We pinpoint an improvement in dividend payments in French companies managed by overconfident managers. In addition, we affirm that profitability, cash flow, firm size and CEO duality are positively correlated, while board size, CEO ownership and leverage are negatively correlated with the decision to pay dividends. Next, a dynamic panel regression was carried out to identify the determinants of the dividend policy and to examine the impact of overconfidence on dividend payments by the CEO. As a result, the dividend payout ratio can be explained in terms of two effects: first, a direct effect related to a firm characteristic (board size); and second, an indirect effect that is transmitted by irrational CEO behavior (overconfident CEO). The finding shows a positive and significant impact of CEO overconfidence on French dividend policy. As found by Wu and Liu (2011) and Anouar (2013), the more confident the CEOs, the more likely they are to pay dividends. The results also show that firms managed on the basis of CEO duality, large board size and high cash flow distribute more dividends. Profitability and CEO ownership have a negative impact on dividend payment. Furthermore, we use fuzzy-set QCA to better understand the relationship between dividend policy, governance mechanism, and managerial overconfidence. The results presented in the chapter also have practical implications for dividend studies, since they offer solutions to dividend payout policy and managerial behavior characteristics in France. This brings us to the conclusion that, in relation to other known variables, managerial overconfidence should be regarded as a significant main determinant of payout policy.

We next examined whether CEO turnover is associated with CEO overconfidence. The result shows no significant association between these two variables.

The relevance of examining the French case comes from the observation that, despite the delicate political atmosphere that characterizes it, France today is a country that pays the

most dividends to shareholders from among the European countries and is ranked 4th in the world in this category. In addition, according to Henderson Global Investors (2015), French CEOs are considered overconfident compared to their peers in other developed economies. For all these reasons, we felt a crucial need for another, more focused approach.

Keywords: Dividend policy, CEO overconfidence, Corporate governance, GMM models, Fuzzy-set QCA

Introduction

Research on behavioral corporate finance has focused on the behavior of managers, taking into consideration a main assumption that the choices managers make may not be an outcome of a utility maximization and that managers can make deficient choices due to many irrational influences, such as mood, emotion, limited information, cognitive ability and managerial biases in their investment decisions (Mitchell and Utkus, 2004; Malmendier and Tate, 2005a, b, 2008, 2011). If managers are prone to some kind of psychological bias, their firm might be in a suboptimal situation, in which the managers believe that they are maximizing firm value when they are actually reducing it. In this vein, empirical tests have identified an adverse impact of overconfidence on major financial decisions (Baker, Ruback and Wurgler, 2007). The areas explored are investing and financing (Hackbarth, 2008;³³ Heaton, 2002;³⁴ Malmendier et al., 2011³⁵), mergers and acquisitions (Malmendier and Tate, 2008)³⁶ and, to a lesser extent, dividend policy (Cordeiro, 2009; Deshmukh et al., 2013³⁷). As evidence is scarce, the main issue of this chapter is to explore the impact of over-confident executives on dividend policy decisions. Research on the relationship between managerial overconfidence and dividends is a newly emerging area and is therefore under-studied. Recent literature on behavioral corporate finance has considered the impact of managerial cognitive biases, such as overconfidence, on corporate financial decisions. For instance, Heaton (2002) shows that, theoretically, firm value is destroyed by overconfident managers. Continuing in the same vein, Malmendier and Tate (2005a) report that corporate investment choices are extremely sensitive to free cash flow in companies managed by over-confident executives. Malmendier et al. (2011) argue in the same context that debts are highly preferred over equity by overconfident managers (of course, after internal funding). Croci et al. (2010) compared bidder performance in high and low market valuations between firms

³³ Hackbarth (2008) documents that overconfident CEOs tend to choose higher debt levels.

³⁴ Heaton (2002) confirms that overconfident managers have a significant effect on corporate decisions.

³⁵ Malmendier, Tate and Yuan (2011) examined the relationship between managerial overconfidence and capital structure choices. They found that overconfident managers are less likely to issue equity because they think that their firms are undervalued. Therefore, they are also reluctant to issue risky debt since they believe that the interest rates creditors demand are too high. However, they document that the reluctance of overconfident managers to raise funds through external sources leads to pecking order financing. Thus, overconfident CEOs generally prefer debt to equity because debt allows current shareholders to remain residual claimants of the firm's future cash flows.

³⁶ Malmendier and Tate (2008) found that overconfident managers are more likely to engage in acquisitions that are value-destroying.

³⁷ Desmukh et al. (2013) and Cordeiro (2009) documented that overconfident managers are less likely to distribute dividends to shareholders.

managed by overconfident and rational CEO in the UK and found that rational managers were more likely to generate more value for shareholders through mergers and acquisitions than over-confident CEOs.

This study could be perceived as the first to examine the association between overconfident CEOs and dividend policy in France from 2000 to 2015 and could be considered a contribution to the financial literature in several ways. First, the research adds to the literature on behavioral corporate finance, the impact of overconfident CEOs on the decision to pay dividends, and dividend payout ratios outside the US.

Second, the purpose of this study is to explain as clearly as possible the behavior of overconfident French managers during economic and political turbulence with regard to dividend policy and to highlight the importance of firm-level data and corporate governance in explaining increases in paying dividends. Another key factor to remember to study is ownership structure and the impact of board characteristics on dividend policy. Since France is widely considered a country in which corporate ownership is concentrated and boards of directors are filled with entrenched³⁸ directors, board size and CEO power are important determinants which may have an impact on the sensitivity of CEOs toward dividend policy.

Third, our work also differs from previous studies in its methodology. The few studies that have studied overconfidence used qualitative methods or logistic models, rather than the generalized method of moments (GMM) estimator dynamic model and a fuzzy model, which give more realistic results, in addition to the accuracy of the data used. One of the greatest challenges in behavioral corporate finance is to construct plausible measures of overconfidence. Our approach is to examine the overconfidence of French managers using several investment proxies. Five measures linked to overinvestment have been used, which is a potential result of overconfidence: (i) the first proxy is industry-adjusted excess investment, which is the firm's residual from a regression of total asset growth on sales growth minus the industry median residual (Schrand and Zechman, 2012); (ii) excess assets growth, as claimed by Ahmed and Duelleman (2013), which is the amount of excess investment in assets from a residual of the regression of total assets growth on sales growth (overinvest). We set overinvest as equal to 1 if the residual from the excess investment

³⁸ As claimed by the AXA CEO in The Economist: "it's always the same people on company boards, and many have amicable relations".

regression is greater than 0, and 0 otherwise. Intuitively, if assets are growing at a faster rate than sales, this reveals that managers are overinvesting in their company relative to their peers; (iii) DEBTIND is the firm's industry-adjusted debt-to-equity ratio, equal to long-term debt scaled by the market value of the firm, minus the industry median for the year. A debt-to-equity ratio greater than the industry median indicates overconfidence (Ben-David et al., 2007; Malmendier et al., 2011); (iv) capital expenditures above the industry median, as firms with overconfident managers will tend to overinvest in assets, resulting in above-average capital expenditures and/or above average growth assets; and (v) finally, using principal component analysis (PCA), we constructed an overconfidence index based on the previous proxies: overconfidence index, a dichotomous variable set equal to 1 if the overconfidence index is greater than the median level of the overconfidence index, and 0 otherwise.

The rest of the chapter contains six sections. The first section provides a debate in the literature appropriate to this research. The second section outlines the different measures of managerial overconfidence. The section presents CEO characteristics. The fourth section deals with the impact of corporate governance on dividend. The two final sections deal with methodology and results.

Motivation

The empirical evidence remained inconclusive despite the extensive literature on dividend policy. since the irrelevance theory of Modigliani and Miller (1961) and subsequent research based on different theories and hypotheses. The debate over dividend policy is not over. Hence, our literature review shows that although the previous research studied the effect of managerial bias on investment and financing decisions, dividend policy remained undeveloped.

Malmendier and Tate (2005), Malmendier et al. (2007), Hackbarth (2008) and Malmendier et al. (2011) find that overconfident CEO consider their companies to be undervalued by the market. They are unwilling to raise funds from external sources and exhibit financing preferences that are consistent with pecking order theory (Myers & Majluf, 1984). This preference for internal resources suggests that overconfident CEOs tend to pay lowers dividends to enhance the possibility of internal funding.

Ben-David et al. (2007), Cordeiro (2009) and Deshmukh et al. (2013) document that executives who are overconfident tend to pay less dividends. In the same vein, Ben David (2013) indicates that there is also a reduced propensity for chief financial officers (CFOs) to pay dividends and a greater propensity to engage on market timing.

Another key factor to bear in mind is that, as mentioned in the first chapter, France is one of the most generous countries in terms of dividend payments in the European Union (EU). Dividends have risen by more than 11% in France (2015). For three years (2013, 2014 and 2015), France was the leading European country in terms of dividend distribution, according to a report by Henderson Global Investors (2015). Moreover, dividends have not only been upgraded, the YPO Confidence Index³⁹ has also recorded that confidence in the euro area has been the highest compared to the rest of the world. The Index shows overall positive sentiment in spite of political uncertainty and financial crisis. French firms have been able to resist economic and political troubles rather well. It is important to point out, however, that the relationship between managerial overconfidence and dividend policy has not yet been studied in France. For these reasons, future research must focus on managerial overconfidence and dividend policy.

How can we explain French CEO behavior toward dividend policy?

We suggest a different explanation for the policy of dividend payout and corporate CEO suboptimal behavior. Instead of focusing on company-level characteristics, we link corporate decisions with CEOs' personal characteristics. In our studies, we follow Wu and Lui (2008) on the assumption that CEOs are striving to maximize company value, despite an overconfidence bias, and that executives want to be seen as knowledgeable and qualified by the market. (Blanton et al., 2001). This research examines the impact of the overconfidence of French managers on dividend policy by using five proxies to measure managerial overconfidence (as outlined above).

In the literature, several studies, such as Malmendier and Tate (2005a,b, 2008), Campbell et al. (2011), Hirshleifer et al. (2012) and Ahmed et al. (2013), have proposed explaining managerial overconfidence by using the late exercise of stock options and the company's

³⁹ YPO surveys its network of more than 24,000 CEOs in more than 130 countries through questions related to current and expected economic conditions affecting their businesses. About one-third of YPO members are entrepreneurs, another third run family businesses, and the rest are professional (hired) executives.

share purchases. However, this measure presents several flaws. First, it is essentially obtained from cross-sectional data and the studies are constructed using panel data. This implies an insufficient update of the proxies of overconfidence. Another limitation is that a proxy relying on the exercise of stock options of French executives produces too many missing values. A further weak point is that this proxy may not be practical in France, since recent performance shares awarded to executive directors offer more incentive and are more important than stock options. This explains the scarcity of studies in the French context. To circumvent these limitations, we identify a relevant and operational measure of overconfidence and use a measure based on the overinvestment of managers to quantify this behavioral bias.

The existing literature confirms the notable presence of this behavioral bias and its impact on a company's investment and financing policy. Malmendier and Tate (2005a) confirm the effect highlighted by Heaton (2002), by studying the sensitivity of investment to cash flow. In their model, overconfident managers overinvest and, when the financial constraints are strong (involving the use of capital increase to obtain additional resources), the sensitivity of overinvestment to cash flow increases. As a result, the propensity for overinvestment could, in particular, result in larger, more frequent and less profitable business acquisitions. This measure assumes that an overconfident manager tends to overinvest.

Ben-David et al. (2007) report that overconfident managers tend to overinvest compared to the average, which is in line with the assumption that CEOs overestimate the cash flow of investment projects and underestimate the risk. The idea is that overconfident managers tend to invest more.

Two types of incentive related to overinvestment behaviors have been identified: agency conflict (Jensen, 1986) and overconfidence (Heaton, 2002). However, these factors influence overinvestment only indirectly through the opportunity to overinvest.

Our study adds to the emerging literature on corporate behavioral finance that points to the key role of individual characteristics and biases of CEO in explaining corporate decision outcomes, such as dividend policy choices.

Statement of the Problem

As referred to above, the debate over dividend policy has not yet finished. Even though many theoretical and empirical researches have been conducted over the past six decades, explanations have remained unresolved for the dividend policy variations over time and across firms. Therefore, in this study, we consider closely on the effect of managerial bias on the decision-making process, particularly in relation to dividend distribution. We focus on how psychological aspect and bias can affect the decision-making process, as this could explain why corporate decisions are often far from rational choices. This challenge led us to our basic question: could CEO overconfidence better explain the dividend puzzle?

Recently, study on the effect of CEOs' over-confidence on dividend payout policy has emerged. This study field has provided contrasting theoretical and empirical outcomes. Some academics claim that there is a negative correlation between managerial overconfidence and dividends (e.g. Ben-David et al., 2007; Coreido, 2009; Deshmukh et al., 2013). Nevertheless, Wu and Liu (2011) claim that there should be a positive relationship between CEO overconfidence and dividend policy.

Research objectives: To examine whether managerial bias (overconfidence) can affect the decision to pay dividends in French firms.

Research question: Does individual emotional bias (Greenfich, 2005), such as overconfidence, have an impact on dividend policy?

Contributions

This chapter makes at least three major contributions to the literature on the issue of corporate governance, behavioral corporate finance and dividend policy. Our contribution to the literature lies in an explanation of the behavior of overconfidence in French CEO managers. Our approach underlines the importance of firm-level data (Fama and French, 2001) and corporate governance (Shleifer and Vishny, 1989; Morck et al., 1990; Zwiebel, 1996) in explaining corporate decisions. We also investigate the effect on dividend policy of ownership structure and board properties. Since France is widely considered a country in which corporate ownership is concentrated and boards of directors are mainly composed of entrenched directors (Alexandre and Paquerot, 2000), board size and CEO power are

important determinants that may have an impact on the sensitivity of CEOs toward dividend policy.

Moreover, our study relies on a methodology that is different from that in other studies. Studies on overconfidence and dividends generally use qualitative methods: press coverage and the analysis of textual information (Hirshleifer and Teoah, 2012; Juhel and Anouar, 2014) or logistic models (Coreido, 2009; Fama and French, 2001) which differ sharply from a GMM dynamic model approach. One of the main difficulties in behavioral corporate finance studies is to provide operational measures of overconfidence. Our approach examines several proxies for the overconfidence of managers in a French context, to check that our findings are robust. Moreover, we employ two different models, a GMM dynamic panel and a more robust model (a fuzzy QCA model) to gain a more complete picture of French CEO overconfidence and dividend policy. To investigate which combinations of causal conditions A and B are most probable to lead dividend payment. It should be noted that the outcome of the approach accounts for a set of conditions combinations, called configurations or causal recipes, which imply distinct theoretical paths to the outcome under study. (Longest and Vaisey, 2008).

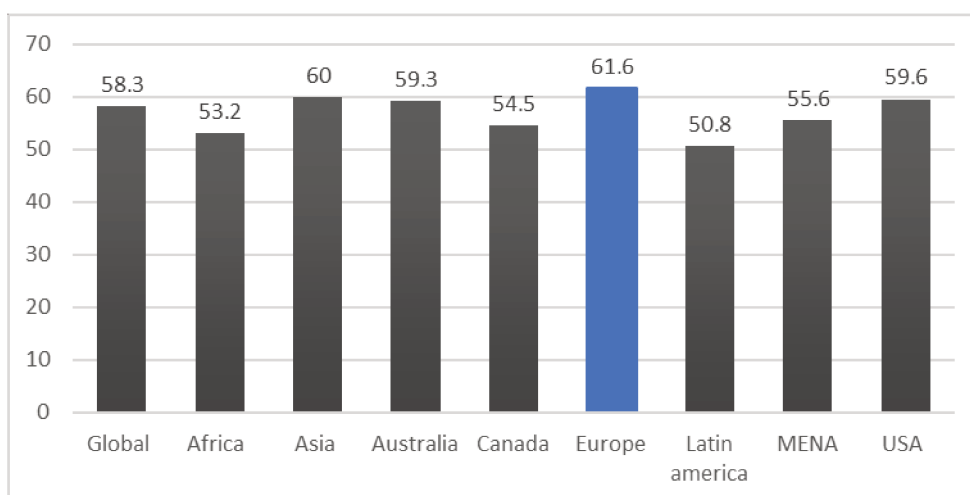
This is a challenging area in the field of behavioral corporate finance. To our knowledge, this is the first piece of research to use a quantitative methodology through different measures of overconfidence in the French context.

This research attempts to examine the importance of overconfidence bias in explaining dividend behavior. For this reason, some of the results of a literature review are outlined and this section is divided into three main subsections: the first analyzes the impact of economic and political decisions on the global overconfidence index in different areas; the second, describes overconfidence in managers and corporate investment decisions; and the third studies the impact of CEO overconfidence on dividend policies (e.g. Malmendier and Tate, 2005 a, b , 2008; Cordeiro, 2009; Malmendier et al., 2011; Baker and Wurgler, 2012; Deshmukh et al., 2013).

The last YPO Confidence Index⁴⁰ update on November 1, 2016 shows that confidence in the EU recorded the highest indicator (61.6 in 1Q 2016) compared to the rest of the world in the last quarter. Thus, confidence in the euro area has resisted political uncertainties and grown. How, then, can we explain this European overconfidence and optimism?

Quarter	Global (Millions)	European Union (Millions)
2Q 2009	51.0	48.0
4Q 2009	51.0	48.0
2Q 2010	57.0	56.0
4Q 2010	62.0	57.0
2Q 2011	60.0	57.0
4Q 2011	62.0	55.0
2Q 2012	60.0	53.0
4Q 2012	62.0	53.0
2Q 2013	60.0	53.0
4Q 2013	62.0	53.0
2Q 2014	62.0	53.0
4Q 2014	62.0	53.0
2Q 2015	62.0	53.0
4Q 2015	62.0	53.0
2Q 2016	62.0	53.0

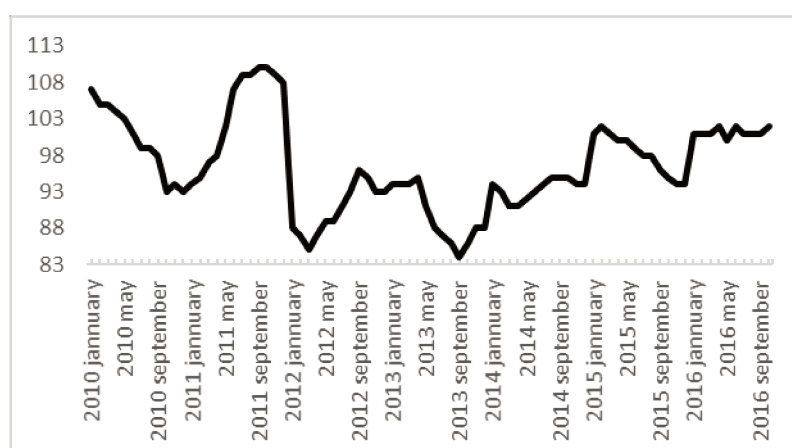
⁴⁰ YPO surveys its network of more than 24,000 CEOs in more than 130 countries on questions related to current and expected economic conditions affecting their businesses. About one-third of YPO members are entrepreneurs, another third run family businesses, and the rest are professional (hired) executives.



Area	Global	Africa	Asia	Australia	Canada	Europe	Latin America	MENA	US
YPO Confidence Index	58.3	53.2	60.0	59.3	54.5	61.6	50.8	55.6	59.6

Europe surpasses the US and Asia in confidence scores. Despite increased political uncertainties, Brexit, the new wave of attacks in France and Germany, and difficulty in forming a new government in Spain, Europe resists and recorded the highest confidence score around the world. European leaders forecast that the economy will be relatively stable for years to come. (see table above)

Figure 7. French business confidence composite over all sectors



Source: Insee

As can be seen in the graphic 7, sentiment is at a 5-year high: French business sentiment has risen to 102 points, suggesting that French firms regard Brexit as a sign for gaining

confidence and experiencing a positive impact on French business and the economy. As Manuel Valls stated, “Welcome to Paris”, indicating that the Prime Minister wants to make France attractive to the biggest companies that could leave the UK. This could explain the upgrade of French business in the confidence index despite the political instability.

As claimed by Philippe Crevel’s⁴¹ analysis, France and the US have the same characteristic: they both have the biggest corporation. As usual, the biggest firms are the ones that generally pay the largest dividends, which explains this generous dividend policy in France. Another reason is that France does not have pension funds to attract foreign investors and capital, as is the case in the UK, the US, Germany and the Netherlands, so attracts those looking to invest through overpaying dividends.

The third factor that could explain the growth of dividends in France is the increase in the French business confidence composite, which suggests that corporations have been able to resist the negative effects of the political and economic situation; even sectors that had been in trouble for years, such as the automobile industry, recovered in 2015. The banking sector has also generated significant profits, such as BNP-Paribas.

The three factors above contribute to results that may seem abnormal but which are quite reasonable. This led us to examine the previous literature that focused on the relationship between managerial overconfidence and corporate decisions.

I.2. Overconfidence and Corporate Decisions

The previous section highlighted the trend in the Global Confidence Index that reveals the economic conditions managers could expect in the different areas. This section focuses on the influence of managerial behavioral bias on corporate decision-making.

In the field of behavioral corporate finance, Baker et al. (2004) argue that corporate decisions are mainly affected by cognitive bias. Emerging research has shown that emotional and psychological biases not only affect investors, but also corporations (Fairchild, 2007; Shefrin, 2007; Malmendier et al., 2011). According to Shefrin (2007), bias is a predisposition to error; heuristic is a mental shortcut or a rule that makes taking decisions easier, and framing refers to the way in which decisions are affected by the way in which the setting decisions

⁴¹ Philippe Crevel is an economist, director of the Cercle de l'Epargne (thrift circle) and associate director of Lorello Ecodata, a consulting firm specializing in economic strategies.

are describe. Much of the research demonstrates that what is important in understanding individual behavior is not the risk taken but the perception of risk in explaining why individuals take risky decisions (Palich and Bagby, 1995). In traditional finance, individuals are supposed to perceive the same level of risk when making decisions (Nutt, 1993), whereas research in behavioral corporate finance shows the intricacy of the decisional process (March and Simon, 1958) and the complexity of human psychology (Baker et al., 2004).

Therefore, to better understand irrational individual behavior, Kahneman (2011.p3) made a distinction between “confidence” and “high confidence” or “overconfidence”:

“confidence is a feeling, which reflects the coherence of the information and the cognitive ease of processing it. It is wise to take admissions of uncertainty seriously, but declarations of high confidence mainly tell you that an individual has constructed a coherent story in his mind, not necessary that story is true”.

Some behavioral study on corporate finance describes overconfidence and optimism as likely to appear together (Taylor and Brown, 1988). An optimistic person tends to be Excessive confident and vice versa. In considering this case, we need to specify the two concepts separately and clearly, in order to better understand the decision-making process.

Overconfidence bias is linked to underestimating of the variance or risk of future events by individuals overestimating their ability to affect firm outcome positively by virtue of the private information they have (De Long et al., 1991; Daniel et al., 1998; Odean, 1998; Gervais and Odean, 2001; Fabre and François-Heude, 2009). Optimism is usually defined as a personal characteristic that is stable in nature. A person who appears optimistic is more likely to think that all events are equal and have a positive and beneficial result (Scheier and Carver, 1985). Optimism is the tendency to expect a positive result irrespective of the real scenario or the abilities and skills that a person may have. In accordance with this distinction, in our research, we chose to study overconfidence bias and to analyze its impact on dividend payout policy.

Since it is considered one of the most significant and robust findings in behavioral corporate finance (Wu and Liu, 2011), our definition of CEO overconfidence was drawn from the psychology literature: “the better than the average” effect (Odean, 1998). Overconfidence in

managers is referred to as their overestimation of their own skills (IQ, managerial skills, private information, etc.) rather than overestimating exogenous outcomes (the growth of the French economy, etc.) (Malmendier and Tate, 2005a; Wu and Liu, 2011). Since leaders and management practices influence the outcomes of a firm in the market, recent research has focused on how CEO characteristics and psychological biases might have an impact on corporate decisions (Shefrin, 2010; Azouzi and Jarboui, 2012; Szyska, 2013). For example, Ezzi, Azouzi and Jarboui (2016) emphasize the importance of emotional intelligence and behavioral bias in a firm's performance. They show that performance is not only related to team-working skills, but can also be affected by the leader's emotions, such as fear, happiness and surprise, which play a consistent role in decision-making processes.

According to the finance literature, overconfidence, predominantly in stock trading, is modeled as the underestimation of variance. In behavioral corporate finance, overconfident managers are considered to be individuals who overestimate the accuracy of their information (Goel and Thakor, 2000; Gervais et al., 2003).

Theoretical researchers have argued that individuals are more likely to be overconfident about future events and the success of their projects (Weinstein, 1980; Svenson, 1981; Taylor and Brown, 1988; Malmendier et al., 2011). The study of this form of bias from the managerial perspective remains highly relevant and has been tested in several pieces of research (Morrow et al., 1981; Cooper et al., 1988; Heaton, 2002; Landier and Thesmar, 2003; Malmendier and Tate, 2005a, b, 2007). March and Shapira (1987) demonstrate that managers tend to be overconfident when they are persuaded that their revenues are under control. Weinstein (1980) shows that individuals are optimistic about uncertain events when they are keen on the results.

As defined by Barber and Odean (1999), overconfidence arises when knowledge perception exceeds its reality. Malmendier and Tate (2002) explain that overconfident executives are more likely to overinvest and overestimate their project's profitability. Heaton (2002) reveals in the same vein that overconfident CEOs overestimate the net present value of new projects.

In the growing field of corporate behavioral finance, overconfidence is one of the main concerns. The problem with overconfidence is that managers overestimate projects and take excessive risks by investing in negative NPV projects, even when they have the good will to

maximize shareholder wealth (Baker et al., 2004). When referring to the literature on overconfidence, such as Lichtenstein et al. (1977), Jolls (1998), Korobkin and Ulen (2000) and Choi and Pritchard (2003), researchers demonstrate that people tend to be overconfident because they believe that they know more than they do in reality. Overconfidence affects corporate decisions by overestimating a project's benefits by the way this type of assumption can lead a company to take incorrect decisions which do not maximize the value of the firm. Overconfident managers tend to take irrational risks, which can destroy shareholder value (Lovallo and Kahneman, 2003).

Gervais et al. (2003) state that managers make decisions on behalf of stockholders. They found that overconfident managers hesitate less before making decisions compared with rational risk-averse managers. Consequently, overconfident managers tend to take investment and financing decisions even if they do not have precise information about the new project. This can lead to managers taking risks that are not beneficial to the investors.

Overconfident CEOs generally have a higher probability of being leaders after a competition for promotion (Goel and Thakor, 2007) and the decisions they make will have a great influence on a corporate firm's policy. Schaefer, Williams, Goodie and Campbell (2004) scrutinized the link between the Big Five⁴² personality traits, encoded as extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience, and overconfidence, which is defined as the difference between accuracy and confidence. The results show that extraversion significantly predicted overconfidence. Agreeableness, conscientiousness and individuals with a high degree of openness to experience are correlated to overconfidence. Contrary to expectations, neuroticism had no correlation with overconfidence.

Similarly, according to Malmendier and Tate (2008) Overconfident CEOs overestimate their value-creating capacity. As a consequence, both in their firms and by taking other firms, they overestimate the returns they can produce. The researchers concluded that overconfident managers tend to undertake more acquisitions. The market reaction to acquisition announcements is negative. Malmendier and Tate (2008) present different reasons for

⁴² In psychology, the Big Five are five central personality traits empirically proposed by Goldberg (1981), and then developed by Costa and McCrae in the years 1987-1992. They constitute not a theory but a reference point for the description of the theoretical research on personality (see Goldberg, 1993; John and Strivastava, 2002).

overconfident managers holding their vested options in money, even when rational models suggest exercising the following. First, taxes and dividends: these could be considered as one of the reasons that CEOs can delay the exercise of an “in the money” option in order to avoid paying taxes on their profits. Likewise, CEO managers could accelerate the exercise of stock options because of dividend payments. If corporations are less likely to distribute dividends around fusions, time-series variations in dividend payments may attribute late exercise to decisions about fusions.

Another reason, Malmendier and Tate (2008) reveal, is that board pressure and corporate governance show the exercising of timing in stock option and merger decisions. Directors may put pressure on the CEO to hold the exercise of stock options to signal to the market the high quality of the firm’s merger deals.

Moreover, good past performance reflects good opportunities; consequently, CEOs would prefer to hold their options and engage more in acquisitions. Good past performance could also lead to market overvaluation and, therefore, a bubble, in the way CEOs may delay the exercise of stock options to reap the benefit of the bubble or to avoid the bubble bursting by holding their options because exercising options could be perceived as a negative signal to the market. A preference-based explanation could explain later option exercise. Some CEOs are considered to be risk prone, so they may delay exercising options and undertake risky projects, such as mergers. Lastly, CEO views may cause them to delay exercise choices as they may think their stocks will perform significantly and they will want to benefit personally from expected appreciation.

Hirshlifer et al. (2012) used both press coverage and options exercising behaviors as measures of overconfidence. Examining press coverage consists of identifying and comparing the number of articles that consider a CEO as overconfident with those that report a CEO as being rational. Therefore, based on options exercising behavior, Malmendier and Tate (2005a, 2008) found that overconfident managers are better innovators. The results suggest that firms with overconfident managers have high stock return volatility and invest more heavily in research and development (R&D) and innovation among industries in which innovation is important (R&D expenditures). Their findings are consistent with those of Goel and Thakor (2008). Likewise, Gervais et al. (2011) document that overconfident managers imply high benefits to good risk growth opportunities.

Ben-David et al. (2010) measured proxies for miscalibration in two survey questions about annualized stock market return forecasts over the next 10 years and the expected annual S&P return over the coming years. Furthermore, they linked stock market miscalibration to miscalibration of corporate investment and found that there is a strong correlation between miscalibration based on predicting S&P 500 returns and miscalibration based on managers predicting their own firm's projects. They concluded that top corporate executives are considered capable of miscalibration and that miscalibrating managers invest more than the average.

Basing their work on 10 years of quarterly surveys, Ben-David et al. (2013) collected more than 13,300 forecasts of the S&P 500 made by real-world senior finance executives. They examined two managerial biases: optimistic managers who overestimate the mean cash flow of their firm (Shefrin, 2001; Heaton, 2002; Hackbarth, 2008) and miscalibrating managers who overestimate the information they possess and underestimate the volatility of their firm's cash flow. As can be predicted, the results are in accordance with their previous study (2010), in which they document that CFO miscalibration appears to be related to corporate decision-making. Nevertheless, they find little evidence that corporations with miscalibrating managers invest more and have more debt, on average.

Ben-David et al. (2007) state that firms with overconfident CFO managers invest more, have higher debt leverage, distribute fewer dividends, choose generally to use long-term debt rather than short-term debt, and engage more in market activities. Schrand and Zechman (2012) find a positive correlation between overconfidence and overestimation of the probability of success and the presence of biased financial decisions. Overconfident CEOs overestimate their own skills and ability, so tend to underestimate the risk of bankruptcy of their firm and take financial decisions that are not coherent with the firm's characteristics. This feeling of overconfidence leads them to increase the debt level of the company.

In accordance with agency theory, Fast et al. (2011) show that overconfident managers usually tend to act in the best interests of shareholders. They enhance resolving the problems caused by underinvestment that arise from a debt overhang when the firm has growth opportunities. However, overconfident managers are also more likely to invest, even in negative NPV projects. They document that distortion occurs when CEO managers overestimate their firm's future cash flow. Therefore, they suggest that these distortions are

independent of others caused by mispricing of securities issues. Other results have shown that shareholders and bondholders react negatively to the announcement of an overconfident manager leaving voluntarily. They show that the voluntary turnover of overconfident CEOs is indeed evaluated by shareholders (Campbell et al., 2011). Moreover, firms managed by overconfident individuals show a higher market-to-book ratio, a higher return on assets, and lower leverage compared to less overconfident managers.

Adam et al. (2015) examined the relationship between managerial overconfidence and corporate management risk decisions by testing whether overconfidence could fill the gap observed between theory and practice in corporate finance risk management. They found a positive link between speculation and past speculative gain, without any corresponding relationship between speculation and past speculation losses. This asymmetry supports the assumption that the financial success of past speculative decisions increases managerial overconfidence, giving rise to managers elevating their level of speculation; whereas, losses do not decrease managerial overconfidence because managers tend to attribute failures to bad luck. They find that corporate hedging decisions⁴³ over time and corporate decisions are consistent with an explanation of managerial overconfidence.

Ortoleva and Snowberg (2015) scrutinized the role of overconfidence due to imperfect information processing in political behavior. Based on behavioral biases of ideology, the authors attempted to answer puzzling questions, such as: “Why are politicians and voters becoming more polarized despite the increased availability of information?” Why politicians persist in denying global warming and, indeed, why the science behind global warming has been invented and distorted for ideological or financial reasons or both. Likewise, the introduction of behavioral biases sheds light on political institutions (Callander, 2007; Bisin et al., 2015). They find that behavioral biases such as overconfidence are fundamental and statistically significant predictors of ideological extremism, voter turnout, and partisan identification.

⁴³ A risk management strategy used in limiting or offsetting the probability of loss from fluctuations in the prices of commodities, currencies, or securities. In effect, hedging is a transfer of risk without buying insurance policies. Hedging employs various techniques but, basically, involves taking equal and opposite positions in two different markets (such as cash and futures markets). Hedging is also used in protecting one's capital against the effects of inflation through investing in high-yield financial instruments (bonds, notes, shares), real estate, or precious metals.

Grubb (2015) stated that, due to overconfidence (overprecision and overoptimism), behavioral biases can lead individuals to misforecast self-control, which can lead consumers to misweigh product quality and price, such as overpaying for gym membership if they do not go frequently (DellaVigna and Malmendier, 2006). The authors address further questions about how consumer confidence adjusts to market outcomes, such as: “What will firms do to exploit consumer overconfidence?” Firms in different industries seek to exploit consumer overconfidence by using pricing features to face competition. Firms respond by designing contractual terms to increase consumer overvaluation of their products. What are the implications of consumer confidence for public policy? Scrutiny suggests that policy makers should try to anticipate firms’ equilibrium responses to consumer protection measures, such as the Credit Card Act of 2009⁴⁴.

Iyer et al. (2015) considered a firm with limited internal funds, a rise in the level of debt, and growth investment opportunities. A rational manager acting in the interests of shareholders will sometimes decline positive-NPV projects if the outstanding debt captures some of the benefits of the project without incurring an investment cost (Myers, 1977). An overconfident CEO tends to overestimate the expected cash flows from a project and might decide to invest in a growth opportunity that might otherwise have been rejected by a rational manager. In other words, an overconfident CEO aims to mitigate underinvestment problems by investing in growth investment opportunities that might be rejected by a rational manager. The conclusion is that the voluntary leaving of an overconfident CEO has a negative impact on the abnormal return to shareholders and bondholders. Similarly, overconfident CEOs who are not forced to leave are highly valued by shareholders. It is equally important to point out that firms managed by an overconfident CEO show higher market-to-book values, a higher return on assets and lower leverage compared to a less overconfident CEO.

Most of the above findings have come from exploring the relation between overconfident managers and corporate decisions, such as investment and financing (Malmendier and Tate, 2005a, b; Ben-David et al., 2010, 2013; Hirshlifer et al., 2012). However, the impacts of managerial beliefs on dividend policy remain largely unexplored, both conceptually and

⁴⁴ A federal law passed by the US Congress and ratified by US President Barack Obama on May 22, 2009. The law has two main purposes: fairness and transparency, in order to prohibit certain practices that are unfair or abusive as well as making card rates and fees more transparent so that consumers can compare different cards and understand how much they are paying for their credit.

empirically.

I.3. Overconfidence and Dividend Policy

Baker et al. (2006) argued that it is difficult to pinpoint a reasonable prediction about the impact of managerial overconfidence on dividend payout policy. In the literature, there are two strands of research studying the link between overconfidence and dividend policy. The first strand proposes that overconfident managers distribute fewer dividends. Managers who are confident about the future of their firm prefer to invest cash in projects than to distribute dividends. Previous studies support this assumption (Cordeiro, 2009; Ben-David et al., 2007, 2010; Deshmukh et al., 2013) and define overconfident managers as those who tend not to diversify their portfolio and who are well perceived by others (portrayal in the press).

Deshmukh et al. (2013) developed a theoretical model and demonstrated that overconfident managers tend to pay lower dividends than rational CEOs. They argued that firms with overconfident managers distribute lower dividends than other firms governed by rational managers because overconfident CEOs perceive external financing as costlier compared to a rational manager. The idea is that overconfidence results in an undervaluation of the firm, which, in turn, leads to a higher perceived cost of equity. Since overconfident CEOs always perceive their company as undervalued and external financing as costly, they prefer to pay lower dividends to accumulate cash flow in order to invest in future projects. The researchers also document that the link between overconfident CEOs and dividend policy is stronger in corporations with lower growth opportunities and less cash flow. Along the same lines, Malmendier and Tate (2011) stated that overconfident managers perceive their firms as undervalued by the market. Hence, they prefer not to raise external equity financing in order to retain earnings to finance investments and, as a result, pay lower dividends.

Cordeiro (2009) provides evidence that firms managed by overconfident CEOs are less likely to pay a dividend and engage in stock repurchases. This behavior may be explained by these CEOs being confident about the future cash flow of the company or because they expect the cash flow from current projects to be higher. Consequently, overconfident managers are more reluctant to pay dividends to shareholders since they believe they can earn more by investing in their firm. Hackbarth (2008) also argues that overconfident managers will time the market by buying undervalued stock and issuing shares when they believe that they are

overpriced by the market. Irrational managers' behavior is consistent with repurchasing stocks when they are really undervalued in order to convey information about firm value to investors, as reported by signaling theory.⁴⁵ However, this consists of a managerial perception of their substantial value and/or the prospects of their company, which may be wrong. Therefore, an overconfident manager perceives that the market has undervalued the firm's value. Indeed, overconfident CEOs will act and take foolish decisions that may destroy firm value, believing that they are making the right choice. Managerial biases consist of how managers interpret and perceive information they receive about firm value and investment opportunities. Unfortunately, the corporate world in which managers operate is very complex and idiosyncratic; CEOs are submerged every day by a vast amount of data which can be relevant or irrelevant. Therefore, one of the most critical managerial skills is the ability to interpret that information thoroughly in order to take the optimal decision. This idea led us to focus more on managerial biases and non-standard preferences regarding CEO decisions. Although most managers and leaders are generally well educated in finance and economics, they may sometimes depart from the axiom of full rationality. It may be difficult and complicated to distinguish if managers take suboptimal decisions because of psychological biases or because they rationally maximize their private goals at the expense of shareholders. For instance, that managers are more likely to overinvest than distribute cash to shareholders may appear to be moral hazard or managerial overconfidence. They are convinced that funds create more value when invested, rather than when they are kept back from shareholders. This led us to propose the first hypothesis:

H1a: Overconfident CEOs tend to pay fewer dividends.

The second strand of the research tells a different story. Overconfident managers tend to pay more dividends. The main idea is that overconfident managers do not worry about the riskiness of their investment. They are very confident in the choices they make and do not think they will encounter financing difficulties. They use free cash flow to pay more dividends to their shareholders. Wu and Liu (2011) proposed a theoretical model and identified a positive relationship between overconfident managers and dividend policy. Before a firm's earnings are disclosed, the dividend payout policy conveys the perception of

⁴⁵ Dann (1981) and Vermaelen (1981, 1984) suggest that stock repurchase sends a positive signal to the market, which may be used by managers to influence the price. If the market overreacts to this signal, abnormal returns occur.

the manager about future prospects. The researchers studied overconfidence, taking into account rational CEO perception and overconfident CEO perception. Overconfident managers think that the firm will be sure to pay the dividend and they should be convinced of earnings stability. Overconfident CEOs have a narrow perception of the variability of earnings and neglect the possibility of transitory earning shocks. Overconfident CEOs overestimate the persistence of a transitory earnings shock, while considering it as permanent earnings available to pay dividends. The authors demonstrate that overconfident CEOs tend to distribute more dividends.

Bouwman (2009) developed a formal theoretical model. She provides empirical evidence that overconfident managers overestimate future earnings. If CEOs make dividend announcements that rely on their assessments of future earnings, and then investors cannot distinguish between rational managers and highly overconfident managers, announcements of returns are then predicted to be, on average, higher for overconfident managers than for rational managers. She found when controlling for dividend changes, that the market responds more sharply to dividend fluctuations announced by overconfident executives. The finding indicates a positive and significant connection between dividend and overconfidence and offers proof that while the market responds considerably to rises in dividends, such announcements do not appear to be followed by important rises in future income. In short, she concludes that excessive managerial confidence has an effect not only on corporate decisions as described in past research but also on the market's response to those decisions.

There is empirical evidence of a positive influence of overconfidence on dividends. Alghazali et al. (2015) studied the impact of both the level of dividend and the propensity to pay dividends, with a focus on managerial overconfidence and corporate governance factors in the UK. They concluded in favor of a positive relationship between managers' overconfidence and the amount of dividend and the propensity to pay dividends. In line with the literature, they found that dividends are positively related to size, profitability and cash flow, and negatively related to leverage and investment. They also show that companies with strong corporate governance (i.e. large board size, high institutional holdings and large numbers of outside shareholders) distribute more dividends.

Using textual data analysis, Juhel and Anouar (2014) show that overconfident French managers have a greater propensity to pay dividends. Their lexical analysis results show that

there is a positive and significant relationship between overconfidence biases and distribution policy. The content analysis also detected a "crisis effect" and they conclude that overconfidence was more prevalent over the period of the 2008 financial crisis. Chen et al. (2011) examined the link between overconfidence and dividend policy in the context of an emerging market in China. Their results show that, as in developed countries, overconfident Chinese managers are reluctant to pay dividends and that this phenomenon is increased by managerial discretion. The authors extended their research by adding unique factors specific to the Chinese context, such as state ownership (Fan et al., 2007) and political appointments. They wondered whether this particular institutional setting mitigated the relationship between dividend policy and overconfident managers and found that when a company is state-owned and the CEO is politically appointed, overconfident managers tend to distribute more dividends.

Rasheed et al. (2012) studied the links between managerial overconfidence and dividend payout in Pakistan. In contrast with the results obtained in developed Western countries, they provide evidence that there is a weak positive link between overconfidence and dividend payout for Pakistani managers. This leads to the formulation of our second hypothesis:

H1b: Overconfident CEOs tend to pay more dividends.

A synthesis of empirical studies of dividend policy and CEO overconfidence is presented in Table 12.

Table 12. Review and synthesis of empirical studies of dividend policy and CEO overconfidence

Authors	Overconfidence proxies	Empirical results	Countries	Sign
Cordeiro (2009)	<p>Stock option: measures driven by Malmendier and Tate (2005a,b, 2008).</p> <p>Longholder: Dummy variable equal to 1 if the CEO held an option package until the last year before expiration, even though the package was at least 40% of the money entering its last year.</p> <p>Post-longholder: Dummy variable equal to 1 for all CEO-years after the CEO held options to expiration for the first time.</p> <p>Pre-Longholder: Dummy variable equal to 1 whenever Longholder = 1 and Post-Longholder = 0, and 0 otherwise.</p> <p>Holder67: Dummy variable equal to 1 for all CEO-years after the CEO for the rest pf the time failed to exercise 67% in the money option package, i.e. after a 67% increase in the stock price, with 5 years remaining duration.</p> <p>Press overconfidence measures: TOTALcofident: Dummy variable equal to 1 if the number of "confident" and "optimistic" CEO portrayals is more than the number of "not confident", "not optimistic", and "reliable, cautious, practical, conservative, steady, frugal" mentions in the chosen media.</p> <p>TOTALmentions: Total number of articles mentioning the CEO in all searches.</p>	<p>Cordeiro (2009) stated that overconfident CEOs believe that their company is undervalued, either because they expect better growth opportunities or because they require a higher cash flow from their current project.</p> <p>They reveal that non-dividend-paying firms seem to be more confident than dividend-payers.</p>	US listed firms	(-)
Ben-David et al. (2007, 2010)	Survey with a confidence index	Find that companies with over-confident CFOs preserve higher debt ratios and are less willing to pay dividends or repurchase shares. Negative relationship between dividend payment and CEO overconfidence.	US firms	(-)
Deshmukh et al. (2009, 2013)	CEO overconfidence proxies are driven by Malmendier and Tate (2005a,b 2008) and Malmendier et al. (2007).	Their results indicate that the level of dividend payout is lower in firms managed by overconfident CEOs. They conclude that overconfident CEOs who manage	US companies	(-)

		high-growth firms aim to distribute lower dividends. They found a positive relationship between dividend payout and cash flow but the negative relationship between dividend payout and asymmetrical information is stronger. Finally, they analyzed market perception and dividend policy by testing the impact of an increase in dividend announcement on stock prices. They reveal that dividends provide information about the level of CEO overconfidence. They conclude that dividend payout increases the point to lower CEO overconfidence. Therefore, they confirm that this enlightening information is greater when there is higher uncertainty about CEO overconfidence level.		
Malmendier and Tate (2011)	CEO option holding	Overconfident CEOs use less external finance than their peers. CEOs that grew up during the Great Depression (World War II) are averse to debt and depend more on firm internal financing. Moreover, the results show that CEOs with military experience seek intensive policies.	US listed firms	(-)
Chen et al. (2011)	Measure CEO overconfidence by calculating the difference between the forecast profit and actual company performance (Lin et al., 2005)	In China, overconfidence in senior managers in listed public companies is strongly negatively related to dividend distribution. However, the authors include a few factors specific to the Chinese context, such as political connection and state ownership. The results show overconfident managers tend to distribute more dividends.	China	(-)/(+)
Wu and Liu (2011)	<p>CEO overconfidence: CEO perception of the persistence of earnings.</p> <p>Overconfident CEOs = $E(\tilde{X}) = X^K = X^R + x^k$</p> <p>However, rational CEOs: $E(\tilde{X}) = X^R$</p> <p>Where $E(\tilde{X})$: is the expectation of CEO stream earnings.</p> <p>X^K : is equal to the permanent earnings X^R X^R (as ti correctly</p>	The authors define an overconfident manager as someone who overestimates their own ability (IQ or managerial skills) to sustain transitory earnings. The findings reveal that overconfident CEOs tend to initiate or increase cash dividends as the CEOs' overconfidence increases. When overconfident CEOs use a payout policy to signal the firm's future earnings prospects, the signaling effect is	-----	(+)

	assessed by rational CEO) plus overconfidence in earnings x^k	successful if the firm has profitable investment opportunities, and strengthens as the CEOs' overconfidence increases.		
Bouwman (2009)	<p>CEO overconfidence measures are based on Malmendier and Tate (2005a,b 2008) proxies: the timing of executive option exercise.</p> <p>Overconfidence is defined as the manager's propensity to overestimate her firm's expected future earnings. (Malmendier and Tate, 2005a,b 2008).</p>	<p>When receiving private signals about the firm's future earnings, each manager adjusts the dividend policy in response. While rational managers interpret each signal correctly, overconfident CEO managers (who think they are rational) do not correctly evaluate this private signal and consequently tend to overestimate future earnings. According to the intuition established in their research, optimism is connected with announcements of greater yields on a dividend change, not because optimistic managers-led companies will effectively produce greater future profits than rational CEOs-led companies, but simply because of the surprise component in optimistic CEO announcements that contain more excellent news for shareholders.</p>	US firms	(+)
Rasheed et al. (2012)	Similar to Chen et al.' (2011) findings, overconfidence is the difference between the forecast and actual profit in a year.	Pakistani managers are not found to be painting a rosy picture of their cash flows and share much of the income with the shareholders in the form of dividends. A weak positive relationship between managerial overconfidence and dividend payout has been found, which asserts that Pakistani managers are not prone to overconfidence while formulating dividend policy. The economic outlook of Pakistan is bleak and uncertain, which explains why Pakistani managers are not buoyant about the future cash flows of their companies and prefer paying dividends. Most of the firms are operating with losses, which persuades managers to pay dividends.	Emerging market: Pakistan	(+)

Juhel and Anouar (2014)	Textual data analysis	The managers of SBF 250 companies are more confident when they talk about dividends and financial or accounting results; they are overconfident when they talk about strategy; and finally, managers are not or are less confident when their companies are exposed to an uncertain environment.	France	(+)
-------------------------	-----------------------	--	--------	-----

The existing research on CEO overconfidence and dividend policy in behavioral corporate finance demonstrates ambiguous findings. Therefore, the relationship between dividends and overconfidence is less clear.

SECTION II. MEASURES OF MANAGERIAL OVERCONFIDENCE IN THE FRENCH CONTEXT

Psychology research reveals that people are not fully rational. One of the key factors influencing people's decisions and behavior is overconfidence (Plous, 1993). The main objective of this section is to develop proxies of overconfidence in the French context.

First, we start by presenting an overview of overconfidence proxies. Second, we explain why the late exercise of stock options and company share purchases cannot be used in France as a measure of managerial overconfidence. Malmendier and Tate (2005a,b 2008, 2011) employed this measure in a US context. Third, to circumvent this limitation, we use a set of measures based on overinvestment to quantify psychological bias (Ahmed et al., 2013; Schrand and Zechman, 2012). Finally, we propose using CEO age as a measure of overconfidence (Gervais and Odean, 2001; Yim, 2013). Therefore, in this section, we present different proxies that attempt to quantify and formalize managerial bias, such as overconfidence, in the financial literature.

II.1. Overview of Overconfidence Proxies

Bessière (2007) defined an overconfident leader as an individual with excessive confidence in his or her own skills and abilities. The study also demonstrated that this bias is more evident when the environment is less certain.

A major challenge for researchers regarding overconfidence is to define a measure of this behavioral bias in order to highlight CEO irrationality. In the literature, there are several

types of bias measurement. The first method consists of a questionnaire revealing the preferences of leaders. Azouzi and Jarbou (2014) used a Bayesian network method to examine the relationship between overconfidence and dividend policy through a questionnaire addressed to CEOs of Tunisian companies. Ben-David et al. (2013) surveyed CEOs and measured the overconfidence bounds provided when asked to estimate the future performance of a stock index using a psychometric test.

The second method is based on a textual analysis of the messages send by company presidents or on a press-based measure (Baker and Wurgler, 2004b; Malmendier and Tate, 2005b, 2008; Hribar and Yang, 2011; Hirshlifer et al., 2012; Juhel and Anouar, 2014). This proxy Confident CEO (Press)_{it}⁴⁶ consists of retrieving all articles referring to a CEO in the *New York Times*, *Business Week*, *Financial Times*, *Wall Street Journal*, *The Economist*, *Fortune* and *Forbes*. For each CEO and year, they recorded the number of articles that used terms relating to confidence, such as confident, confidence, overconfidence, overconfident, overoptimistic and overoptimism. They also reported the number of articles that used keywords relating to the following: conservatism, caution and pessimistic. For each year, they compared the number of articles that had used pessimistic and optimistic words. They measured CEO overconfidence for each CEO i in year t as follows:

$$\text{Confident CEO (Press)}_{it} = \begin{cases} 1 & \text{if } \sum_{s=1}^t \alpha_{is} > \sum_{s=1}^t b_{is} \\ 0 & \text{otherwise} \end{cases}$$

Where α is the number of articles using confident keywords and b_{is} is the number of articles using pessimistic keywords.

Juhel and anouar (2014) used a textual data analysis approach based on the messages of company presidents and found that overconfident CEOs tend to pay dividends. The authors also demonstrated that French CEOs are more confident in times of crisis and when the environment is uncertain.

Using a third method, Oliver (2005) estimated confidence with the use of the Consumer Sentiment Index, which measures public perception about economic conditions. Puri and

⁴⁶ Malmendier, U., Tate, G., 2005. CEO overconfidence and corporate investment. *Journal of Finance*, 60, 2661-2700.

Malmendier, U., Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, 89, 20-43.

Hirshleifer, D., Low, A., Teoh, S.H. (2012). Are overconfident CEOs better innovators? *The Journal of Finance*, 67(4), 1457-1498.

Robinson (2007) based their proxy on a survey of consumer finances. Zacharis and Shepherd (2001) conducted experiments involving venture capital employees to determine the level of overconfidence.

Finally, the most common approach to identifying an overconfidence proxy builds on the work of Malmendier and Tate (2005b, 2008, 2011) and is based on the belated exercise of stock options and purchasing shares in the firm. CEO managers should exercise stocks and sell shares obtained from exercising options to minimize their exposure to idiosyncratic risk. For example, Cordeiro (2009) shows that overconfident leaders are negatively correlated with a propensity to pay dividends and used stock options as a tool to measure the confidence of leaders. In the same context, and using the same proxy measures, Deshmukh et al. (2013) confirmed a negative relationship between the level of dividend distribution and overconfidence. Cuny et al. (2009) also examined the relationship between the exercise of stock options and dividend payout. They found that confident leaders are more likely to pay lower dividend compared to rational leaders.

Malmendier and Tate (2005a) used the timing of exercising options as a measure of CEO confidence, the logic being that rational managers would exercise options when they had vested. However, overconfident CEOs would prefer holdings vested in money options hence, this behavior is considered as a degree of overconfidence. They examined the sensitivity of expenditure in year t to cash flow in that year. This type of investment-cash flow sensitivity model has been widely used in the literature (Almedia et al., 2004; Hovakimian, 2009; Banerjee et al., 2016). Malmendier and Tate's (2005b) results show that overconfident managers spend more of their cash flow on capital expenditure.

Hirshleifer et al. (2012) studied the effect of overconfidence on investment and risky projects by using CEO equity holding options and press-based measures. They found that overconfident managers invest more in R&D. Hribar and Yang (2016) used both options and press-based measures as proxies for individual overconfidence (optimism and miscalibration⁴⁷)⁴⁸ to examine the effect of overconfidence on management forecasting.

⁴⁷ Ben David, Harvey and Gram (2010) define miscalibration (le mauvais calibrage) as a form of overconfidence examined in both psychology and economics: "Miscalibration people overestimate the precision of their own forecasts, or underestimate the variance of risky processes. In other word their subjectivity probability distributions are too narrow." Ben David, Harvey and Gram (2013): miscalibration "is the systematic underestimation of the range of potential outcomes".

Malmendier and Tate (2005a) used the net purchases of the firm's shares by the CEO as a proxy, as overconfident CEOs fail to diversify their idiosyncratic risk. Overconfident CEOs will tend to buy more of their firm's stock relative to other CEOs. Consistent with Campbell et al. (2011), Ahmed et al. (2013) classified overconfident CEOs using a dichotomic variable, in which purchase is equal to 1 if CEOs' net purchases (purchases minus sales) are in the top quintile distribution of net purchases by all CEOs and those purchases increase their ownership in the firms by 10% during the fiscal years, and 0 otherwise.

The above measures are not without limitations. By their nature, they are cross-sectional and empirical studies deal with panel data. This leads to an insufficient update in the measure of overconfidence. In a French context, a stock-option-based measure, for example, will lead to a large presence of missing values in the data, which is a potential limitation to empirical investigation. Moreover, executive compensation structures and remuneration standards are different for each country. For example, French and US remuneration standards are different. In French law, there are two legal processes that make it easier for certain employees to become partners in a company. In order to align CEO performance and actions with firm success, (1) stock options and (2) performance shares can be used. The use of stock options is directly inspired by the North American system and was introduced by Law No. 70-1322 on December 3, 1970, and has been reworked several times since then. After authorization by an EGM⁴⁹ meeting, the board of directors offers certain employees the right to purchase at an intangible price. Thus, if there is an increase in the value of the shares, they will have acquired them at a lower market price. However, companies in France tend to have abandoned this practice because of the associated fiscal⁵⁰ and social costs⁵¹. Today, some executives prefer to own free shares rather than stock options. Therefore,

They had shown that miscalibration can be more consistent among top financial executives. This result is consistent with the findings of Kidd (1970) (engineers) and Cooper, Woo and Dunkleberg (1988) (entrepreneurs).

⁴⁸ Theoretical studies distinguish between the effect of optimism and miscalibration on corporate policies. According to Shefrin (2001), Heaton (2002) and Hackbarth (2008), optimistic managers overestimate the mean of their firms' cash flow. Managers who miscalibrate also underestimate the volatility of their firms' future cash flows.

⁴⁹ The extraordinary general meeting for shareholders.

⁵⁰ In addition, with regard to tax costs, stock options are subject to a triple taxation on the rebate, which is integrated into the income tax. On acquisition gains (the difference between the value of the share on the day the option is exercised and the value of the share on the day the option was granted), the rate varies depending on whether the buyer will have sold the shares within four years, between four and six years, or after more than six years. Tax is imposed according to the regime of specific capital gains. On the capital gain on a sale (the difference between the sale price of the share and the purchase price of the share), the tax is charged according to the ordinary capital gains tax regime.

⁵¹ The social security financing law for 2008 introduced two new contributions on stock options: one at the expense of employers (30% since 2012) and the other at the expense of beneficiaries (10% since 2012). The proceeds from these two contributions are allocated to compulsory health insurance plans.

employees who hold performance shares, in comparison to those who own stock options, do not take any financial risk because their shares are free of charge. The gain is locked. For this reason, stock options tend to have disappeared in France in favor of free shares. In contrast with stock options, beneficiaries are certain to derive a substantial financial benefit with no risk. This new system is now favored by many firms that seek to retain certain employees by partially substituting wages and salaries with a compensation system that is exempt from social security contributions and benefits and a tax regime that is more favorable than taxable wage income and stock options of employees. In order to overcome these potential difficulties and due to the proximity of overconfidence to overinvestment, the next subsection presents empirical research that has examined overinvestment as a potential consequence of overconfidence.

II.2. Investment Proxies

Managerial overconfidence can influence investment in three ways: overinvestment, high investment cash flow sensitivity, and bringing investment to its optimal level. Overinvestment is considered a potential consequence of overconfidence.

Overinvestment is closely related to overconfidence. Intuitively, firms with overconfident managers will tend to overinvest in assets, resulting in above-average capital expenditure and/or above-average growth in assets (relative to sales growth) (Schrand and Zechman, 2011; Ahmed and Duellman, 2013).

Azouzi and Jarboui (2014) show that overconfident CEOs overestimate their firm's growth opportunities and tend to overinvest. Ben-David et al. (2010) found that miscalibration and overconfidence are related to corporate internal rate of return (IRR) and investment. Furthermore, firms with miscalibrating and optimistic senior finance executives⁵² invest more on average.

Ahmed et al. (2013) used two overconfidence proxies based on investment: capital expenditure, which is a dichotomous variable equal to 1 if the capital expenditure deflated by lagged total assets in each year is greater than the median level of capital expenditure deflated by lagged total assets for the firm's Fama-French industry code in that year, and 0 otherwise; and excess assets growth, based on the study by Schrand and Zechman (2011),

⁵² Senior finance executives are CFOs and financial vice presidents.

which is the amount of excess investment in assets from the residual of the regression of total assets growth on sales growth run by industry-year (overinvest). They set overinvestment equal to 1 if the residual from the excess investment regression is positive, and 0 otherwise. This indicates that when assets grow at a quicker rate than sales, CEOs overinvest in their firm relative to their peers.

In other research, Ben-David et al. (2010) regressed investment intensity computed by total investment scaled by total assets using a miscalibration and optimism variable. The results show that firms' investments increased with both miscalibration and optimism. Malmendier and Tate (2015) examined the correlation between measures of CEO overconfidence and decisions made by CEO managers. The decisions included investments, mergers, choices regarding internal and external financing, and dividend policy. They examined variations in the availability of debt financing using recent shocks to the corporate debt market and employed longholding to measure CEO overconfidence. They estimated differences between firms run by overconfident and rational CEOs using a panel regression. Each firm accounted for two observations: one before the shock and one after. The findings confirm the importance of overconfidence biases in corporate investment decisions. The hypothetical prediction demonstrated that investments relating to CEO overconfidence were more sensitive to external financing cost than the investments of rational CEOs.

In addition to managerial overconfidence, there are other key factors that could influence financial decisions. The next section presents CEO characteristics, such as duality and CEO ownership, that may also affect dividend payments.

SECTION III. CHARACTERISTICS OF CEO POWER

This section presents CEO duality and stock ownership as characteristics that may influence corporate decisions.

III.1. CEO-Chair Duality

With reference to Krenn (2014), CEO duality is defined as one person holding the positions of chair of the board and chief executive officer. Chen et al. (2011) tested the relationship between the financial characteristics, corporate governance and the propensity to pay dividends of Chinese listed companies. The results reveal that there is a significant and negative relationship between CEO duality and the propensity of a company to pay cash

dividends. Whereas, Gill and Ogradowish's (2012) study of the effect of corporate governance on the decision to pay dividends on 269 firms listed on the NYSE during 2009-2011 showed that there was a significant and positive relationship between board size and CEO duality and dividend policy.

III.2. CEO Stock Ownership

It is important to study how the combined effect of CEO overconfidence and CEO ownership influences dividend policy. A dividend can be defined as the distribution of a firm's earnings (past or present) in real assets among shareholders in the firm in proportion to their ownership. Therefore, as shown in the previous section, biased behavior due to CEO overconfidence affects the investment decisions of firms (Malmendier and Tate, 2005a, 2008; Ben-David et al., 2013; Deshmukh et al., 2013). Ownership structure has also been documented as having a significant impact on corporate finance decisions. Rozeff (1982) revealed that firms with high insider managerial ownership on the board distribute more cash dividends as they have more power and control over management, in results that are contrary to Deshmukh et al.'s (2013) findings.

SECTION IV. BOARD SIZE AND FIRM CHARACTERISTICS

This section reviews the crucial role of board size and firm characteristics in explaining dividend policy.

IV.1. Profitability

According to McCabe (2011), profitability is the most important and reliable indicator of dividend policy as it gives an indication of the ability of an insurance company to raise its income level. Firms that make a high profit are expected to pay high dividends to shareholders. Amidu (2007) found that dividend policy affects firms' performance, especially profitability measured by net income produced by total assets. The results show a positive and significant link between returns on total assets, return on equity, sales growth, and dividend policy. Howatt et al. (2009) also conclude that positive dividend changes are linked to positive future changes in real earnings per share. Nissim and Ziv (2001) showed that dividend growth was directly related to future earnings increase in each of the two years following a change in dividend.

IV.2. Cash Flow

Kale and Noe (1990) proposed that dividends behave as a sign of a firm's future cash flow's stability. Jensen (1986) demonstrated that dividends alleviate the agency problem between managers and shareholders. Generally, firms in the growth stage with abundant investment opportunities tend to have less cash flow and pay fewer dividends. In contrast, firms in the mature stage tend to have high free cash flow and high dividend payments. Hence, excess cash flow can lead managers to display selfish behavior by spending free cash flow on, for example, luxurious offices and negative-NPV projects. To mitigate the agency problem, Easterbrook (1984) and Jensen (1986) suggested that managers return excess cash flow to shareholders by paying dividends or by repurchasing shares. In the French case, Calvi-Reveyron (1999) found, during the study of 1,342 dividend announcements carried out by 449 French firms in the period 1989-1995, that the stock market reacted positively and significantly to firms exposed to the risk of overinvestment. An increase in the dividend is not used as a signal of the objective to meet shareholders' preferences or to improve the current stock price, but rather in order to limit bad uses of excess cash flow.

IV.3. Leverage

Agency theory predicts that the use of debt and dividend policy could work as a tool to tackle agency problems. Jensen (1986) affirmed that corporate debt could serve as a substitute for dividends in order to mitigate agency problems. Ross (1977) had earlier explained that investors use debt as a signal of the performance of firms. Firms with good financial performance can issue more debt because of their abilities to repay loans, whereas firms with a low financial performance will issue a low level of debt. Leverage is a negative determinant of dividend payout policy. This means that firms with a high level of debt prefer to retain more earnings in order to repay loans, instead of paying dividends to shareholders. Likewise, Margaritis and Psillaki (2010) found a negative relationship between dividend policy and leverage. This suggests that firms with high leverage pay lower dividends (Jiraporn et al., 2011).

IV.4. Board Size

The function of the board of directors in terms of corporate governance is to protect shareholders' interests and discipline management. If the functioning of this internal control

mechanism is weak or inadequate, shareholders' interests will become of secondary importance and managers' discretionary activities will increase.

The corporate governance literature shows the key role of board structure and board size in controlling a firm's management (e.g. Mace, 1986; Adams and Ferreira, 2007). (e.g. Mace, 1986; Adams and Ferreira, 2007). Board size and composition have attracted the attention of many recent studies⁵³.

Earlier studies have shown the importance of board size in alleviating the conflict between principal and agent (Yermeck, 1996; Lipton and Lorsch, 1992; Eisenberg et al., 1998). The literature has already discussed whether large or small boards are more efficient in monitoring management. A big board size brings more knowledge, strengthening and expertise to the relationship between corporate performance and the external market (Pearce and Zahra, 1991) and reduce the decision-making autonomy of the CEO (Conyon and Peck, 1998). Other studies, however, have shown that boards with a lower membership function are better than boards with a big number of board members (Lipton and Lorsch, 1992; Jensen, 1993).

The earliest studies detected the significant role of dividend policy in mitigating interest conflict between CEOs and stockholders (Rozeff, 1982; Easterbrook, 1984; Jensen et al., 1992). This may show that an effective board could use dividend as a tool to relieve agency problems related with free cash flow. The literature, however, shows mixed findings about the correlation between board size and dividend policy. For example, Chen et al. (2005) found that board size and board structure did not affect the dividend policy. Boumosleh and Cline (2013) reported that the size of the board and board composition had a positive impact on dividends payment. This suggests that when the number of board members is greater, companies pursue higher payout. The results obtained are consistent with Chen et al. (2011), Gill and Obradovich (2012) and Bokpin (2011).

⁵³ Palmberg J. (2015), "The performance effect of corporate board of directors", *European Journal of Law and Economics*, 40(2), p. 273-292.

Kalsie, A., & Shrivastav, S. M. (2016). Analysis of board size and firm performance: evidence from NSE companies using panel data approach. *Indian Journal of Corporate Governance*, 9(2), 148-172.

SECTION V. METHODOLOGY AND FINDINGS

This section studies the impact of overconfident managers, firm-specific data and CEO characteristics on dividend policy in the French market from 2000 to 2015. As defined by Fairchild (2005), optimism is an overestimation of future events and overconfident managers refer to overestimated staff attitudes and competences. Since these two terms are commonly used in the financial literature, in this study, both optimism and overconfidence are integrated in one proxy to express managerial overconfidence.

V.1. Methodology

This study examines the relationship between dividend payout ratio, CEO overconfidence, CEO ownership, duality, board size, cash flow, firm size, firm age, leverage, and profitability. To test our hypothesis, we used the following regression:

$$Payout_{i,t} = \beta_0 + \beta_1 OVERCONFIDENCE + \beta_2 CEO_Own_{i,t} + \beta_3 CEO_Duality_{i,t} + \beta_4 BS_{i,t} + \beta_5 Lev_{i,t} + \beta_6 Firm\ size_{i,t} + \beta_7 Cashflow_{i,t} + \beta_8 Profitability_{i,t} + \beta_9 Firm\ age_{i,t} + \beta_{10} Payout_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

Dividend payout is an important financial term used by investors, as this measure shows investors how much of a firm's earning are being given back to shareholders. It is important to note that the dividend payout rate is highly dependent on the amounts distributed in previous years. This dynamic panel GMM method is characterized by several specific advantages in terms of the nature of the data panel and the level of solutions it provides. Indeed, the dynamic panel GMM method provides solutions to the problems of simultaneity bias, inverse causality, and omitted variables that weakened previous studies.

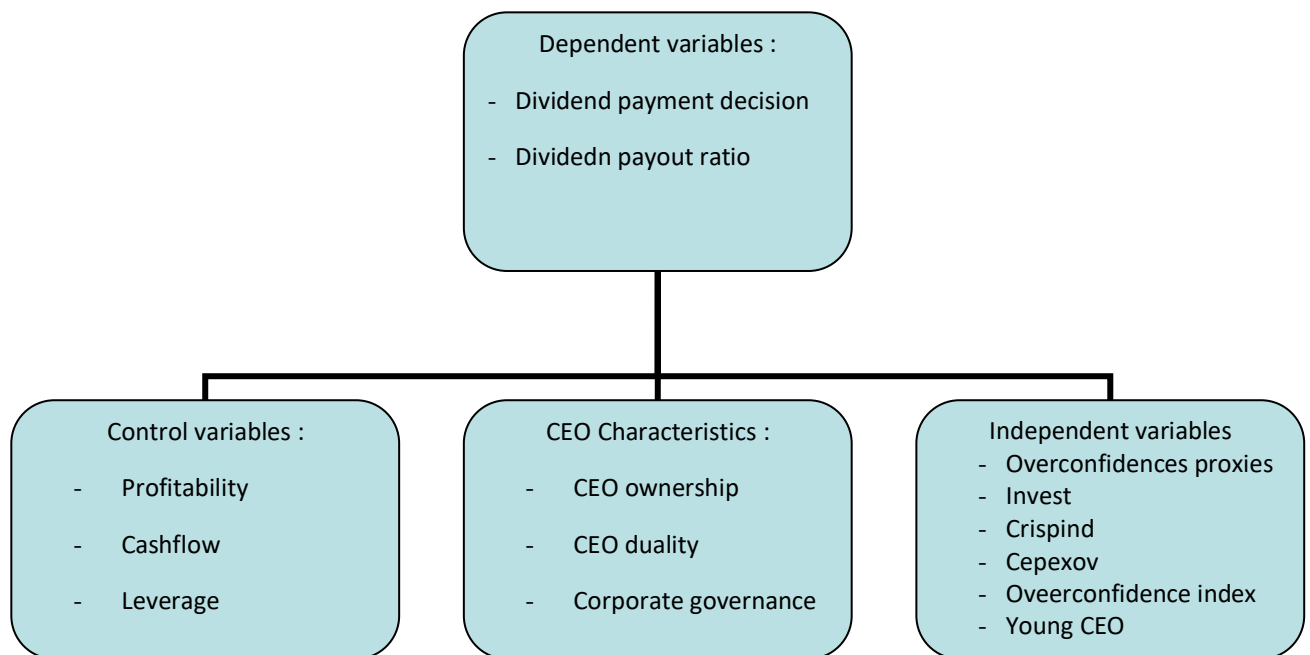
This method also allows both individual and temporal-specific effects to be monitored and to assess the endogenous biases of the variables, particularly when one or more delays in the dependent variable are present as explanatory variables. It allows the endogeneity problem to be corrected by using a series of instrumental variables generated by the variable delays, not only at the level of the dividend distribution variable but also at the level of the other explanatory variables.

There are two variants of dynamic panel GMM estimator: the first-differences GMM estimator and the system GMM estimator. In order to solve endogeneity problems and inverse variable. We apply the system GMM estimator of Blundell and Bond (1998).

Two tests are related to the dynamic panel GMM estimator:

- The Sargan-Hansen overidentification test, which assesses the validity of lagged variables as instruments.
- The Arellano and Bond autocorrelation test, in which the zero hypothesis is the absence of first-order autocorrelation of the errors of the level equation. In our regressions, the results of these two tests were in line with expectations. The statistics for the two tests allowed us to accept the H0 hypothesis of the validity of the lagged variables as instruments and the absence of second-order autocorrelation AR(2).

V.2. Theoretical Framework



V.3. Definitions of Variables

Table 13. Definitions of the variables

Variables	Definition
PAYOUT _{it}	The dividend payout of the firm (i) at time (t).
Managerial overconfidence	
INVEST	A dichotomous variable set, equal to 1 if the residual of a regression of total assets growth on sales growth run by industry-year (Over-Invest) is greater than 0 (and 0 otherwise).
CRISPRESID	Excess investment greater than the industry median (i.e. XSINVEST_INDADJ greater than 0) for that year indicates overconfidence.
DEBTIND	The firm's industry-adjusted debt-to-equity ratio, equal to long-term debt scaled by the market value of the firm, less the industry median for the year (DERATIO_INDADJ).
CEPEXOV	A dichotomous variable set, equal to 1 if the capital expenditures deflated by lagged total assets is greater than the median level of capital expenditures to lagged total assets for the firm's Fama-French industry code (and 0 otherwise).
OVER_INDEX	Using PCA, we constructed an overconfidence index based on previous proxies. A dichotomous variable set, equal to 1 if the overconfidence index (score) is greater than the median level of the overconfidence index (and 0 otherwise).
YOUNG CEO	A dummy variable equal to 1 if the CEO age is less than the median level of CEO age (CEO_Age ≤ 55 years) and 0 otherwise. A young CEO is considered to be overconfident.
Firm characteristics	
CASH FLOW	Cash flow is measured as the ratio of pre-tax profit plus depreciation to the book value of total assets (Deshmukh et al., 2013).
PROFITABILITY	This value is the income after taxes for the fiscal year divided by total revenue for the same period.
LEV	Measured as the total debt scaled by the book value of total assets.
FIRM SIZE	Measured by the natural logarithm of the book value of total assets (Fama and French, 2001).

FIRM AGE	Measured as the logarithm of firm age since inception.
BS	Total number of board members (both insider and outsider).
CEO power	
CEO_OWEN	The total stock owned by the CEO divided by total stock issues.
CEO_DUALITY	Dummy variable, equal to 1 if the CEO also serves as the board chair (and 0 otherwise).
Lagged variable	
PAYOUT _{t-1}	The dividend payout of the firm (i) at time (t-1).

V.3.1. Dependent Variable

Payout_{i,t} = Dividend payout ratio, which is the percentage of earnings paid to shareholders in dividends during the year. This measure shows the portion of profits a firm decides to keep to fund operations and the portion of profits that is given to its shareholders. The variable used to measure the dividend level is the dividend distribution rate or dividend payout ratio (Rozeff, 1982; Agrawal and Jayaraman, 1994):

$$\text{Dividend Payout ratio} = \frac{\text{Dividend per share (DPS)}}{\text{Earning per share (EPS)}}$$

The dividend payout is an important financial term used by investors. This measure shows investors how much of a firm's earnings are being giving back to shareholders. Therefore, it also provides information in terms of retained earnings.

V.3.2. Independent Variables

1. Firm-specific data

- Cash flow: measured as the ratio of pre-tax profit plus depreciation to the book value of total assets (Deshmukh et al., 2013).
- Profitability: net margin: this value is the income after taxes for the fiscal year divided by the total revenue for the same period.
- Leverage: measured as total debt scaled by the book value of total assets.

- Firm size: measured by the natural logarithm of the book value of total assets (Fama and French, 2001).
- Firm age: firm maturity is measured as the logarithm of firm age since inception.

2. CEO characteristics and corporate governance

- CEO power: measured by CEO-chair duality and CEO ownership.
- CEO ownership: total stock owned by the CEO divided by total stock issues.
- CEO duality: dummy variable, equal to 1 if the CEO also serves as the board chair, and 0 otherwise.
- Board size: total number of board members (both insider and outsider).

3. Managerial overconfidence

We now detail our proxies for overconfidence. First, we used five overinvestment-based measures of overconfidence in our empirical approach. Our first investing-based proxy for overconfidence comes from Schrand and Zechman (2012) and Ahmed and Duellman (2013) and is a dichotomous variable (labelled INVEST⁵⁴) equal to 1 if the residual of a regression of the total assets growth on sales growth run by industry years (Over-Invest) is greater than 0, and 0 otherwise. Our other proxies were proposed by Schrand and Zechman (2012): (CRISPRESID)⁵⁵ corresponds to excess investment, defined as an investment greater than the median for the industry (i.e. CRISPRESID greater than 0). Our third proxy (DEBTIND)⁵⁶, the firm's industry-adjusted debt-to-equity ratio, is equal to long-term debt scaled by the market value of the firm less the industry median for the year (DEBTIND). A debt-to-equity ratio higher than the industry median points to managerial overconfidence biases (Ben-David et al., 2007; Malmendier et al., 2007). The fourth proxy we used is CEPEXOV⁵⁷ (Ahmed and

⁵⁴ Following Schrand and Zechman (2012) and Ahmed and Duellman (2013), this proxy measures excess investment. If assets are growing at a faster rate than sales, it suggests that managers are overinvesting in their firm relative to peers.

⁵⁵ If the excess investment is greater than the industry median for that year, the CEO is considered highly overconfident.

⁵⁶ Hackbarth (2008) suggests that overconfident managers choose a higher level of debt and issue new debt more often. A high debt-to-equity ratio generally means that CEOs have an aggressive practice in financing their growth opportunities, which is linked with a high level of risk. This behavior can be explained by the likelihood that overconfident CEOs may overestimate their firm's ability to meet their liabilities. Therefore, Ben David, Graham and Harvey (2013) concluded that debt levels increase with overconfidence, because managers overestimate their ability to predict the future (Bar-yosef and Venezia, 2010) or because they underestimate the volatility of stock market returns (Holstein, 2002).

⁵⁷ This measure is associated with overinvestment as well as excess asset growth. Referring to Ben David, Graham and Harvey (2010), this measure demonstrates that firms managed by overconfident CEOs have more significant capital

Duellman, 2013). This is a dichotomous variable, equal to 1 if the capital expenditures deflated by lagged total assets are greater than the median level of capital expenditures to lagged total assets for the firm's Fama-French industry code (and 0 otherwise).

Second, using PCA, we constructed an overconfidence index based on the five previous proxies. OVERCONFIDENCE INDEX is a dichotomous variable, equal to 1 if the overconfidence index (score) is greater than the median level of the overconfidence index, and 0 otherwise.

We then used Young CEO as a managerial overconfidence proxy: a dummy variable equal to 1 if CEO age is less than the median level of CEO age ($\text{CEO_Age} \leq 55$ years) and 0 otherwise. A young CEO is considered to be overconfident.

V.4. Descriptive Statistics

This section describes the statistical proprieties of different variables for all sectors and then for each sector. These statistics include the mean, median, maximum, minimum and standard deviation. The statistical proprieties of the dividend payments based on the categorical data sets of the study are presented below.

Test of normality

First, before performing the regression analysis and to better understand the relationship between managerial biases and dividend payout, we used statistical tools to examine the group mean between overconfident CEO and rational CEO in terms of dividend payouts. For that we had to choose between parametric and non-parametric tests. This test was used to validate the methodology used and examines whether the observations follow a normal distribution. For the normality test, the hypotheses are:

$$\begin{cases} H0: \text{data follow a normal distribution} \\ H1: \text{data do not follow a normal distribution} \end{cases}$$

In the case of a $p\text{-value} < 0.05$ ($p\text{-value}=0.000$), we would reject $H0$ data as not being normally distributed. For this reason, we used non-parametric statistical tools to test whether the mean payout dividend differed between overconfident managers and rational

expenditures. Malmendier and Tate (2005) also found that overconfident CEOs tend to overinvest in capital projects. A proxy of managerial overconfidence is also used by Campbell et al. (2011) at the firm investment level. They consider a CEO as overconfident if the highest quintile of industry-adjusted investment rate is recorded for two successive years. In other words, if CEOs choose a high level of industry-adjusted investment for their company for two consecutive years, they are regarded as highly overconfident. A similar proxy was applied by Boulton and Campbell (2016).

managers. In order to test this relationship and take into consideration that the data are not normally distributed, we used the Wilcoxon signed-rank test to ascertain whether the mean payout dividend was different between rational CEOs and overconfident CEOs. When the requirements for the t-test for two independent samples are not satisfied, the Wilcoxon rank-sum non-parametric test can often be used to test if the samples were drawn from populations with an ordinal distribution. The Wilcoxon rank-sum test (or Mann-Whitney test) can be used instead of the two independent samples t-test. The main idea behind this test is to compare the means of the dividend payouts for the two sets of individual groups (rational and non-rational CEOs) and assess if they are significantly different from each other. For this test, we used the following null hypothesis:

$$\begin{cases} H_0: \text{the mean dividend payout is equal for rational and overconfident CEO).} \\ H_1: \text{the two observations (population) are not equal} \end{cases}$$

According to this statistical test, the primary results indicate that proxies used to measure overconfidence (DEBTIND, CEPEX and OVERCONFIDENCE INDEX) have p-values < 0.05 (respective p-values = 0.0002, 0.0005 and 0.000). We rejected the null hypothesis. This implies that there is a significant difference in the mean payout dividends between rational managers and overconfident CEOs. For the CRISPRESID and INVEST overconfidence proxies, the results show that there is no significant difference between rational managers and overconfident managers (p-value=0.5733; p-value=0.9405).

This section describes the statistical proprieties of different variables for all sectors and then for each sector. These statistics include the mean, median, maximum, minimum and standard deviation. The statistical proprieties of the dividend payment based on the categorical data sets of the study are presented below.

Table 14 below shows the descriptive statistics. The mean share (CEO stock ownership) is 15.40%, with a maximum of 84.45% and a minimum of 0%. The average board size is about 9.15%, similar to that of the US firms and UK firms reported by Combs et al. (2007) and Veprauskaite and Adams (2013), respectively. The statistics show that the maximum board size is about 23, while the minimum is 3.

Table 15 shows that CEO duality is about 70.57% of our sample. When the CEO doubles as the board chair, this offers the CEO a more significant opportunity to influence board decision- making.

Table 14. Summary statistics

Variables	Mean	Max	Min	SD	p50
PAYOUT	27.56386	100	0	26.01073	25.015
CASHFLOW	0.0966671	0.4422723	-0.0753109	0.1123618	0.0736248
PROFITABILITY	0.0318042	0.15	-0.23	0.0828535	0.042
LEV	0.27382	1	0.0029567	0.2519746	0.2196392
FIRM SIZE	13.38723	17.33198	9.639465	2.274659	13.06142
FIRMAGE	3.465082	5.010635	2.012676	0.8080655	3.401197
CEO_OWN	15.40195	84.45	0	22.59272	1.09
BS	9.151563	23	3	4.313949	9

Table 15. Distribution of CEO duality

CEO_Duality	Freq.	Percent	Cum.
0	0.565	29.43	29.43
1	1.355	70.57	100.00
Total	1.92	100.00	

Table 16 presents the results of the two-sample Wilcoxon rank-sum non-parametric statistical test. The primary results indicate that proxies used to measure overconfidence, such as DEBTIND, CEPEXOV, OVERCONFIDENCE INDEX and YOUNG_CEO, have p-values equal to 0.0002, 0.0005, 0.000 and 0.000, respectively. This implies that there is a significant difference in the mean payout dividend between rational managers and overconfident CEOs. For the CRISPRESID and INVEST overconfidence proxies, the results show that there is no significant difference between rational and overconfident managers (p-value=0.5733; p-value=0.9405).

Figure 8. CEO age differences in the French context (2000-2015)

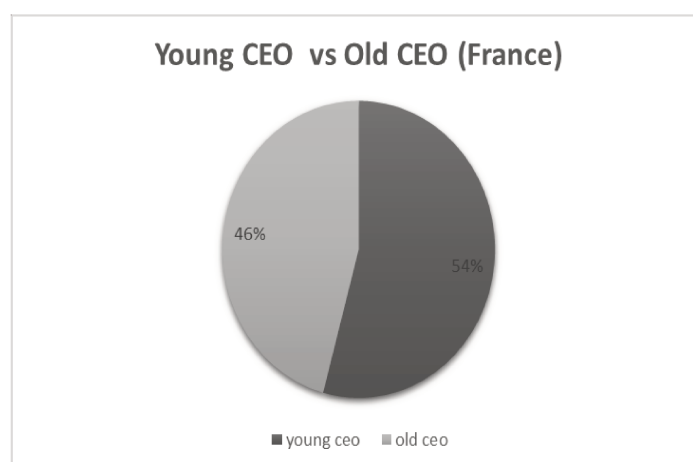


Table 16. Results of descriptive statistics of overconfidence proxies through dividend payout

	Two-sample Wilcoxon rank-sum (Mann-Whitney) test	Low dividend payout				High dividend payout		
			Freq.	Percent	Cum.	Freq.	Percent	Cum.
INVEST	p-value = 0.9405	0	65	6.24	6.24	56	6.37	6.37
		1	976	93.76	100	823	93.63	100
CRISPRESID	p-value = 0.5733	0	515	49.47	49.47	445	50.63	50.63
		1	526	50.53	100	434	49.37	100
DEBTIND	p-value = 0.0002**	0	543	52.16	52.16	417	47.44	47.44
		1	498	47.84	100	462	52.56	100
CEPEXOV	p-value = 0.0000**	0	660	63.46	63.46	300	34.13	34.13
		1	380	36.54	100	579	65.87	100
OVER_INDEX	p-value = 0.0000**	0	407	42.09	42.09	509	61.1	61.1
		1	560	57.91	100	324	38.9	100
YOUNG_CEO	p-value = 0.0000**	0	490	55.75	55.75	389	37.37	37.37
		1	389	44.25	100	652	62.63	100

Table 17 shows the descriptive statistics regarding CEO age characteristics for French firms in the period 2000-2015. The statistics reveal that the average CEO age is between 54 and 55 years old. According to Figure 8, French firms seem to be managed by young CEOs, rather than by older ones (Younger CEO: 54%).

Table 17. Descriptive analysis of CEO age

Variable	Mean	Max	Min	Sd	p50
CEO_Age	54.25	82	28	8.912931	55

Table 18 presents the descriptive statistics of firm and CEO characteristics split by dividend payout levels. The mean cash flow is about 10% for high dividend payouts and 8% for firms with low dividend payouts. This result implies that higher cash flow leads to higher dividend payments. The mean profitability is about 4.84% for high dividend payouts and 1.77% for

lower paying firms. Leverage mean is 29.81% for high dividend payouts and 25.33% for low dividend payouts. The mean firm size for high dividends is 14.3 and for low dividend payouts about 12.60. This result provides evidence that large firm are more likely to distribute high dividend payouts. The results show that firm and CEO characteristics are affected by dividend payout policy (high or low payout).

Table 18. Results of descriptive statistics for dividend payout

	CASHFLOW	PROF	LEV	FIRMSIZE	FIRMAGE	CEO_OWN	BS
Panel A. Results of descriptive statistics for high dividend payout							
Mean	0.105	0.048	0.298	14.315	3.713	13.953	10.758
Sd	0.098	0.062	0.260	2.219	0.756	21.950	4.391
Min	-0.075	-0.23	0.002	9.639	2.012	0	3
Max	0.442	0.15	1	17.331	5.010	84.45	23
P50	0.075	0.047	0.230	14.571	3.663	0.4	11
Panel B. Results of descriptive statistics for low dividend payout							
Mean	0.089	0.017	0.253	12.603	3.254	16.624	7.794
Sd	0.122	0.094	0.243	2.011	0.790	23.061	3.746
Min	-0.075	-.23	0.002	9.639	2.012	0	3
Max	0.442	0.15	1	17.331	5.010	81.94	21
P50	0.070	0.037	0.205	12.359	3.178	2.17	7

Table 19 presents the pairwise correlations among the variables. The results show that some overconfidence proxies (DEBTIND, CEPEXOV, YOUNG_CEO and OVER_INDEX) are significantly correlated to dividend payout policy. However, INVEST and CRISPRESID are insignificantly correlated. Moreover, the findings show that CEO characteristics are significantly associated with overconfidence. This section primarily uses the correlation matrix to detect the collinearity problem and hence will not include two highly correlated variables in the same model. For more advanced collinearity diagnostics, we used the VIF. The VIF examines how collinearity affects the variance of the estimated coefficients, as collinearity can be a problem when the VIF is greater than 10 (Belsley et al., 2005). The VIF was computed for all estimated models in order to check if collinearity was of major concern in the sample.

Table 19. Pairwise correlation matrix (2000-2015)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) PAYOUT	1.0000														
(2) CASHFLOW	0.1123*	1.0000													
(3) PROFITABILITY	0.1953*	0.3062*	1.0000												
(4) LEV	0.1038*	0.4046*	0.0901*	1.000											
(5) FIRMSIZE	0.3451*	-0.1064*	0.1191*	0.1460*	1.0000										
(6) FIRMAGE	0.2643*	0.0173	0.0977*	0.1762*	0.4018*	1.0000									
(7) B_SIZE	0.3114*	0.1062*	0.0705*	0.2850*	0.6941*	0.3968*	1.0000								
(8) CEO_OW	-0.0183	0.0046	0.0351	-0.1419*	-0.3675*	-0.0708*	-0.3880*	1.0000							
(9) CEO_DU	-0.0563	0.0075	-0.0692*	-0.0123	-0.0916*	-0.1910*	-0.0706*	0.2381*	1.0000						
(10) INVEST	-0.0024	0.0304	-0.0255	0.0057	-0.0154	-0.0185	-0.0063	-0.0059	-0.0029	1.0000					
(11) CRISPRESID	-0.0216	0.0543*	0.0540*	-0.0029	-0.0526*	-0.0890*	-0.0595*	-0.0043	0.0149	0.2593*	1.0000				
(12) DEBTIND	0.0807*	0.1020*	0.0925*	0.7044*	0.2394*	0.2724*	0.2615*	-0.1168*	-0.0469*	0.0064	-0.0104	1.0000			
(13) CEPEXOV	0.2577*	0.1825*	0.1792*	0.2410*	0.6945*	0.3841*	0.6029*	-0.3227*	-0.1112*	0.0020	-0.0109	0.2507*	1.0000		
(14) YOUNG_CEO	-0.1767*	0.0159	-0.1105*	-0.1054*	-0.2019*	-0.2628*	-0.1900*	-0.1210*	-0.1116*	0.0069	0.0826*	-0.0700*	-0.1584*	1.0000	
(15) OVERCONFIDENCE INDEX	-0.1681*	0.018	-0.0871*	-0.3970*	-0.5399*	-0.3177*	-0.4101*	0.2003*	0.0836*	0.0995*	0.4287*	-0.5834*	-0.3899*	0.1424*	1.0000

Notes: This table reports the pairwise correlations among the variables for the firm-specific factors, corporate governance factors and CEO characteristics. The figures in **bold** indicate that the coefficient is significant at the 5% significance level. The highest (average) value of the variance inflation factor (VIF) is 1.97 which indicates the absence of multicollinearity problem.

V.5. Empirical Results

Table 20 presents several specifications of the estimation of equation (1). We used several proxies. The table presents the regression of overconfidence measures, firm-specific measures and corporate governance variables for dividend payout policy. First, we used five measures of overconfidence that can influence investments. Second, we estimated equation (1) using the overconfidence index. Finally, we used Young CEO as an overconfidence proxy. All p-values are based on two-tailed significance tests using firm and year clustered standard errors. Hansen's overidentification test did not reject the validity of the instruments used and the Arellano and Bond test did not reject second-order autocorrelation.

Table 20. Regression results for managerial overconfidence proxies and dividend corporate policy

VARIABLES	(1) GMM	(2) GMM	(3) GMM	(4) GMM	(5) GMM	(6) GMM
PAYOUT _{t-1}	0.481*** (0.00225)	0.487*** (0.00201)	0.484*** (0.00149)	0.484*** (0.00229)	0.486*** (0.00248)	0.481*** (0.00269)
CEO_OWN	-0.0413*** (0.00477)	-0.0404*** (0.00453)	-0.0440*** (0.00673)	-0.0465*** (0.00565)	-0.0351*** (0.00519)	-0.0396*** (0.00732)
CEO_DUALITY	2.448*** (0.237)	2.396*** (0.259)	2.269*** (0.179)	2.254*** (0.200)	2.494*** (0.284)	2.197*** (0.172)
BS	-0.226*** (0.0354)	-0.222*** (0.0358)	-0.258*** (0.0310)	-0.290*** (0.0215)	-0.226*** (0.0386)	-0.155*** (0.0487)
FIRMSIZE	1.953*** (0.0928)	2.072*** (0.0830)	2.003*** (0.102)	1.989*** (0.0847)	1.973*** (0.0941)	2.100*** (0.119)
FIRMAGE	-0.742*** (0.284)	0.851** (0.359)	-0.652*** (0.207)	-0.492 (0.302)	0.774** (0.315)	-0.688* (0.392)
CASHFLOW	14.24*** (1.777)	15.32*** (1.618)	17.34*** (1.530)	17.68*** (1.762)	18.35*** (1.216)	11.44*** (1.846)
PROFITABILITY	3.132*** (0.746)	0.232 (0.839)	1.835** (0.908)	1.601* (0.866)	1.899** (0.899)	2.905*** (0.867)
LEV	-3.250*** (0.595)	-3.428*** (0.621)	-4.851*** (0.859)	-3.972*** (0.586)	-3.626*** (0.594)	-2.488*** (0.806)
INVEST	1.144*** (0.0763)					
CRISPRESID		1.628*** (0.0437)				
DEBTIND			0.330 (0.300)			
CEPEXOV				0.291* (0.166)		
YOUNG_CEO					2.641*** (0.110)	
OVER_INDEX						3.007*** (0.134)
Constant	-9.930*** (1.129)	-17.02*** (0.953)	-9.395*** (1.356)	-9.716*** (1.670)	-16.54*** (1.481)	-13.17*** (2.305)
Observations	1.782	1.782	1.782	1.782	1.782	1.782
Number of id	120	120	120	120	120	120

Standard errors in parentheses; *** = $p < 0.01$; ** = $p < 0.05$; * = $p < 0.1$

The results for INVEST, CRISPRESID, CEPEXOV, OVER_ INDEX and Young CEO are positive and significantly related to dividend payout ratio. The coefficient of DEBTIND is insignificant. The results for INVEST and CRISPRESID show that assets are growing at a faster rate than sales, which suggests that French CEOs overinvested in their firm relative to peers. CEPEXOV is linked with overinvestment as well as excess assets growth. The findings show that firms managed by overconfident CEOs have more significant capital expenditures and tend to distribute more dividends (Campbell et al., 2001; Malmendier and Tate, 2005b; Boulton and Campbell, 2016).

In line with H1b, we find positive and highly significant ($p < 0.0001$) coefficients for four measures of overinvestment-based overconfidence (columns (1), (2), (3) and (6)) and positive and significant results at the 10% level for the CEPEXOV coefficient in column (4). These results indicate that overconfident French managers are more likely to distribute dividends to shareholders.

The Young CEO variable is associated with higher dividend payouts (column (5)). Older CEOs are less overconfident. They prefer retaining earnings, rather than distributing dividends to shareholders. Older managers tend to have a greater ability to seek information, evaluate that information and take more time making decisions (Taylor, 1975). Older CEOs may want to take less risk, since they aspire to financial security and have strong career concerns for the short time left until their retirement (Carlsson and Karlsson, 1970). Another explanation could be that older CEOs are more committed to their organization (Alutto and Hrebiniak, 1975). The last explanation could be, in a view supported by Matta and Beamish's (2008) findings, that risk aversion increases when CEOs are near retirement age.

Our findings are in line with those of Wu and Liu (2011). Their theoretical model shows that overconfident CEOs are more likely to pay dividends because of biases in their evaluation of future income. Compared to their peers, companies with overconfident CEOs pay more dividends. Managerial overconfidence's effect on dividend payout policy is not exclusive to US companies (Deshmukh et al., 2013) and should be recognized as a significant determinant of dividend policy in France. The results also confirm those of Juhel and Anouar (2014).

Cash flow is positively and statistically significant at the 1% level. Excess cash flow can lead managers to act selfishly by spending free cash on, for example, luxurious offices and perks and negative-NPV projects. To mitigate the agency problem, Easterbrook (1984) and Jensen

(1986) suggest that managers return excess cash flow to shareholders by paying dividends or by repurchasing shares. Aggregated conditions also lead to more dividend payouts. Excess cash flow leads to more agency problems. Firms are more likely to pay cash dividends. Leverage has a negative and significant effect on dividends, confirming that firms with high leverage pay lower dividends (Jiraporn et al., 2011).

There is a positive and significant relationship between profitability and dividend payout. Amidu (2007) found that dividend policy affects firms' performance, particularly profitability. We found that firm size is positive and significant at the 1% level across all six regressions. Previous literature documented that larger firms are more likely to pay higher dividends (Fama and French, 2001; Osobov and Denis, 2005, 2008). The firm age coefficient is significantly associated with dividend payout policy.

As in previous studies (Wen and Jia, 2010; Haye, 2014), we also found a negative relationship between CEO ownership and dividend payout. Managerial ownership and dividends can be substituted to minimize the problems of agency cost. Recent research shows that CEO duality and CEO ownership encourage CEOs to take risky decisions (Adam et al., 2005). Here, CEO duality has a positive and significant effect. CEOs with more power are more likely to take decisions and to act on their desires. Board size is considered the most active factor in controlling managers and protecting shareholders' interests. Chen et al. (2006) suggested that the presence of an adequate number of directors is one of the major factors influencing dividend payouts. Although few studies have focused on the influence of board size on dividend policy, many researchers have studied the impact of board size on firms' performance. It was found that a smaller board results in higher firm performance (Yermack, 1996; Eisenberg, 1988; Guest, 2009; Nguyen and Faff, 2012). Studies of the link between dividend policy and board size have arrived at limited and mixed evidence. For example, Chen et al. (2005) suggested that board size has no significant effect on dividend policy. Subramaniam and Devi (2011) found that dividends and investment opportunities are low in the presence of larger board size and composition. Zhang (2008) shows that companies with strong corporate governance tend to distribute low dividend payouts. Adjaoud and Ben-Amar (2010) found that firms with high corporate governance standards pay more dividends to their shareholders. Table 20 shows that the coefficient of board size is significantly

negative. As board size negatively affects dividend payout policy, this suggests that firms with more directors on the board force managers to pay fewer dividends.

In the second part of our analysis, we used QCA to examine which combinations of causal conditions A and B are most likely to produce overconfident CEOs and dividend payments. The result was several distinct combinations of conditions, called configurations or causal recipes, which suggests different theoretical pathways to produce the outcome under analysis (Longest and Vaisey, 2008).

Contrary to traditional OLS models, which study the effect of a variable X on Y, i.e. if X increases by one unit, Y increases by Beta unit, while keeping the other variables constant. This methodology allows to take into account the effect of several conditions (variables) at the same time. This method exceeds the traditional methods since it is closer to reality. This methodology allows us to take into consideration several interactions at the same time. However, traditional models have been limited to three terms of multiplicative interactions in the same regression. This method produces several solutions for an event to manifest itself. The importance of the QCA model in our study is as follows. We used the QCA method to test the link between dividend distribution policy, the overconfidence of managers and the characteristics of companies. This is a newly developed technique that offers the possibility to test the links between the presence of a condition and the occurrence of an event when relying on small samples. The technique can also be used to examine which combinations of conditions are associated with the occurrence (or non-occurrence) of the event in question.

The methodological contribution is twofold and we compared the results of the GMM regression with those of QCA to shed light on the value added by the latter. As QCA is the product of ongoing research, and largely meets the quality criteria that are expected of a good application, this methodology allows the synthesis of data in order to test theories or models, produce new theoretical propositions and guide decision-making.

The objective is to identify the conditions that favor the distribution of dividends and compare them with those presented in the Logit model. Comparative qualitative-quantitative analysis (CQQA) is used to test existing theories. In the course of our analysis, we developed a new simplification procedure that generates, in a systematic and theoretically informed

way, simplified hypotheses, leading to a minimum parsimony formula. The objective was to identify the best combination that generates the occurrence of dividend distribution.

An important question is: What model or configuration is most appropriate for coordinating the dividend distribution policy in the best possible way?

In addition, we used the calibration method, since in most of the studies on the excess of confidence the variable measuring the latter is often retained as a dichotomous variable: if the manager is overconfident, the proxy takes the value of 1, and 0 otherwise. This latent variable omits observations and neglects varying degrees of overconfidence. A behavioral bias calibration methodology transforms latent variables into quantitative variables (residuals) between 0 and 1. This methodology makes it possible to take into consideration not only extreme observations, but also the different levels of optimism and confidence of a manager.

Finally, the methodology makes it possible to identify new paths for theoretical elaboration and to revisit previous studies.

+++Model 2: Use of QCA to study CEO overconfidence, duality, ownership, board size, cash flow and profitability in decisions regarding dividend distribution decisions

Div = f (overconfident, CEO Ownership, Duality, Boar Size, Cashflow, Profitability)
(2)

One of the foremost limits which will be raised is that previous researches used multivariate analysis regression. Fresh studies like Woodside (2017) show that symmetric theory construction such as multiple regression analysis is challenging for several reasons:

In fact, if the number of cases is important for example ($N > 1000$) this could lead almost that all relationships are statistically significant. (2) symmetric models perform better in fit validity than asymmetric models but since they use additional information on the associations of variations of independent variables, but asymmetric model are better in prediction validation. (Gigerenzer and Brighton, 2009). Symmetric models based on multiple regression analysis is therefore that fit validation of such models is typically high though random numbers are used for the values of the independent variables (Armstrong, 2012). (3) the apply of variable based tools like symmetric models could be a pair in testing case-based

identification models. Inappropriately, several theory constructions in management science are case based proposals (Fiss, 2011).

With reference to Woodside (2017), fuzzy set qualitative comparative analysis (fsQCA) is more appropriate approach to data analysis and theory construction.

QCA use Boolean logic algebra in order to investigate the causality between an outcome and all configurations of several predictors somewhat than estimating the net impact of single variables.

This leads to Y outcome set and causal conditions A and B, the fuzzy set QCA scrutinize which are the configurations of causal factors that are more expected to produce or provide the outcome Y; The solution is made up of different conditions known as configurations or causal recipes, that recommends completely different theoretical pathways to provide the outcome. (Longest and Vaisey, 2008).

Fuzzy set QCA differs from standard statistical approaches (Ragin, 2008) in several ways:

Fuzzy set QCA standardize data to values that lie between zero and one, wherever zero represents full non membership and one represents full membership. Or standard statistical models process data directly.

Standard statistical models are based on the use of independent variables but Fuzzy set QCA apply different configurations or conditions.

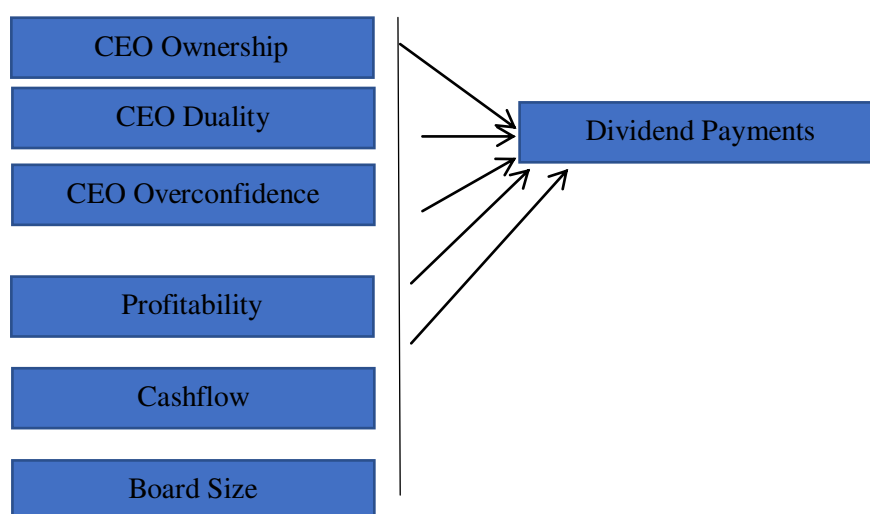
Standard statistical model is based on correlation rather Fuzzy set QCA is founded on set theory.

Conventional statistical approaches involve analysis of net impact, whereas fuzzy set QCA allows more complex causal relationships to be analyzed.

FsQCA offers an alternative to regression analysis to detect cause and effect processes (Ragin, 1987). FsQCA also permits identifying configurations of causal conditions that lead to the outcome (Woodside, Eunju, & Tzung, 2012). In this study, we used to fuzzy-set QCA to identify causal conditions that lead to dividend distribution.

The research model has five attributes and one outcome (figure 11). The attributes are CEO Overconfidence, CEO Ownership, CEO Duality, Profitability, Cashflow and Board Size. The outcome was dividend payout.

Figure 9. Research models and propositions



We proceed to the analysis of determinants of dividend policy decisions in the French context, including firm characteristics and CEO characteristics. We considered dividend payout policy treatment as a firm's propensity to pay dividends by the interaction of several internal and external factors which are currently affecting the firm due to environmental uncertainty. We applied fsQCA, which is constructed on the set-theoretical approaches presented by Ragin (1987, 2000, 2008). FsQCA verifies whether a condition or combination of conditions is necessary and/or sufficient for a certain outcome. It also aims to reveal the minimal (combination of) conditions required to create a particular outcome (Vis, 2012). The method is used to investigate complex pathways and fsQCA explores different set relations, between, within and across variables, in order to identify the combinations of causal sets that best match the results.

All logically possible combinations of conditions are studied (Ragin, 2008). The data matrix has 2^k rows, where k is the number of causal conditions used in the investigation. The range of conditions in the study defines a property space with k dimensions. Each column denotes a condition. Empirical cases are ranked into the rows of a truth table (Fiss, 2011; Schneider and Wagemann, 2012). Boolean algebra is then performed to identify commonalities between the configurations that lead to the outcome, producing a logical reduction of statements. The Quine-McCluskey algorithm is usually chosen to carry out the logical minimization of a truth table (Quine, 1952; Fiss, 2007).

V.6. Findings and Discussion

Table 21 demonstrates a summary of the results and antecedent conditions in fuzzy terms. Each variable was coded to help the readability of the tables shown below. All variables were converted into sets using standardized rank conversion following Longest and Vaisey (2008).

The distribution of cases has not changed, as shown in the table, but the scale has been "fuzzified" to range from 0 to 1. Thus, the values represent the membership level in the set.

We ranked orders our variables (rankedvar) and standardized the ranking. The equation for the standardization is $(\text{rankedvar} - \min(\text{rankedvar})) / (\max(\text{rankedvar}) - \min(\text{rankedvar}))$.

Table 21. Distribution of each variable and its corresponding set

Variable	Coding	Original mean	Set mean
DIV	D	-	-
OV	O	-	-
CASHFLOW	F	0.0966	.5
PROFITABILITY	R	3.06851	.4998697
BS	B	9.151563	.4888119
CEO_DUALITY	D	-	-
CEO_OWN	W	15.40195	.4444123

FsQCA's main goal is to examine the set-theoretical relationship of sufficiency (Ragin, 2008). A sufficient set of conditions is a subset of the result set. It requires the development of a truth table consisting of all possible combinations of causal sets and displays that produce the result by combining causal conditions. For k causal sets, the truth table will have 2^k rows and, as this chapter considers six conditions, the total number of possible combinations is 64 (2^6).

Regarding sufficiency consistency, a crucial question is to what degree cases are members of the conditions and the outcome in relation to their overall membership in the conditions. In joining sufficiency coverage, we explored to what degree cases are members of the conditions and the outcome in relation to their overall membership in the outcome.

Therefore, if sufficiency consistency is high enough, the evidence is consistent with the hypothesis that the conditions are sufficient for the outcome (Dusa and Alrik, 2013). Consistency scores are analogous to a Pearson's r coefficient in statistical analysis; and coverage is analogous to the coefficient of determination, R^2 , in statistical analysis (Hsu et al., 2013). Results of sufficient conditions and their consistency and coverage indexes are shown in Table 22.

We apply complex configurations where remainders are omitted, in order to reduce the combinations. So to fix which solutions to reduce, we count on fuzzy program composed for Stata by Longest and Vaisey (2008). **The gain of Fuzzy set QCA is that permits the analysts to identify combinations of causal variables that, in turn recommend diverse theoretical pathways to give the outcome.** Our results are reported :

Table 22. Configurations leading to strong dividend payout

	1	2	3	4
OVER_INDEX (O)			1	
CASHFLOW (F)	1	1	1	
Net Margin (R)		1		1
Board Size (B)	0		1	1
CEO Duality (D)	0	0	0	0
CEO ownership (W)	0	0		
Consistency	0.884	0.873	0.876	0.884
Raw coverage	0.075	0.144	0.159	0.152
Unique coverage	0.001	0.015	0.023	0.013
Overall solution coverage	0.196			
Overall solution consistency	0.869			

Notes: **1** Presence of the conditions in the model predicting the outcome **0** Absence or negation of the conditions.

“Raw Coverage”: is the part of cases with the outcome that fit the causal conditions of each path, and “Unique Coverage” represents the part of cases that are covered only by the

solution. “Consistency” is the average consistency score beyond all causal ways and “Total Coverage” is the part of cases with the outcome covered by all paths.

Table 22 presents the results of the fsQCA. Consistency should be 0.75 or above (Ragin, 2008). Unique coverage should be above 0 (Schneider & Wagemann, 2010). Solution consistency should be above 0.74 (Woodside, Camacho, & Lai, 2013).

Finally, solution coverage is the proportion of outcome cases that all the solutions explain.

Table 22 offers the four solutions that fsQCA produces.

Solution consistency is 0.869, which is above 0.74. Solution consistency ranges from 0.886 to 0.912, all above 0.75. Raw coverage ranges from 0.884 to 0.873. Unique coverage ranges from 0.001 to 0.023, all above 0. Results have a good model fit.

The configurations in Table 24 are the different paths to achieving high dividend payout. More than one combination of conditions is sufficient to achieve the outcome. The different combinations show a satisfying overall consistency (around 0.869) and a reasonable overall coverage (0.196).

Four combinations of conditions lead to a high level of dividend distribution:

- Solution 1: excludes CEO overconfidence and net margin, requires the presence of cash flow, board size and CEO ownership and duality in a low proportion.
- Solution 2: includes only the presence of cash flow and net margin and the absence of CEO duality and CEO ownership, omitting all other conditions.
- Solution 3: shows that the presence of high cash flow, large board size and CEO overconfidence combined with the absence of CEO duality leads to high dividend payments.
- Solution 4: includes the presence of net margin and board size and the absence of CEO duality.

According to the above results, the condition included in almost every combination is the absence of CEO duality, which is consistent with several pieces of academic research. For example, Pan (2009), Chen et al. (2011), Arshad et al. (2013) and Mansourinia et al. (2013)) found that companies are less likely to pay dividends when the CEO holds a dual position as chair in the company. Therefore, this indicates that there is a negative correlation between

CEO duality and cash dividend policy. When the CEO is the president of the board of directors (BOD), the BOD cannot perform its key function and internal control systems will be invalidated. The CEO has more power to control the BOD and this will affect the independence of BOD decisions in terms of dividend policy. There is a greater possibility of the CEO pursuing his/her own interests but not all shareholders' interests if he/she perceives a likelihood of entrenchment through a specific investment. Therefore, CEO duality implies more managerial power, which leads to paying lower cash dividends, suggesting that CEOs prefer to accumulate more cash to avoid relying on external finance for future investments (Malmendier and Tate, 2005a; Hackbarth, 2008).

Second, excess cash flow leads to more agency problems; hence, firms are more likely to pay cash dividends. A large board size reduces the decision-making autonomy of the CEO's (Conyon and Peck, 1998; Guest, 2008). This indicates that our first solution (1), characterized by the presence of a large board size, high cash flow, high CEO ownership and the absence of CEO duality, produces greater dividend distribution.

Firms are also more likely to pay dividends when the CEO does not hold a dual position as chair in the company and mainly when profitability is high. Firms that make consistently high profits are expected to pay high dividends to shareholders. When CEOs are not also the chair of the board, they have less power to direct the company the way they want. Previous studies (Wen and Jia, 2010; Haye, 2014) have argued that there is a negative relationship between CEO ownership and dividend payout. Their findings further explain that managerial ownership and dividends can be substituted for one another to minimize the problems of agency cost. Thus, firms distribute more dividends in the case of high profitability, high cash flow and the absence of CEO duality and CEO ownership (Solution 2).

Wu and Liu (2011) shows that overconfident CEOs are more likely to pay dividends because of biases in assessing future income. Moreover, Boumosleh and Cline (2013) report that both board size and board composition have a positive impact on paying dividends. This suggests that when the number of board members is greater, companies tend to pay out more. The results obtained are consistent with Chen et al. (2011), Gill and Obradovich (2012) and Bokpin (2011). Finally, excess cash flow can lead managers to act selfishly by spending free cash on, for example, luxurious offices and negative-NPV projects. To help alleviate the agency problem, Easterbrook (1984) and Jensen (1986) indicate that by paying dividends or

repurchasing shares, executives return excess cash flow to shareholders. Aggregated conditions also lead to more dividend payouts (Solution 3).

CEO duality implies more managerial power, which leads to paying lower cash dividends. Amidu (2007) also found that dividend policy affects firms' performance, particularly profitability. Thus, firms with high profitability tend to pay higher dividends to shareholders. Hence, the function of the board of directors in corporate governance is to protect shareholders' interest and discipline management. If the functioning of this internal control mechanism is weak or inadequate, shareholders' interests will become of secondary importance and managers' discretionary activities will increase. Corporate governance literature shows the key role of board structure and board size in the monitoring of firm's management behaviour (e.g. Mace, 1986 ; Adams and Ferreira, 2007). Therefore, the absence of CEO duality with the presence of high profitability and large board size leads to higher dividend payouts (Solution 4).

Conclusion

This second chapter explored the dividend policy of companies listed on the French stock market, using a two-step approach. First of all, we argued that the dividend policy is not simply a decision on dividend amounts. It is a two-step decision-making process that involves the decision to pay or not to pay and the decision on how much firms should pay after they decide to pay.

Second, the originality of our solution lies in our use of two different econometric approaches: GMM and fuzzy-set QCA.

We applied the GMM approach to examine the dividend payout ratio in relation to firm characteristics and CEO overconfidence. We then considered dividend payment as a dichotomous variable, in order to gain further information about French dividend policy by using a fuzzy QCA approach. This chapter contributes to recent studies by showing the impact of managerial overconfidence and corporate governance on dividend policy in France. In summary, our results showed that CEO overconfidence leads to a rise in the payout ratio compared with rational peers, which is consistent with Wu and Liu (2011) and Juhel and Anouar (2014). In other interesting results concerning corporate governance factors regarding dividend policy, we found a negative relationship between dividend payment and CEO stock ownership, and a negative relationship between dividend payments and board size. The relationships between dividend policy and duality, firm cash flow, firm profitability and firm size are positive. In general, the findings in this chapter provide an additional contribution to the growing literature in the field of behavioral corporate finance.

Chapter III. Dividend Policy, Irrational Approaches, and Corporate Governance

*“We human beings think that we are logical, but research has shown that **information** is systematically **analyzed unconsciously** in the parts of the brain related to emotion. It would therefore seem that **decisions** are based on **emotion**.”*

(Lukasz Snopek, 2016)

Abstract

This chapter deals with the relationship between approaches involving irrationality (of investors and managers) and decision-making choices, particularly with regard to dividend policy in France. This chapter opens a new field in behavioral corporate finance, since managers' and investors' irrationality and its impact on corporate payout policy has not been widely considered thus far in the existing research.

In response to such challenges, future studies must focus on the combined effect of both non-rational investor behavior and managerial irrationality on firms' dividend policy. This could be achieved by combining considering managerial overconfidence with market perception. Introducing institutional investors, blockholders and board composition permits better understanding of dividend policy. Using quantile fixed-effects approaches to data from 2000-2015, the results show first, that a higher dividend payout is associated with high CEO stock ownership, larger firm size, and higher cash flow at all levels of dividend rate distribution. However, profitability, board size and managerial overconfidence are not significant across different dividend payout quantiles. Effects of Institutional Investors as part of board directors are significant and positive when dividend payout rate is high ($q=80$). Therefore, investor sentiment is negative and significant when the dividend payout rate is low ($q=10$ or 20%) and is positive and significant when the dividend payout distribution is high ($q=80$ or 90). The final chapter of this thesis presents an empirical investigation of the combined effect of managerial overconfidence and investor sentiment on corporate dividend policy in France.

Keywords: Dividend policy, CEO overconfidence, Corporate governance, Sentiment index, Quantile fixed-effects.

Contribution

Our study contributes to the literature in several ways. Previous research has demonstrated that managerial overconfidence (Malmendier and Tate, 2008; Moore et al., 2015⁵⁸; Leung et al., 2018⁵⁹) and investor sentiment (Lemmon and Portniaguina, 2006; Baker and Wurgler,

⁵⁸ Moore, D. A., Tenney, E. R., & Haran, U. (2015). Overprecision in judgment. *The Wiley Blackwell handbook of judgment and decision making*, 182-209.

⁵⁹ They found that the risk aversion or confidence of a CEO is a stable determinant of both personal and corporate-level investing activity.

2007) affect firms' financial decisions (Plous, 1993). To the best of our knowledge, this work is the first to consider simultaneously managerial and investor irrationality and its effects on corporate payout policy. This idea has not been considered so far in the existing literature and this new approach has been able to reveal new and useful results. Considering the effect of these dual irrational behaviors on dividend policy, we provide fresh insights for the behavioral corporate finance literature.

Previous studies conventionally applied OLS methods to study the relationship between the dependent variable and the explanatory variables. However, the OLS methodology provides only one set of coefficient estimates to describe the mean effect of the explanatory variables on the dependent variable. In contrast, the quantile regression approach generates a multitude of coefficient estimates, each set of estimates describing the relationship between the dependent and the explanatory variables at a particular quantile of the dependent variable. As a result, the quantile estimates provide more details and a more complete picture of the relationship between the dependent variable and explanatory variables. Quantile regression is becoming extensively used in finance and other disciplines.

The purpose of this chapter is to:

- Examine the impact of the combined effect of the irrational behavior of managers and investors on dividend policy in France.
- Investigate whether there is heterogeneity in the relationship between the dividend payout ratio and its determinant using quantile regression methods.
- Contribute to the growing literature on behavioral corporate finance. In so doing, we also demonstrate the richness of quantile regression estimates.

This new approach seems particularly promising for the following reasons:

Unlike previous studies, we use the combined effect of sentiment and managerial bias to forecast corporate dividend payments.

We use quantile regression to give a more comprehensive picture. The quantile regression parameter estimates the change in a specified quantile of the response variable produced by a one-unit change in the predictor variable. This allows comparison of how some percentiles of the dividend payout ratio may be more affected by certain characteristics than others.

Working with panel data provides an "out-of-sample" test of the results of most similar studies in the US market.

Introduction

One way to make money is to recognize our own limits and to implement a financial plan that we can execute. In Plato's *Apology of Socrates*, the Oracle of Delphi states that Socrates is the "wisest of men". Socrates is aware of his own flaws and so asks, "How can this be?" After a conversation with a man widely deemed to be brilliant, Socrates concludes, "I do not suppose that either of us knows anything really beautiful and good, I am better off than he is, for he knows nothing, and thinks that he knows; I neither know nor think that I know". Socrates is the wisest of men, Plato suggests, precisely because he is aware of his flaws. Similarly, successful investors must be aware of their own irrationality. Indeed, investors cannot act rationally every time.

Biased managers or biased investors?

Thus far, our discussion has focused on the biases of top executives. Primary research in behavioral finance, however, concentrated almost exclusively on the biases of individual investors (e.g. Odean, 1998, 1999; Barber and Odean 2000; see also Daniel and Hirshleifer's (1998) contribution to this symposium). Later studies considered how these individual biases could be exploited by rational market participants – including rational managers of firms. (Baker and Wurgler 2004a, b; Ausubel, 1999; Malmendier and Shanthikumar, 2007). This line of argument suggested that a number of corporate finance puzzles could be understood as an outcome of rational managers exploiting investor biases. For example, if investors sometimes overvalue and sometimes undervalue firm value, a rational manager who maximizes value to existing shareholders would issue equity during periods of positive sentiment. Baker and Wurgler (2000, 2002) provide evidence that firms tend to issue relatively more equity than debt just before periods of low market returns and shun equity, in favor of debt, before periods of high returns. Their results suggest that managers exploit the inefficiency of the stock market and that market timing has large and persistent effects on capital structure. However, if top corporate executives seek to exploit irrational investors, are such findings in conflict with the hypothesis that some managers are overconfident and persistently overestimate the value of their firm? The answer is no. Indeed, these two biases can go hand in hand. Overconfidence induces CEOs to overestimate the value of their firm relative to the market much of the time, and relative to its true value all the time. Hence, CEOs' investment and financing choices will be biased in the ways discussed above. At the

same time, during periods of very positive investor sentiment, investors' assessment of a firm might be even more optimistic than that of the CEO. Such periods of high investor sentiment produce distorted access to equity financing and allow periods of market overvaluation, as predicted by Baker and Wurgler (2000, 2002), albeit shorter ones than in a world with (only) rational managers. In short, there is no inherent inconsistency between these two strands of behavioral corporate finance.⁶⁰

Research question: Does the matching of biased CEO managers and biased investors (simultaneously market sentiment and CEO overconfidence) better explain the behavior of dividends in France?

The structure of this chapter is as follows. The first section is devoted to presenting irrational approaches. The second section discusses market sentiment. The third section focuses on manager irrationality. The fourth section considers corporate governance factors. The fifth section presents data and variables used to explain dividend payout ratios. The sixth section analyzes and discusses the empirical results. The chapter concludes with a summary of our main results.

⁶⁰ For further discussion of these biases and how they can interact, see the survey articles by Barberis and Thaler (2003), Baker, Ruback, and Wurgler (2007), and Baker and Wurgler (2013).

SECTION I. IRRATIONAL APPROACHES

I.1. Irrationality

The aim of this survey of the literature on behavioral finance and behavioral corporate finance related to investor sentiment is to outline the shortcomings of the efficient market hypothesis. Indeed, if capital market were always efficient, there would be no concern for sentiment. An efficient market is defined as a market in which asset prices always fully reflect all the available information (Fama, 1970).

Irrationality is often invoked when we are unable to understand a form of human behavior. This misunderstanding can be said to be total, meaning that a particular action or belief is completely incomprehensible or could only be the consequence of applying a particular human model to actions and beliefs in the various social sciences.

Different models that rest explicitly on the notion of irrationality as a tool for understanding and explaining human action vary significantly in their approach and classification of human actions and beliefs. The variation is strongly connected to the way in which these models approach and manage what seems unintelligible and, consequently, the way in which irrationality is defined.

The main objective of this chapter is to outline some of the significant ways in which irrationality has been approached. Given that it is not possible to review a large amount of work on the topic of irrationality, we chose to discuss only a number of approaches to irrationality that we find to be significant in general. As sentiment can influence financial markets in the presence of limited arbitrage (Shleifer and Vishny, 1997), it is one candidate explanation for different asset valuations across investors and for certain puzzles discussed in the literature. Such strong statements seem to be exaggerated, as sentiment is only one of a list of possible explanations for various puzzles observed in the literature. Moreover, just as there are different ways to measure the efficiency of a market, there are various – admittedly not uncontroversial – ways to measure sentiment.

In the sections below, we shed light on investor errors as a form of cognitive bias that leads to irrational behavior. Various proxies are applied to capture sentiment. In addition to dividend premium initiated by Baker and Wurgler (2004a), other investor behaviors also help to explain why firms pay dividends. According to Miller (1986), behavioral finance might help

resolve long-standing anomalies in the area of dividend policy. However, measuring the sentiment or feelings of a large number of investors seems to be quite complex and difficult⁶¹ (Baker and Wurgler, 2007), since irrational behavior could be due to different cognitive biases, such as those examined in prospect theory, herd behavior and reference points, among other explanations. Therefore, consumer confidence might be an indication of investors' feelings concerning the economy and financial markets. However, for a given individual (a CEO), we can measure bias, such as CEO overconfidence, which is considered a relevant bias in the financial literature and psychological theory (judgment decision-making⁶²).

I.2. Cognitive Bias

Cognitive bias has become a high priority in the study of investor decision-making. For example, Shane and Venkataraman (2000) show that there are two factors that can influence the probability of gaining particular opportunities: the possession of information enabling identification of an opportunity and the cognitive propensities necessary to exploit it. According to the two criteria, research contributes to better understanding of the information process and cognitive bias that have an important role in the development of behavioral corporate finance literature.

A cognitive bias is a subjective opinion that emanates from specific heuristics (Bazerman, 1990; Busenitz and Lau, 1996). Cognitive processing⁶³ is guided by how information is attended and the capability of an investor to analyze and select securities and investment choices.

Huberman (2001) demonstrates that when people are offered two choices, they prefer the one with which they are familiar, which leads to the basic result that people simply prefer to invest in familiar rather than unfamiliar stock. Cognitive bias influences risk perception, and risk perception has a direct influence on decision-making. The next subsections present

⁶¹ This process is presented in section II. The measures are summarized in Table 25.

⁶² We have employed the following elements as a basis for our argument: "Overconfidence may be the mother of all decision-making biases" (Moore et al., 2015). Moore, Tenney, and Haran (2015) Overprecision in judgment. The Wiley Blackwell handbook of judgment and decision making, 182-209; "No problem in judgment and decision making is more prevalent and more potentially catastrophic than overconfidence" (Plous, 1993, p. 217); Plous, S. (1993). The psychology of judgment and decision making. McGraw-Hill Book Company.

⁶³ A. T. Beck (1976), A. T. Beck and Clark (1997), A. T. Beck, Emery, and Greenberg (1985), Bower, 1981, 1987.

prospect theory, loss aversion, reference points, and herd behavior as consequences of investor errors that lead to irrational investor behavior.

1.2.1. Prospect Theory, Loss Aversion, and Reference Points

Expected utility theory refers to making a rational decision to get an optimal result, while prospect theory, which describes investors' behavior when making decisions under uncertainty, is a generalized expected utility theory. Prospect theory was initiated by Kahneman and Tversky in 1979 as a behavioral economics theory. Indeed, Kahneman and Tversky (1979) demonstrate that losses have a greater emotional impact on individuals than an equivalent amount of gain. Prospect theory is also known as loss aversion theory and shows that investors evaluate gains and losses differently. The theory describes how investors make a choice between probabilistic alternatives where risk is involved and the probability of different incomes is unknown. According to Barberis (2013), prospect theory has been applied in three main frameworks in finance: the cross section of average returns, where the goal is to understand why some financial assets have higher average returns than others; the aggregate stock market; and financial assets over time.

Baker and Wurgler (2011) present a model in which investors are loss averse and reluctant to accept any reductions in dividends relative to the reference point set by prior dividends. Manager utility function reflects both a preference for a higher stock price today and avoiding any investor disappointment caused by dividend cuts or decreases in the future. Managers with strong earnings separate themselves by paying high dividends and still retaining enough earnings to be likely to at least match the same dividend in the next period.

Ormos and Timotity (2016) present a model based on Kahneman and Tversky's (1979) framework, applying the assumption that, in some situations, investors define reference points different from zero on their utility curve, consequent to anchoring bias (which describes the common human tendency to rely on the first trait of information) as a way to base judgment on a familiar reference point (Ariely et al., 2003). They propose an assumption based on the cause of risk-seeking behavior, in which investors take more risk in order to enhance and maximize their expected utility.

1.2.2. Herd Behavior

Herd behavior is defined as a situation in which choices made by others influence the

decision made by an individual. It has been argued that herd behavior has several negative impacts on a market. The theory states that investors' herding behavior distorts public knowledge, exacerbates the volatility of markets and contributes to overpricing and underpricing stock during bubbles and crashes.

Bikhchandani and Shama (2000) used herding behavior to explain dividend policy in which companies follow the leader within the sector or follow the first firm that announces a dividend. Baker and Smith (2005) also found evidence to support herding behavior.

Therefore, understanding financial decisions and stock price volatility is closely related to the understanding of investor behavior and cognitive basis. Based on the elements mentioned above that cause biases in investors' expected probabilities, we highlight market sentiment proxies in the next section.

SECTION II. MARKET SENTIMENT

Financial literature indicates the existence of three approaches to studying sentiment: direct, indirect and composite measures. Market sentiment is quantified either directly by survey or indirectly using financial information contained in market data. Finally, some researchers have constructed composite measures by combining several direct and indirect methods. These three types of measurement are presented in Table 22.

Table 23. Measures of sentiment

Investor sentiment proxies	Definition	Authors
Direct measures		
University of Michigan Consumer Confidence Indexes (MCCI) and the conference	The annual Michigan Survey began in 1943, then started being issued quarterly in 1952, and then monthly in 1977. The Consumer Confidence Survey is based on 5,000 US households. The survey is based on questionnaires sent to a random sample of members of a panel. The impact of this American indicator is fairly strong on the markets because it is a genuine leading gauge of people's future consumption. Michigan adopts a rotating panel design in which the respondents are requested to be re-interviewed six months after the first interview (see Curtin, 1982 for details).	Segers, Franses and Bruijn (2017) ⁶⁴ ; Charoenrook (2005) ⁶⁵ ; Ho and Hung (2009) ⁶⁶ ; Curtin (1982) ⁶⁷

⁶⁴ Segers, R., Franses, P. H. and de Bruijn, B. (2017). A novel approach to measuring consumer confidence. *Econometrics and Statistics*, 4, 121-129.

⁶⁵ Charoenrook, A. (2005). Does sentiment matter? Vanderbilt University working paper.

⁶⁶ Ho, C. and Hung, C. H. (2009). Investor sentiment as conditioning information in asset pricing. *Journal of Banking & Finance*, 33(5), 892-903.

⁶⁷ Curtin, R. T. (1982). Indicators of consumer behavior: The University of Michigan surveys of consumers. *Public Opinion Quarterly*, 46(3), 340-352.

Investors Intelligence Survey (IIS) data	A survey that is used to capture the sentiment of institutional investors. The IIS approaches stock-market newsletter writers once a week to understand if they are bullish or bearish on the stock markets in the near term.	Ho and Hung (2009); Hui and Li (2014); Wang (2018) ⁶⁸
ISM Purchasing Managers Index (PMISENT)	The PMI is a monthly publication and a comprehensive economic monitoring indicator system. It is divided into manufacturing PMI, services PMI, construction PMI, and retail PMI. PMI is a quick and timely leading indicator reflecting market dynamics. Together with GDP, it constitutes a macroeconomic indicator system. The PMI survey is now officially included in the National Bureau of Statistics survey system.	He, Zhang and Tian (2015); Ying, Yu (2009) ⁶⁹ ; Zhang and Feng (2012) ⁷⁰ ; He and He (2012) ⁷¹ ; Li and Li (2011) ⁷² ; Zhang and Xu (2012); Xu, Xue and Che (2012) ⁷³
American Association of Individual Investors (AAII)	The AAII conducts a survey each week by interviewing between 125 and 500 investors. The American Retail Investors Association defends the interests of small investors. The purpose of the AAII publication is to help individual investors achieve a higher return on their portfolios of securities than indices or equity mutual fund (OPCVM).	Brown and Cliff (2004, 2005); Solt and Statman (1988); Shefrin (1999); Fisher and Statman (2000); Ho and Hung (2009); Corredor et al. (2013, 2015); Hui and Li (2014); Chiu et al. (2018)
Search engine data: such as Google Search	As the main search engine in the world, Google Search captures 67.5% of the global market share.	Da et al. (2015) ⁷⁴ ; Gao et al. (2018) ⁷⁵ ; Hervé et al. (2019) ⁷⁶ .
The Household Confidence Index (HCI)	The HCI is a synthetic short-term economic indicator that assesses the level of household confidence in the economy and thus tries to predict future household consumption. It is also a fairly significant indicator for assessing the near future of economic growth.	Otoo (1999); Fisher and Statman (2003); Qiu and Welch (2006); Lemmon and Portniaguina (2006); Zouaoui et al. (2011).
Indirect measures		
Volatility Index (VIX)	The CBOE calculates and disseminates the VIX index in real time, which is an estimator of the implied volatility of the annualized 30-day PS 500. In practice, this volatility is calculated from that of calls and puts outside the	Brown and Cliff (2004)

⁶⁸ Wang, W. (2018). The mean-variance relation and the role of institutional investor sentiment. *Economics Letters*, 168, 61-64.

⁶⁹ Ying Yu (2009). The practical application of Chinese PMI data - The leading analysis of PMI[J]. *Science and Technology*, (12): 43-45

⁷⁰ Libin Zhang and Yi Feng. Empirical test between PMI and GDP of China[J]. *Statistics and Decision*, 2012, (2): 143-145.

⁷¹ Li He and Yue He. The prediction model of GDP combining with PMI in China [J]. *Statistics and Decision*, 2012, (1): 84-86.

⁷² Zhuo Li and Linqiang Li. Re-examine the impact of international crude oil price fluctuation on Chinese macroeconomic[J]. *Economic Review*, 2011, (3): 77-87

⁷³ Zhiwei Xu, Hexiang Xue and Dawei Che. The research on periodic of inventory investment in China - based on dynamic perspective of Purchasing Managers' Index [J]. *Economic Research*, 2012, (8): 81-91.

⁷⁴ Da, Z., J. Engelberg and P. Gao. "The Sum of All FEARS Investor Sentiment and Asset Prices." *Review of Financial Studies*, 28 (2015), 1-32.

⁷⁵ Gao, Z., Ren, H., and Zhang, B. (2018). Googling investor sentiment around the world. *Journal of Financial and Quantitative Analysis*, 1-66.

⁷⁶ Herve, F. et al., Noise traders and smart money: Evidence from online searches, *Economic Modelling*, <https://doi.org/10.1016/j.econmod.2019.02.005>.

	currency, having as the due date the current month (at least eight days) and the next one. The combination of these maturities is variable to achieve a constant maturity of 30 days. The VIX is often seen as a measure of investor fear (investor fear gauge; see, for example, Whaley, 2000).	
Price-to-earnings ratio (PER)	<p>The PER is considered a gauge of the overvaluation of stock prices. This indicator is regularly used by economics analysts to evaluate the deviation of a stock price from its fundamental value. Campbell and Shiller (2001) deduced that PER reliably predicts the evolution of stock prices. They noticed that the periods in which this indicator reached high levels were only transient but were inevitably followed by stock market crises. They concluded that periods in which PER are very high are followed by price reversals and not by profits.</p> <p>This financial indicator has been interpreted in the literature using several approaches. Kowalczyk (1993) claimed that a higher P/E value implies that risk level is low because investors are more willing to buy from firms that are safer than others. Hamrol (2005) suggested that stocks with a low P/E should be bought. Czekaj et al. (2001) found that stocks with a low P/E ratio gave a much higher rate of return than stocks with a relatively high P/E ratio (Ritchie, 1997).</p>	Ford (1997); Gruszczyńska-Broźbar (2009); Zouaoui et al. (2011); Flotyński (2016)
Trading Index (TRIN) ⁷⁷	In 1989, Richard Arms defined a new way to capture investor sentiment through the interaction between the price and volume of shares. Brown and Cliff (2004c) noted that this ratio is based on market performance.	
Number of initial public offering (IPO)	Investors' activity on the financial markets is closely linked to investors' psychology. In this context, some research indicates that IPOs positively influence investors' behavior on the financial markets due to the existence of asymmetrical information between managers and investors. This measure consists of counting the number of IPOs on the stock market during each month.	
Trading volume	The volume of trade is a proxy that is used to detect investor sentiment. Generally, investors only participate in the financial market when they are optimistic. Finter et al. (2012) indicated that the trade pattern moves in the same direction as investor sentiment.	
Brown and Cliff (2004)	<p>Brown and Cliff (2004) found significant correlations between direct measures of market sentiment and the number of indirect measures.</p> <p>They used several tools:</p> <p>SENTp represents the sentiment of professional institutions.</p> <p>SENTa denotes the sentiment of amateurs measured by the AAIL.</p> <p>ADVt/DECt S_t: this indicator is used to measure market performance. In their study, Brown and Cliff (2004b) indicate that this is the ratio between the number of stocks that have experienced price increases at time t' (ADVt), and the number of stocks that have experienced price deterioration at time t' (DECt). When this indicator is greater than 1, investor sentiment is qualified as rising and vice versa.</p> <p>The ARMS index is a modification of ADV/DEC that incorporates volume. This</p>	

⁷⁷ ARMS R. W. Jr, The Arms index (TRIN): an introduction to volume analysis of stock and bond markets, 1st edition, 1996, Marketplace Books, Columbia, Maryland, USA.

	<p>measure is the ratio of the number of advances to declines standardized by their respective volumes.</p> <p>HI/LO: the number of new highs to new lows is also designed to capture the relative strength of the market. The three variables in this group are in both the weekly and monthly samples. As the numerator and denominator of these variables tend to move in opposite directions, these data are truncated at 0 and have a few extreme positive outcomes.</p> <p>ΔMARGIN: the percentage change in margin borrowing.</p> <p>ΔSHORTIR: the percentage change in short interest.</p> <p>ODDLOT: the ratio of odd-lot sales to purchases.</p> <p>SHORTSLS: the ratio of short sales to total sales</p> <p>PUT/CALL: the ratio of CBOE equity put to call (PUT/CALL) trading volume is widely viewed as a bearish indicator.</p> <p>VOL: a constructed measure of expected volatility relative to current volatility.</p>	
Sentiment Index (SENT _⊥)	<p>Combines several indirect measures to obtain a composite indicator of market sentiment. It combines six indirect measurement tools:</p> $\text{SENTIMENT}_t = -0.241\text{CEFD}^* + 0.242\text{TURN}^*_t + 0.253\text{NIPO}^* + 0.257\text{RIPO}^*_t + 0.112S_t - 0.283P^{\text{D-DN}}$ <ul style="list-style-type: none"> - Sentiment t: index sentiment. - CEFD: the average difference between the net assets value (NAV) of closed endstock fund shares and their market prices. - NYSE share turnover is based on the ratio of reported share volume to average shares listed in the NYSE Fact Book; TURN is the natural log of the raw turnover ratio, detrended by the 5-year moving average. - NIPO: number of IPOs. - RIPO: average first-day returns. - PD–ND: dividend premium: the difference in M/B ratios of payers and non-payers. 	Baker and Wurgler (2006, 2007)

SECTION III. MANAGER IRRATIONALITY

For human beings, rationality can be defined as a mental ability or an innate quality to differentiate between right and wrong at a certain point in time. It is how an individual confirms his or her beliefs and actions using reasons of respective beliefs and actions. When individuals are highly objective, logical and mechanical, they are referred to as “rational”. If their personal emotions, moral norms and codes come into play, this so-called rationality is questioned and takes the form of irrationality. Rationality is also considered an “optimization”. This means that if sophisticated information content is available, decision-making will be a process of finding a rational optimal choice. It is a human tendency to propagate an idea of themselves as being rational, but real-life situations illuminate that grey area where someone is neither rational nor irrational. This kind of human behavior is illustrated in some models in the social sciences that assume humans to be reasonably

estimated rational entities. The concept of “bounded rationality” has emerged from the very same thought process. When making decisions, people fall into a place of bounded rationality, reflecting their cognitive biases in their decisions (Hammond et al., 2006).

The limitation on information content drives manager from rationality. Other constraints, such as time and a lack of analytical skills, also distract a manager into making the best possible decision, rather than the optimal one. Bounded rationality allows individuals to apply their sagacity according to their preferences after simplifying the choices available. This miscalibration of probabilities to reach the desired outcome brings into play the cognitive bias of overconfidence. The behavioral pattern of overconfidence and its effects in relation to financial decision-making have already been studied in much depth. However, much room is available in the area of senior managers’ overconfidence and its impact on dividend policy-making. Overconfidence is an overestimation of one’s own capabilities, particularly when a task involves a partially stochastic outcome (Svenson, 1981; Russo and Schoemaker, 1992; Soll, 1996). Based on one of the most prominently established findings from the social psychology literature, individuals are inclined to overestimate their judgment potential relative to the average when it comes to appraisal of their skills (Larwood and Whittaker, 1977; Svenson, 1981; Alicke, 1985). The human expectation of success leads individuals to attribute good outcomes to their own actions, but bad outcomes to bad luck (Alicke, 1985). Overconfidence or hubris emboldens decision-makers to overemphasize their problem-solving capacities (Camerer and Lovo, 1999).

SECTION IV. CORPORATE GOVERNANCE AND DIVIDEND POLICY

As a result of the extent of business affairs and the consequent formation of agency relationships, investors are uncertain that managers make decisions that offer the best benefits to the investor. Therefore, the focal purpose of corporate governance is the requirement to restore investors’ trust and the means of ensuring that corporate operations are done with transparency, accountability and responsibility.

Corporate governance is intended to be a tool for directing and managing a company and its associated affairs in order to raise the level of its success and enhance its accountability, with the aim of considering long-term stockholders and other stakeholders (Cheah and Lee, 2009). This definition of corporate governance is broad enough to negotiate all the characteristics of firms and encompasses cash flow and cash-managing policies. However, a

major corporate policy involves dividend payout decisions (Kouki and Guizani, 2009). Corporate governance comprises a set of associations between a company's management, board, shareholders and other interested parties that will govern the direction of the company's movement in the firm dividend era.

IV.1. Institutional Ownership and Corporate Dividend Policy

As shown by Miller and Scholes (1982) and Lakonishok and Vermaelen (1986), institutional investors have an incentive to obtain dividends rather than capital gains. Michaely (1991), Robin (1991) and Han (1994) support the notion of institutional investors favoring dividends over capital gains. Logically, institutional shareholders should want to perceive of firms paying more dividends than retaining more earnings. Therefore, it is not irrational to forecast that the degree of institutional ownership has consequences for corporate dividend policy. Under the agency-cost-based assumption, dividend payout is expected to be inversely linked to institutional ownership. Dividend payments can facilitate a decrease in agency cost by obliging the firm to be exposed to the discipline of the capital market. If institutional owners are operational in supervising the management, firms with a high degree of institutional ownership will be relatively less worried about agency cost and would, therefore, pay lower dividends.

Aoki (1984) and Lowenstein (1988) claimed that institutional shareholders are a strong and positive force for impelling those at the corporate management level to behave in the long-term interests of their firm. However, Kouki and Guizani (2009) found a negative relationship between institutional ownership and dividend policy. Xiya (2011) divided institutional investors into two main clusters, as generalized investors and special investors comprising securities investment funds, securities agencies and investment companies. Concentrating on the latter group, Xiya (2011) examined the influences of institutional investors on Chinese firms' dividend policy before and after share reforms. Even if in both periods a firm's dividend policy was affected by institutional ownership, after share reorganization, the relation became more significant. In a similar paper, Li and Wang (2007) estimated that although there was not a significant link, institutional investors' active participation in the governance process may moderate the dividend policy of a firm. The current concept restricts the agency-cost assumption, as Han et al. (1999) signposted that institutional investors may employ market experts to evaluate management efficiency. Therefore, in the

presence of institutional owners, a firm is less likely to use dividends as a means of reducing agency costs.

IV.2. Board Independence and Corporate Dividend Policy

The aim of corporate governance is to have an effective and efficient board and accomplishing this objective entails consideration of the board's structures. The most important attribute of these structures is board independence. According to the literature on corporate governance in France,⁷⁸ board independence is an important feature in assessing the effectiveness of a board.

The upshot assumption proposes that the presence of independent directors has a significant impact on board effectiveness, since they have more power to protect shareholder wealth in the form of dividend payouts (Hu and Kumar, 2004; Al-Najjar and Hussainey, 2009; Ntim, 2011). Moreover, independent directors are suggested as having concrete encouragement to monitor and control managers' opportunistic behavior in order to improve their status and appearance in the labor market (Borokhovich et al., 2005). Centered on the substitute hypothesis, dividends facilitate the mitigation of agency disagreements mainly in firms with weak governance practices, since dividend payouts decrease the free cash flow available to managers (Easterbrook, 1984).

Observed proof of the impact of independent directors on dividend payout policy is rare and, therefore, this study has been provided with an opportunity to make a new contribution to the existing literature. For example, consistent with past investigations (La Porta et al., 2000; Borokhovich et al., 2005; Iqbal, 2013; Mansourinia et al., 2013), Abor and Fiador (2013) identified a negative association between the presence of independent directors and dividend payout policy for a sample of 177 Nigerian companies. Within the UK corporate context, Al-Najjar and Hussainey (2009) found a practical sign of a statistically negative relationship between the number of independent directors and dividend payouts among 400 non-financial firms. From a regulatory viewpoint, the various corporate governance codes in France (e.g. the Viénot I (1995) and II reports (2002) and the Bouton

⁷⁸ Various corporate governance codes have been drawn up by employers' associations (MEDEF and AFEP) under the Viénot I and II reports and the Bouton Report. The Viénot I Report (1995) was mainly concerned with the board of directors of publicly listed companies, wishing to clarify its mission and to make its work more effective. It recommended the suppression of cross directorships, a limitation of the number of board seats held, and recourse to independent directors.

Report) recommend that the majority of board members should be independent directors. This suggests that increasing the proportion of independent directors is considered an essential corporate governance mechanism that decreases the need to pay larger dividends.

IV.3. Blockholders and Corporate Dividend Policy

Based on prior research, the empirical results of studying whether blockholders and improved governance lead to higher or lower dividend are mixed. Based on the agency cost-based assumption, the authority of blockholders offers better supervision of managers and, therefore, mitigates agency problems (Shleifer and Vishny, 1986). Consequently, firms with a higher level of concentrated ownership will be less involved in agency problems and will pay fewer dividends (Han et al., 1999). This is why dividend payouts are an alternative to governance problems in a firm (Kouki and Guizani, 2009) and, consequently, one way of decreasing agency costs is to have a dividend policy. Asghar et al. (2011) considered that the fundamental motivation for this logic is that once a company pays out dividends, there is a lower level of cash to be exploited by managers in personal projects and inappropriate investments. Furthermore, firms with higher proportion of blockholder investors pay more dividends, given that a portion of their revenue resulting from dividends is tax-exempt. Therefore, large shareholders are more attracted to receiving more dividends (Robin, 1991).

Findings regarding the authority of large shareholders are mixed and dichotomous. While some conclusions suggest firm dividend policy is positively affected by large investors (Han et al., 1999; Xiya, 2011), others consider that there is no significant association between the presence of large investors and dividend policy (Weng and Shinong, 2007). Zeckhauser and Pound (1990) do not find significant differences in dividend payout ratios between firms with and without large blockholders, using data for US companies. Weng and Shinong (2007) support the notion that although there is no direct relationship between large shareholders and firm dividend policy, examination of institutional investors can play a governance role and enable monitoring of dividend distribution practice. They maintain that the higher the ownership of institutional investors, the less likely firms are to pay dividends.

SECTION V. DATA DESCRIPTION AND VARIABLES

V.1. Data and Sample

We utilized data from DataStream, a database that provides annual financial information on

French firms, as well as financial reports. Each firm's information is reported at the end of its fiscal year, giving us an unbalanced panel with one observation per firm per fiscal year. We excluded firms in the fields of finance and insurance, as these have different classification systems. We omitted firm-year observations with missing values for any of the variables used in our analysis. Through the above selection process, we obtained a final sample of 1,838 firm-year observations spanning the period 2000-2015.

V.2. Definitions of the Variables

Table 24. Variables and their definitions

Variables	Definition
PAYDiv _{i,t}	The dividend yield rate, which compares the dividend per share to the market price per share.
Firm characteristics	
Cash flow	Measured as the ratio of pre-tax profit plus depreciation to the book value of total assets (Deshmukh et al., 2013).
Profitability	Net margin: this value is the income after taxes for the fiscal year divided by total revenue for the same period.
Lev	Measured as total debt scaled by the book value of total assets.
Firm size	Measured by the natural logarithm of the book value of total assets (Fama and French, 2001).
Firm age	Firm maturity is measured as the logarithm of firm age since inception.
Governance variables	
BS	Total number of board members (both insider and outsider).
BC	The proportion of independent directors on the board of directors measured as the number of independent directors divided by the total number of directors on the board.
BLOCK	Measured by the percentage of shares held by the top three shareholders.
INS_INV	Institutional ownership is the ratio of shares that institutions own in the firm divided by the total number of outstanding shares.
CEO power	
CEO_ own	Measured by total stock owned by the CEO divided by total stock issues.
CEO_duality	Dummy variable: 1 if the CEO also serves as the board chair, and 0 otherwise.
Managerial overconfidence	
OVER_INDEX	Using PCA, we constructed an overconfidence index based on the previous proxies. crispc1: a dichotomous variable set equal to 1 if the overconfidence index (score) is greater than the median level of the overconfidence index, and 0 otherwise.
INDEXSENT: Market sentiment	
We used the Household Confidence Index as a sentiment measure. It seems reasonable to retain this direct measure of sentiment in panel data analysis. Many researchers propose using the Household Confidence Index as a measure of individual investor sentiment (Otoo, 1999; Fisher and Statman, 2003).	

V.2.1. Dependent Variable

The main variable used in our study is as follows:

PAYDiv_{i,t} = In our study, we used the dividend yield rate as a variable for dividend distribution policy, which compares the dividend per share to the market price per share:⁷⁹

$$\text{Dividend yield rate} = \frac{\text{Dividendpershare}(DPS)}{\text{Marketpricepershare}(MPS)}$$

V.2.2. Independent Variables

- **Investor sentiment index**⁸⁰: we used the Household Confidence Index as a sentiment measure. It seemed reasonable to retain this direct measure of sentiment in panel data analysis. Many researchers have also proposed using the Household Confidence Index as a measure of individual investor sentiment (Otoo, 1999; Fisher and Statman, 2003; Lemmon and Portniaguina, 2006; Qiu and Welch, 2006) and presented several arguments justifying consideration of the Consumer Confidence Index. Financial specialists and speculators also confirm that the Index gives⁸¹valuable information regarding financial markets.
- **Figure 10**: the line in Figure 10 shows the evolution of the Household Confidence Index.⁸² The most significant level of confidence was detected in 2000, which tends to confirm this indicator as a reliable sentiment proxy. However, if we remain on the same approach, the Index is rather negative between 2000 and 2015. Katona (1975) notes that people generally do not have specific expectations about markets at any given time and, therefore, when asked, they invent answers in order to be courteous to the interviewer. Shiller (2000) used this finding to propose a different methodology and measure other elements of investor sentiment. From December 2007, Figure 10 shows that the level of confidence of French households rose. In 2015, there was renewed optimism but the Index still remains negative.

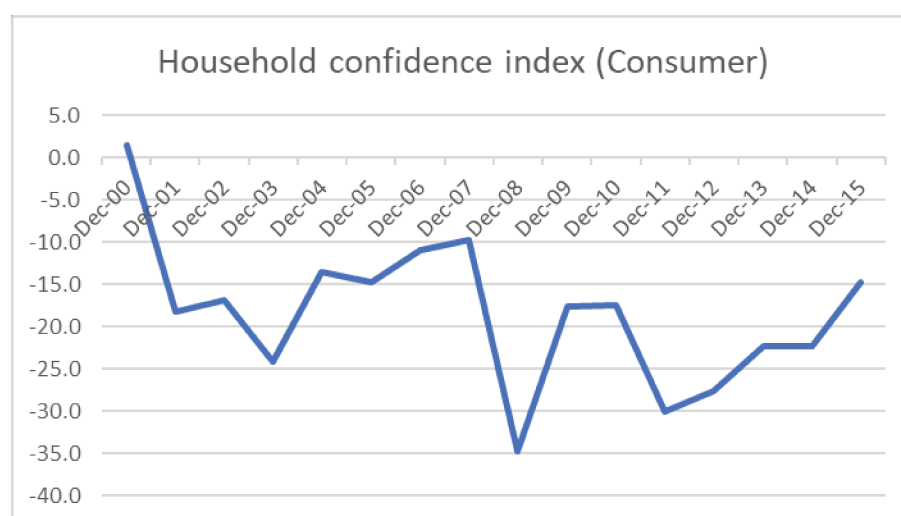
⁷⁹ The dividend payout ratio has two empirical disadvantages. On the one hand, it depends on the sign of the net profit. A firm that has a deficit but nevertheless distributes dividends has a negative distribution rate. On the other, a firm that achieves a low result but maintains its dividends from one year to the next will have a higher distribution rate. In order to address these two disadvantages, we held a dividend yield rate that presents the advantages of not eliminating negatives values.

⁸⁰ The technique and survey have been harmonized by the European Commission since the mid-1990s. The details of the study can be found at: http://ec.europa.eu/economy_finance/db_indicators/surveys.

⁸¹ We refer to the Household Confidence Index as a proxy of sentiment defined by the European Commission.

⁸² A household confidence indicator is a synthetic short-term economic indicator that assesses the level of household confidence in the economy and thus tries to predict future household consumption. It is also "a fairly significant indicator to assess the near future of economic growth".

***Figure 10. Investor Sentiment Index**



- **Overconfidence Index:** a dichotomous variable set equal to 1 if the overconfidence index (score) is greater than the median level of the overconfidence index, and 0 otherwise (see chapter II).
- **Governance variable:** governance variables include institutional ownership, board structure, and blockholders. This chapter studies different characteristics related to the structure of these properties. This mainly concerns the concentration of ownership and the nature of the shareholders (managerial ownership and institutional ownership investors).
- **Blockholders : (BLOCK)** large shareholders have more incentives to monitor the behavior and decisions of executive managers than smaller shareholders. When the extravagance of managers arises, blockholders can use additional pressure to control managers' discretionary expenses. This incentive is particularly strong for blockholder stock, which has recently been more actively involved in corporate governance (Smith, 1996). In our work, the concentration of ownership is measured by the percentage of shares held by the top three shareholders.

Institutional investors: (INS_INV) institutional investors are considered the most important investors in firm decisions, since they have the power to participate in corporate policies when they have strong capital holdings and long investment horizon terms (Hartzell and Starks, 2003; Gasper et al., 2005; Chang et al., 2016) . In addition, these shareholders play a key role in dividend policy because they can monitor the performance of companies and influence the decision-making of

managers. According to Parrino et al. (2003) and Larcker and Tayan (2011), institutional investors can vote against proposals sponsored by managers by putting forward their own measures or expressing dissatisfaction by selling their shares ("voting with their feet").

Some institutional investors only buy shares of companies that maintain a certain stability in the dividends paid. The advantage to a company of having a stable and regular dividend policy is that it is likely to attract institutional investors, increase the demand for its shares and, therefore, its market value. According to Allen et al. (2000), institutional investors (pension funds, insurance, and investment funds) prefer to receive higher dividends. Shleifer and Vishny (1997) argued that majority shareholders prefer to generate private profits from a company and reduce dividends. This divergence of interests leads us to consider the question of the nature of the influence of the shareholders on the decisions of companies with regard to dividend policy.

Institutional ownership is the ratio of shares that institutions own in the firm divided by the total number of outstanding shares.

- **Board composition:** we measured this variable (BC) by the proportion of independent directors on the board of directors. Different empirical studies⁸³ suggest that independent directors are best placed to control managers and are more likely to work for the interests of shareholders.

⁸³ Eisenberg, T., Sundgren, S., & Wells, M.T., 1998. Larger board size and decreasing firm value in small firms. *Journal of Financial Economics*, 48, 35-54.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The journal of law and Economics*, 26(2), 301-325.

Barnhart et al. (1994) Barnhart, S.W., M. W. Marr and S. Rosenstein, 1994. Firm performance and board composition: Some new evidence. *Managerial and Decision Economics*, 15, 329-340.

Tang, X., Du, J., & Hou, Q. (2013). The effectiveness of the mandatory disclosure of independent directors' opinions: Empirical evidence from China. *Journal of Accounting and Public Policy*, 32(3), 89-125.

SECTION VI. METHODOLOGY AND FINDINGS

VI.1. Methodology

We began by estimating the panel data, which are more informative than cross sections as they reflect dynamics and Granger causality across variables. Our basic specification is as follows:

$$\text{Div}_{i,t} = \beta_0 + \beta_1 \text{OVER_INDEX}_{i,t} + \beta_2 \text{CEO_OWN}_{i,t} + \beta_3 \text{CEO_DUALITY}_{i,t} + \beta_4 \text{BS}_{i,t} + \beta_5 \text{CASHFLOW}_{i,t} + \beta_6 \text{PROFITABILITY}_{i,t} + \beta_7 \text{LEV} + \beta_8 \text{SIZE}_{i,t} + \beta_9 \text{INDEXSENT} + \beta_{10} \text{INS_INV}_{i,t} + \beta_{11} \text{BLOCK}_{i,t} + \varepsilon_{i,t} \quad (1)$$

We investigated heterogeneity in the relationship between dividend payout distribution, corporate governance and irrational behavior using quantile regression methods. This method provides a more detailed picture than classic linear regression, as it focuses on the entire conditional distribution of the dependent variable, not only on its mean.

Shapiro-Wilk W-test for normal data

The Shapiro-Wilk test for normality is available when using a distribution platform to examine a continuous variable.

Test statistic:

$$W = \frac{(\sum_{i=1}^n \alpha_i x_i)^2}{\sum_{i=1}^n (x_i - \bar{x})^2} \quad x_i = i^{\text{th}} \text{ smallest value of } x; \alpha_i = \text{Shapiro-Wilk constant}; \text{ the null hypothesis}$$

is rejected if $w < w_{\alpha}$ (p-value $< \alpha$)

The null hypothesis for this test is that the data are normally distributed. The Prob < W value listed in the output is the p-value. If the chosen alpha level is 0.05 and the p-value is less than 0.05, then the null hypothesis that the data are normally distributed is rejected. If the p-value is greater than 0.05, the null hypothesis is not rejected. This study relates effective corporate governance and irrational approaches to dividend policy in firms with different levels of dividend payout and explores the possible decision-making factors that can explain the dividend payout policy.

We used quantile regression techniques to estimate the effect of an irrational approach and corporate governance on firms' dividend policy. In this chapter, we apply quantile regression to investigate the dividend distribution payout policy of French firms. General regression

methods, such as OLS or the fixed-effects estimator, focus only on the central tendency of the distribution, which does not allow for the possibility that the impact of explanatory variables can be different for different levels of dividend payout. The innovation of this study is that it investigates the impact of variables of corporate governance, managerial biases and investor biases on different distributions of firm dividend policy by using quantile regression. An additional advantage of using quantile regression is that it can mitigate some statistical problems, such as sensitivity to outliers and non-Gaussian error distribution (Barnes and Hughes, 2002). This study estimates the coefficients at 10 quantiles using the same list of governance and control variables. It was expected that different effects of the explanatory variables at the different quantiles would be reflected in the size, sign, and significance of the estimated coefficients of the different variables.

Quantile methods can be preferable to the more usual regression methods for other reasons. First, while conventional regressions spotlight average firms, quantile regression can describe the entire distribution of the dependent variable. This is a relevant feature because we are less interested in the average effects of dividend payouts in this chapter and more concerned with irrational approaches and corporate governance as evidenced by heterogeneous effects across the dividend payout distribution.

Second, the standard least-squares assumption of normally distributed errors does not hold for our data because our dependent variable (dividend payout) follows heavy-tailed distributions. Rather, quantile regression is robust to extreme observations regarding the dependent variable. The quantile regression estimator was accomplished for the analysis of cross-sectional data sets (Koenker and Bassett, 1978).

Recently, theoretical developments emerged in the application of quantile regression to panel contexts (Koenker, 2004; Canay, 2011; Galvao, 2011). In our study, we applied panel quantile regressions following Canay (2011). To better analyze the specific effect of corporate governance and irrational behavior on subsequent firm dividend payouts, we applied panel quantile regressions, which allowed us to control for time-invariant firm-specific effects. We rewrote equation (1) in a more typical and general form:

$$y_{it} = x'_{it} + u_i + \varepsilon_{it} \quad (2)$$

Where y_{it} is the dependent variable (i.e. dividend payout) and x'_{it} corresponds to the

explanatory variables (including corporate governance and irrational behavior).

Canay's (2011) panel quantile regression estimator attempted to control the problem of estimating the fixed effects u_i by considering that they are pure location shift parameters that take equal values at all values along the quantiles of dividend payout distribution. Our quantile regression method proceeded, therefore, in two steps (Canay, 2011).

The first step was to estimate the unobserved time-invariant effects u_i , which are fulfilled by using least-squares estimation (i.e. using typical fixed-effects regression) of equation [2]. Taking into account the conditional mean equation represented by (2), with $E(\varepsilon_{i,t} | x_i, u_i)$.

This conditional mean equation suggests that the firm-specific fixed effect u_i exists in the conditional mean of $y_{i,t}$.

We can estimate fixed effect \hat{u}_i as follows:

$$\hat{u}_i = E_T \left(y_{i,t} - x'_{i,t} \hat{\beta}(\theta) \right)$$

Where $\beta(\theta_\mu)$ is the vector of the coefficient estimated from the first stage conditional mean equation (which is estimated conventional least-squares "fixed-effects" panel regression), and where $\hat{\beta}(\theta_\mu)$ is a \sqrt{nT} consistent estimator of $\beta(\theta_\mu)$.

Once we had estimated the fixed effect \hat{u}_i , it was presumed to take the same values across the quantiles.

The second step of Canay's (2011) estimator includes applying the well-known cross-sectional quantile regression estimator (in line with Koenker and Basset, 1987) to a new outcome variable $\hat{y}_{i,t}$ that has been set up by transforming $y_{i,t}$ to remove the fixed effect:

$$\hat{y}_{it} = y_{it} - \hat{u}_i$$

\hat{y}_{it} is then regressed on x_{it}

The quantile regression results thus relate to the quantiles of the time-varying error term ε_{it} once the impact of the time-invariant variable \hat{u}_i has been controlled for. Therefore, we report bootstrapped standard errors (with 100 bootstrapped replications) in order to ensure more precision in our inference.

VI.2. Findings

VI.2.1. Summary Statistics

This section describes the statistical proprieties of the variables considered in this thesis. These statistics include the mean, maximum, minimum and standard deviation.

Table 25 shows the descriptive statistics for the main independent variables. The descriptive analysis is of the full sample. On average, 69.26% of the shares were held by shareholders with a stake over 5%. Not surprisingly, French firms exhibit a concentrated ownership structure. Institutional investors hold, on average, 21.65% of firm stock. The average proportion of independent directors (non-executive directors who are classified by BoardEx) is about 34.80%. With regard to the Consumer Sentiment Index (based on a household survey and reported on a monthly basis), when analysing any consumer sentiment index, it is important to determine the trend of the index over several months or years, as reported earlier in Figure 10. The average index value shows a negative response. A negative value suggests that investors were pessimistic about the economy in the near future.

Table 25. Descriptive analysis – main independent variables

Variables	Obs.	Mean	Std. dev.	Min.	Max.
PAYDIV	1920	.2736138	.2595256	0	.990563
INDEXSENT	1838	-.1835625	.0841743	-.347	.015
PROFITABILITY	1920	.028037	.118398	-.499	.731
CASHFLOW	1920	.0684926	.1934194	-.6388	.442272
LEV	1920	.27382	.2519746	.002957	1
FIRMSIZE	1920	13.38723	2.27466	9.63947	17.332
FIRMAGE	1920	3.465082	.8080645	2.01268	5.01063
OW_CEO	1920	.1540195	.2259272	0	.8445
BLOCK	1920	.6926856	.2872073	.039	1
INS_INV	1920	.2165888	.2552609	0	.9679
BC	1920	.3480334	.2383908	0	.941176
BS	1920	9.151563	4.313949	3	23

Table 26. Descriptive analysis of CEO Duality

CEO_Duality	Freq.	Percent	Cum.
0	565	29.43	29.43
1	1.355	70.57	100.00
Total	1.920	100.00	

Table 27. Descriptive analysis of Overconfidence Index

Over_INDEX	Freq.	Percent	Cum.
0	982	51.15	51.15
1	938	48.85	100.00
Total	1.920	100.00	

Table 28 presents the pairwise correlations between the variables. The results show that all the variables are significantly correlated to dividend payout policy. However, CEO_OW is insignificant. This section primarily uses the correlation matrix to identify a collinearity problem and hence will not include two highly correlated variables in the same model. It is also evident from Table 30 below that none of the correlation coefficients between the independent variables is larger than the value of 0.80. As suggested by Damodar (2004), unless correlation coefficients among regressors exceed this threshold, multicollinearity will not be a serious problem for multiple analysis.

Table 28. Pairwise correlation

	PAYDIV	Profitability	cashflow	lev	firmsize	firmage	CEO_OW	CEO_Duality	Block	INS_INV	BC	BS	Over_INDEX	indexsent
PAYDIV	1.00													
Profitability	0.17***	1.00												
Cashflow	0.21***	0.42***	1.00											
Lev	0.10***	0.08***	0.27***	1.00										
Firmsize	0.34***	0.11***	0.05**	0.15***	1.00									
Firmage	0.26***	0.09***	0.06***	0.18***	0.40***	1.00								
CEO_OW	-0.02	0.05**	0.05**	-0.14***	-0.37***	-0.07***	1.00							
CEO_Duality	-0.06**	-0.05**	-0.02	-0.01	-0.09***	-0.19***	0.24***	1.00						
BLOCK	-0.15***	-0.02	-0.09***	-0.10***	-0.23***	-0.08***	0.30***	-0.06***	1.00					
INS_INV	0.11***	-0.00	-0.02	0.08***	0.30***	0.12***	-0.23***	0.05**	-0.23***	1.00				
BC	0.14***	0.04*	0.02	0.09***	0.40***	0.34***	-0.28***	-0.17***	-0.23***	0.28***	1.00			
BS	0.31***	0.06***	0.12***	0.29***	0.69***	0.40***	-0.39***	-0.07***	-0.31***	0.27***	0.32***	1.00		
OVER_index	-0.15***	-0.07***	-0.05**	-0.39***	-0.53***	-0.31***	0.20***	0.08***	0.11***	-0.16***	-0.23***	-0.40***	1.00	
Indexsent	-0.06***	-0.00	0.02	0.01	-0.07***	-0.10***	0.00	0.00	0.04*	-0.03	-0.10***	-0.05**	0.14***	1.00

VI.2.2. Empirical Results

In order to test our hypothesis, we first estimated Eq. (1) by applying a panel approach. We then took account of unobserved effects through the use of common estimation methods for panel data, such as fixed-effects (FE) and random-effects (RE). A Hausman test was conducted to differentiate between FE and RE approaches. We found that the null hypothesis of the test could not be accepted at any conventional levels of significance (Chi-sq (11)=24.73; p-value=0.001). Therefore, we employed the FE approach to control for time-invariant unobserved characteristics across firms.

Table 29. Regression payout dividend, irrational biases and firm characteristics

VARIABLES	PAYDIV
OVER_INDEX	0.0415***
	(0.0122)
INDEX SENT	-0.0968*
	(0.0558)
PROFITABILITY	-0.0875
	(0.0563)
CASHFLOW	0.0813**
	(0.0338)
LEV	-0.146***
	(0.0431)
FIRMSIZE	0.0187**
	(0.00949)
FIRMAGE	0.0850***
	(0.0307)
CEO_OWN	0.184***
	(0.0598)
CEO_DUALITY	-0.0188
	(0.0192)
BLOCK	0.0249
	(0.0348)
INS_INV	0.0279
	(0.0381)
BC	0.0291
	(0.0380)
BS	0.00166
	(0.00294)
Constant	-0.337***
	(0.122)
Observations	1,920
Number of id	120
R-squared	0.053

Table 29 presents the results obtained from the FE (within-groups estimator) method. Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***) levels. The t-statistics of the FE estimator are shown in parentheses and based on robust standard errors corrected for potential heteroskedasticity and autocorrelation within each firm.

Interpretation of the panel data

Table 29 presents the fixed-effect estimates. The FE results suggest the fixed-effect estimates. The FE results suggest that the overconfidence index is significant at 1% this result support our general decisions or findings that dividend payout is affected by managerial overconfidence in French context.(Wu and Liu (2011) and Anouar (2013))

Additionally, our results confirm that sentiment has a significant effect on dividend payout over the period and that sentiment is a significant proxy on dividend policy. Many studies have documented the causality between market sentiment and stock returns (Brown & Cliff, 2004; Baker & Wurgler, 2006; Baker & Wurgler, 2007; Schmeling, 2009; Da et al., 2015; A. Salhin et al (2016)). Indeed, research on behavioural finance prove that investor sentiment affects stock prices (Baker and Wurgler (2006; Baker, Wurgler, & Yuan, 2012; Da, Engelberg, & Gao, 2015)) but researchers still continue to debate on sentiment proxies and on whether Market sentiment really affect corporate decision such as dividend policy. In our study we have used the consumer confidence index (Household confidence index) which is supposed to hold information's that could predict future market environments such as household spending, total personal consumption growth and expenditures on consumer durables (Carroll, Fuhrer, & Wilcox, 1994; Bram & Ludvigson, 1998; Throop, 1992). while blockholders, independent directors and institutional investors are statistically insignificant.

The fixed effect results show that investor sentiment negatively affects the dividend yield. Overconfidence positively affects the dividend yield. This is a general assumption and does not capture the sequential effect of the dividend yield on irrationality. To correct this problem, it is important to make use of quantile regression.

The use of quantile regressions provide a richer description than linear regressions, since we can study the conditional distribution set of our variable of interest and not just its mean. This method makes it possible to implement the impact of dividend yield on the sequence

differences from the smallest to the largest . This non-parametric approach is not subject to any normal law (the higher the yield, the greater the impact). The FE estimator focuses only on the central tendency of the distribution, and does not show the impact of the explanatory variables on corporate dividend policy for high and low dividend payout firms. Therefore, this study employed the conditional quantile estimates reported in Table 30.

Table 30. Fixed-effects quantile regression estimates for dividend payout and irrational approaches (100 bootstrapped replications)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	q10	q20	q30	q40	q50	q60	q70	q80	q90
INDEXSENT	0.0000	0.0043	-0.0563	-0.0435	-0.0556	-0.0712	-0.1103	-0.1277	-0.1761
	(0.0080)	(0.0372)	(0.0501)	(0.0655)	(0.0650)	(0.0766)	(0.0879)	(0.0908)	(0.1813)
OVER_INDEX	0.0000	0.0172	0.0343***	0.0196	0.0354**	0.0401**	0.0323	0.0609***	0.0304
	(0.0059)	(0.0106)	(0.0117)	(0.0146)	(0.0152)	(0.0168)	(0.0207)	(0.0191)	(0.0351)
PROFITABILITY	0.0000	0.0480**	0.0842***	0.1114***	0.1258***	0.1313***	0.1797***	0.2146***	0.1915
	(0.0056)	(0.0223)	(0.0289)	(0.0329)	(0.0437)	(0.0459)	(0.0469)	(0.0637)	(0.1333)
CASHFLOW	0.0000	0.0661***	0.0750***	0.0905***	0.1013***	0.1236***	0.1717***	0.2070***	0.3456***
	(0.0157)	(0.0182)	(0.0218)	(0.0239)	(0.0258)	(0.0293)	(0.0296)	(0.0426)	(0.0978)
LEV	0.0000	-0.0259	-0.0091	-0.0217	0.0365	0.0318	0.0269	0.0853**	0.0726
	(0.0039)	(0.0221)	(0.0262)	(0.0290)	(0.0229)	(0.0267)	(0.0371)	(0.0431)	(0.0706)
FIRMSIZE	0.0000	0.0141***	0.0189***	0.0212***	0.0295***	0.0347***	0.0362***	0.0471***	0.0687***
	(0.0020)	(0.0024)	(0.0040)	(0.0046)	(0.0040)	(0.0038)	(0.0051)	(0.0057)	(0.0086)
FIRIMAGE	0.0000	0.0379***	0.0372***	0.0450***	0.0479***	0.0508***	0.0475***	0.0508***	0.0049
	(0.0056)	(0.0062)	(0.0087)	(0.0084)	(0.0097)	(0.0096)	(0.0138)	(0.0167)	(0.0254)
CEO_OWN	0.0000	0.0727***	0.0965***	0.1221***	0.1401***	0.1954***	0.2296***	0.2872***	0.4696***
	(0.0135)	(0.0171)	(0.0249)	(0.0274)	(0.0355)	(0.0469)	(0.0493)	(0.0612)	(0.0968)
CEO_DUALITY	0.0000	-0.0294**	-0.0537***	-0.0570***	-0.0584***	-0.0397***	-0.0246	0.0020	0.0230
	(0.0053)	(0.0142)	(0.0152)	(0.0127)	(0.0119)	(0.0146)	(0.0167)	(0.0216)	(0.0341)
BLOCK	0.0000	-0.0691***	-0.0852***	-0.0883***	-0.0826***	-0.0949***	-0.0860***	-0.0817**	-0.1000**
	(0.0078)	(0.0207)	(0.0235)	(0.0230)	(0.0251)	(0.0254)	(0.0266)	(0.0353)	(0.0440)
INS_INV	0.0000	-0.0428**	-0.0337	-0.0003	0.0322	0.0677**	0.0909***	0.0747*	-0.0084
	(0.0062)	(0.0194)	(0.0277)	(0.0320)	(0.0313)	(0.0343)	(0.0319)	(0.0424)	(0.0598)
BC	0.0000	-0.0121	-0.0233	-0.0267	-0.0598**	-0.0765**	-0.0628*	-0.0479	0.0214
	(0.0051)	(0.0157)	(0.0200)	(0.0224)	(0.0258)	(0.0319)	(0.0324)	(0.0405)	(0.0714)
BS	0.0000	0.0085***	0.0139***	0.0135***	0.0107***	0.0094***	0.0069**	0.0060**	-0.0005
	(0.0015)	(0.0016)	(0.0026)	(0.0023)	(0.0020)	(0.0022)	(0.0030)	(0.0028)	(0.0043)
Constant	0.0000	-0.2612***	-0.3150***	-0.3094***	-0.3816***	-0.4144***	-0.3783***	-0.5113***	-0.4634***
	(0.0464)	(0.0417)	(0.0473)	(0.0572)	(0.0476)	(0.0552)	(0.0642)	(0.0713)	(0.1604)
Observations	1,920	1,920	1,920	1,920	1,920	1,920	1,920	1,920	1,920

Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***) levels.

Managerial overconfidence index coefficients are positive and significant: 0.034 (p-value<0.01); 0.035 (p-value<0.05); 0.040 (p-value<0.05) and 0.060 (p-value<0.1), respectively, at the 30%, 50%, 60% and 80% dividend payout quantiles. The higher the overconfidence index, the higher the dividend yield, and this relationship is more important in the higher dividend yield quantiles. This result suggests that French managerial overconfidence leads to increases in dividend payout. However, when the economic outlook⁸⁴ of France is bleak and uncertain, French managers are confident about the future of their cash flow and prefer to pay dividends to their shareholders. According to Table 30, the sentiment index is insignificant across different dividend payout quantiles. Indeed, several studies have used consumer sentiment surveys (Otoo, 1999; Fisher and Statman, 2003 and Salaber and Zalewska, 2016). Nevertheless, their results didn't provide any evidence for the association between consumer confidence and market firm values.

Firm dividend policy is likely to be affected by endogeneity between corporate governance (ownership concentration, etc.) and the irrational behavior of investors as well as CEOs. Problems of endogeneity may be alleviated by allowing for time lags between variables and by controlling for the potentially confounding effects of time-invariant effects, but endogeneity cannot be completely ruled out in our case (Nichols, 2007). Furthermore, the severity of endogeneity may differ for small and large firms, bearing in mind the possible endogeneity between dividend policy and corporate governance and irrationality. Therefore, we cannot claim to have identified causal effects but instead merely seek to report interesting associations regarding the relationship between governance, firm characteristics, behavior approaches and dividend policy for firms with different payout policies.

Table 30 presents our regression results for the following quantiles: 0.10, 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80 and 0.90. Quantile regression coefficients can be interpreted as the marginal change in y at the conditional quantile caused by marginal change in a particular regressor. As will be seen, we obtained different results depending on the quantiles.

⁸⁴ The annual evolution of the gross domestic product (GDP) by volume in France from 2000 to 2017. France's real GDP reached a peak in 2000, with 3.9% growth, and suffered a recession in 2009 (-2.9%). GDP rose slightly in subsequent years (1.1% in 2015). More details can be found at: <https://fr.statista.com>.

Our main variable of interest was the interaction term dividend payout, which captures the effect of a high rate of distributing dividends over and above the main effect of corporate governance and irrational behavior for all firms.

Our findings are reported in Table 30. First, the coefficients of CEO stock ownership are 0.072 (p-value<0.001); 0.096 (p-value<0.001); 0.122 (p-value<0.001); 0.140 (p-value<0.001); 0.195 (p-value<0.001); 0.229 (p-value<0.001); 0.287 (p-value<0.001); and 0.469 (p-value<0.001), respectively, for the 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80 and 0.90 dividend payout distribution. These coefficients are significantly positive at the conventional level. This suggests that higher dividend payouts are associated with high CEO stock ownership at all levels of dividend rate distribution.

Therefore, we find that the coefficient of duality is significantly negative for five levels of quantile: -0.029 (p-value<0.05); -0.053 (p-value<0.01); -0.057 (p-value<0.01); -0.058 (p-value<0.01); and -0.039 (p-value<0.01), respectively, at 0.20, 0.30, 0.40, 0.50 and 0.60. This suggests that quite high dividend payouts are negatively associated with CEO-chair duality. The coefficient of institutional investors is -0.042 (p-value<0.05) and is negative and significant at the 20% quantile and positive and significant at the 60, 70 and 80% quantiles: 0.067 (p-value<0.05); 0.090 (p-value<0.01) and 0.074 (p-value<0.1), respectively.

We now discuss our findings regarding board size. The existing literature contains conflicting theories and evidence regarding whether larger or smaller boards of directors are more effective. The coefficients on board size are 0.008 (p-value<0.01); 0.013 (p-value<0.01); 0.013 (p-value<0.01); 0.010 (p-value<0.01); 0.009 (p-value<0.01); 0.006 (p-value<0.05); and 0.006 (p-value<0.05), respectively, for 0.20, 0.30, 0.40, 0.50, 0.60, 0.70 and 0.80 regarding distributing dividend payouts.

The coefficients for firm size are 0.014 (p-value<0.01); 0.018 (p-value<0.01); 0.021 (p-value<0.01); 0.029 (p-value<0.01); 0.034 (p-value<0.01); 0.034 (p-value<0.01); 0.036 (p-value<0.01); 0.047 (p-value<0.01); and 0.068 (p-value<0.01); these coefficients are all positive and significant. The results suggest that high dividend payout distribution is associated with greater firm size at all levels of payout rate distribution.

According to Jensen (1986), cash flow is a major determinant of dividend payouts. Cash flow is an important determinant of firm value, as well as dividend policy (Dennis and Sibilkov, 2010; Yeo (2018)). Moreover, Graham et al. (2005) provide evidence that managers regard cash flow as the second most important indicator for the market to evaluate a firm's performance but consider CFO more important than earnings when a firm is nearing financial distress. Therefore, investors pay more attention to the amount of cash flow, and the cash flow surplus is positively associated with the stock return (DeFond and Hung, 2003). Given the significant decline in average dividend payout ratios over recent years (Fatemi and Bildik, 2012), stock price is particularly positively correlated with dividend increases (Fracassi, 2008). Table 30 reports that the coefficients of cash flow are positive and significant for all levels of the different quantiles of dividend distribution. These coefficients tend to increase slightly as the dividend payout rises.

The results indicate that there is a positive and significant relationship between leverage and dividend payout ratio at the 80th quantile. Signaling models support the prediction of a positive association between leverage and dividend yield, since high-quality companies ought to opt for both high leverage and high dividends.

Profitability coefficients are positive and significant for seven levels of quantile: 0.048 (p-value<0.05); 0.084 (p-value<0.01); 0.111 (p-value<0.01); 0.125 (p-value<0.01); 0.131 (p-value<0.01); 0.179 (p-value<0.01); and 0.214 (p-value<0.01), respectively, for 0.20, 0.30, 0.40, 0.50, 0.60, 0.7, and 0.80. This suggests that dividend policy is influenced by profitability, and that these coefficients tend to increase to a certain degree as the dividend payout rises.

Firm age coefficients are 0.037 (p-value<0.01); 0.037 (p-value<0.01); 0.045 (p-value<0.01); 0.047 (p-value<0.01); 0.050 (p-value<0.01); 0.047 (p-value<0.01); and 0.050 (p-value<0.01); these coefficients are all positive and significant. The results suggest that high payout rate distribution is associated with higher firm age. This suggests that older and well-established firms tend to pay more dividend payouts to their shareholders. Grullon et al. (2002) suggest that early-stage companies have growth opportunities, so a large amount of their funds are usually invested in high-growth projects and consequently pay lower dividends (Myers and Majluf, 1984). Mature companies that do not have sufficient growth opportunities are more likely to pay high dividends.

Blockholder coefficients are -0.069 (p-value<0.01); -0.085 (p-value<0.01); -0.088 (p-value<0.01); -0.082 (p-value<0.01); -0.094 (p-value<0.01); -0.086 (p-value<0.01); -0.081 (p-value<0.05); and -0.100 (p-value<0.05); these coefficients are negative and significant. We find a large decrease in the level of dividend payments. We could explain this result as a way to control private benefit through strong blockholders. Therefore, corporate dividend payouts are considered a moderating mechanism: if dividends are not distributed to shareholders, the benefit may be diverted by insiders for personal use. The results imply that concentrated ownership leads to a preference for retained income. The negative relationship reflects that dividends are not necessary when blockholder ownership is high and management is tightly controlled.

Ind_ca coefficients are -0.0598 (p-value<0.05); -0.0765 (p-value<0.05); and -0.0628 (p-value<0.1) (respectively, q=50; q=60; and q=70). The negative coefficients for independent directors suggest that firms with a large representation of independent board members pay lower dividends. This result suggests that board independence and dividend policy play a similar role in governance, suggesting that having a large independent board leads to lower dividend payout. This negative relationship supports the substitutional effect of the suggestion that greater board independence leads to lower dividends, assuming that both dividend policy and board independence increase monitoring and effectiveness and improve corporate governance. As a result, shareholders are better secured and agency cost is decreased, since directors have fewer opportunities to engage in suboptimal behavior due to board directors' monitoring and discipline (Easterbook, 1984).

Conclusion

This last chapter focuses on the importance of the irrationality of individuals and its effect on dividend distribution policy, some work has also highlighted the importance of governance in the supervision of executive's directors. For most executives and investors, firms distribute the dividend because they implicitly assume that dividends play a driving role in the overall remuneration of shareholders (dividends and capital gains).

In this chapter have tried to take into account several elements : governance as well as market sentiment and overconfidence of managers in order to explain the level of dividend distribution.

Nevertheless, we have opted for two econometric approaches: the fixed-effect estimates and quantiles regressions. The results obtained with the first method show the existence of the significant impact of the irrationality and its impact on the dividend distribution. The second technique exploits the relationship between different levels of dividend distribution and market sentiment, overconfidence index and governance. The results we have achieved show that the determinant of dividend differ based on firm's dividend level. Additionally, the findings show that overconfidence index, CEO ownership, CEO duality ,Blockholders, Board size, institutional investor and board composition are significant at diffetent payout level. Which is consistent with previous studies (Myers and Majluf, 1984. Hu and Kumar, 2004; Al-Najjar and Hussainey, 2009; Ntim, 2011. Shleifer and Vishny, 1986 among others) While, consumer sentiment index measured by the household confidence index is insignificant.

The results of this study are useful for identifying dividend stock payer. In addition, the results of this study would be useful to managers in dealing with their financial situation, which would then help them to retain and attract potential investors.

GENERAL CONCLUSION

Theoretical and empirical research has attempted to explain dividend policy. However, there is no consensus on the factors that influence dividend payment. Firms have been distributing dividends to shareholders for a long time, yet the motivation for this corporate decision is still being debated among the academic community.

Why does the paying of dividends remain a puzzle?

Black (1976), and authors since, could not find any conceivable answers to why firms pay cash dividends. As Black (1976 p.5) stated, “the harder we look at the dividends picture, the more it seems like a puzzle, with pieces that just don’t fit together”⁸⁵.

The dividend decision is a crucial one for financial managers and is also considered polysemy, since it may reflect different meanings. On the one hand, firms distribute dividends to reward shareholders and to encourage other investors to buy new issues at high prices. On the other, not paying a dividend to shareholders can be considered a signal that the company is very confident about the future and that the corporation has attracted investment. A dividend is a double-edged weapon in the way that it can have two completely different meanings. The meaning depends in particular on investors’ and managers’ perceptions.

Despite numerous attempts, dividends remain an unsolved puzzle. The reasons dividends are still considered a puzzle can be attributed to psychological factors, tax-related matters and information asymmetry. Thus, there are implications for future research.

Most of the existing financial literature is based on the implicit assumption of an efficient financial market. However, research in behavioural corporate finance is replacing the traditional assumption of rationality with behavioural foundations that are more evident.

Our thesis is part of this research perspective, is intended as a contribution to the issue of elements that serve as an explanatory principle for dividend distribution mechanisms.

⁸⁵ Black, F. (1976). The Dividend Puzzle, The harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don’t fit together, “*The Journal of Portfolio Management*, 2(2)

The study was based on a sample of French firms. Such a choice was motivated by the intrinsic characteristics of French companies, both at the managerial level and at the strategic and regulatory level. Various objectives were assigned in this research.

The first chapter provided a fresh approach to investigation dividend policy and new proof of catering dividend policy across sectors. In the first chapter of the thesis, we highlight a set of behavioral explanations for investor preference for dividends.

This research discusses whether or not sector-specific sentiment will shed a light on the probability of paying dividend. Contrary to Baker's conclusions, we find no proof for the catering hypothesis within the French market. In fact, investor sentiment is insignificant determinant of dividend policy. The results are in line with Osobov and Denis (2008) and Von Eije and Megginson (2008) and, therefore, this finding is inconsistent with Anouar and Aubert (2017).

To better scrutinize the consequences of those issues, we have tested if small and young corporation are more predisposed to sentiment (Baker and Wurgler, 2007). Therefore, we have introduced an interaction term between sentiment, firm size and firm age. The results showed that the coefficients of the interaction term of sentiment in small and young corporations (PDinSmallYoung) are similar and not significant.

This finding could be due to the homogeneity of the sample in terms of size and age and by the fact that size of a company depends a lot on its growth opportunities than on its age. Indeed, younger corporations might have larger sizes.

We next studied whether or not sectors divided through firm age and size would provide a higher Enlightenment of dividend policy and sentiment in France.

The results show that French firm operating in industry cater to investors' time-varying demand for dividends. Chen, Bennett and Zheng (2006) show that industry-based investment strategies are more real and efficient than country base strategy. Moreover, in the same vein, Marcelo, Quiros and Martins (2013) find that diversification founded on sector level leads to more effective portfolios. A. Salhin et al (2016).

The regression analysis confirm that sector specific sentiment is a suitable proxy for testing dividend catering theory. Our hypothesis is mainly confirmed for industrial sector. This finding could be explained by the fact that such industry is consider as mature company with heavy investments, they don't have a significant high leverage and need new capital. That why such sector needs to attract and cater for investors demand and seek to develop shareholder loyalty.

The second study consist on examining the effects of excess confidence on dividend distribution. In this chapter, we focus on irrational managerial behavior in explaining corporate decisions, especially dividend policy. The existing literature has investigated the association of CEO overconfidence with financial and investment decisions (Heaton, 2002; Malmendier and Tate 2005a, 2005b, 2008; Malmendier et al., 2011). However, the implications on dividends and CEO overconfidence remain unresolved and little understood (Wu and Liu, 2011; Cordeiro, 2009; Deshmukh et al., 2013).

To provide answers to this problematic, we have opted for GMM model approach. Our method scrutinizes numerous measures of overconfidence in France. This ensures the robustness of our findings. In line with our second hypothesis H1b. The main result displays that overconfident manager leads to raise the payout ratio compared with rational peers, which is consistent with Wu and Liu (2011) and Juhel and Anouar (2014).

In the following part of our analysis, we apply the Quantitative Comparative Analysis fuzzy set to study which combinations of causal conditions overconfident CEOs, cashflow, profitability, ownership, duality and Board size are most likely to produce dividend payments. The finding recommends four different theoretical pathways or solutions to encourage the dividend payment:

- Solution 1: excludes CEO overconfidence and profitability, requires cash flow, board size, CEO ownership and duality in a low proportion.
- Solution 2: includes only the presence of cash flow, profitability, the absence of CEO duality and CEO ownership, omitting all other conditions.

- Solution 3: shows that the presence of high cash flow, large board size and CEO overconfidence combined with the absence of CEO duality leads to dividend payments.
- Solution 4: includes the presence of profitability and board size and the absence of CEO duality.

According to our third solution, the combination shows that a firm with high cashflow ratio, large board size, absence of duality and managed by overconfident CEO lead to pay dividend. This configuration is in line with Wu and Liu (2011) who showed that overconfident manger pays more dividend.

The third chapter deals with the relationship between individual irrationality of investors and managers, corporate governance and dividend policy in France. We shed light on the impact of irrational approaches by taking account of both managerial overconfidence and market sentiment. This idea has also not been considered so far in the existing literature. we intend to provide more evidence to better understand earnings distribution through the approach of behavioral finance in the case of the French market.

To verify the feasibility of such assumption, we have used two categories of sentiment : The Household confidence index and overconfidence index which have both significant coefficient but inverse effects on distribution dividend French policy.

We examine the impact of irrational behavior on dividend policy in France using quantile regression methods. This methodology generates a multitude of coefficient estimates with each set of estimates that describe the relationship between the dependent and explanatory variables. Quantile regression provides greater detail and a more complete picture than the ordinary least squares (OLS) methodology usually used in previous studies.

The main results according to our first analysis (Fixed effect estimator) show that excess confidence has a positive and significant coefficient, while the sentiment index is negatively correlated to the dividend distribution policy. Pessimistic prospects indicate an investment aversion and therefore encourage managers to distribute dividends in order to retain shareholders and offer them other investment alternatives. Whereas, blockholders, independent directors and institutional investors are statistically insignificant. Indeed, this

result can be explained by the weakness of the governance systems of French companies since the majority of large companies are under family control, which can lead to confusion of legal and economic power.

Nevertheless, the FE estimator focuses only on the central tendency of the distribution and does not show the impact of the explanatory variables on corporate dividend policy for high and low dividend payout firms. Therefore, this research employed the conditional quantile estimates in order to better scrutinize this issue.

Our main results regarding to our second analysis (quantile regression) show that managerial overconfidence index coefficients are positive and significant, respectively, at the 30%, 50%, 60% and 80% dividend payout quantiles. This result recommends that French managerial overconfidence leads to increases in dividend payout. However, the sentiment index is insignificant across different dividend payout quantiles.

The coefficient of institutional investors is negative and significant at the 20% quantile and positive and significant at the 60, 70 and 80% quantiles, respectively. This result is in line with the conclusions regarding the logic of institutional investor investments, the latter operate only through large investments they are attracted by the profit since generally these investors do not keep their participation for long.

The results show that blockholder are negative and significant. This finding suggests that the presence of strong blockholder leads to a preference for retaining income. This relationship indicate that dividend distribution is not considered to be a central tool when management is highly controlled.

The coefficients for independent director are negatives and significant. This finding suggests that a firm with a large board independence would pay few dividends to their shareholders since dividend and board independence rise monitoring and effectiveness and improve corporate governance.

The findings of this thesis are consistent with previous research that makes market sentiment and managerial overconfidence decisive in determining dividend policy.

Managerial implications: The findings of this research provide several managerial implications. First, Managers will benefit from understanding the motivation behind investor sentiment, as well as the importance of sentiment specific sector on dividend distribution. This research provides a new evidence in the impact of investor sentiment on sector. Second, investors should take into account, the overconfidence of managers. Consequently, investors who can distinguish between overconfident and rational managers will be better able to understand corporate decisions and firm value. The direct implications for researchers lead to better understanding the importance and the consequence of psychological factors in determining firms' dividends policies.

In general, the findings in this thesis could provide an additional contribution to the growing literature on behavioral corporate finance.

Despite these contributions mentioned above, our research is not without limits.

Limits and future directions of research

The main limitations of this research can be presented according to theoretical or methodological dimension. On the theoretical level, we could Divide the sample according to the form (family or shareholder, state) and the type of control (majority, minority and undetermined) Methodologically, sentiment effects could be studied through impulsional functions to measure their shock (amplitude) Knowing that Orientals are known to be more emotional than Westerners, it would be important to conduct a study in a Middle Eastern country and the Arab world;

Research would become more relevant by taking into account the PESTEL model (economic, sociological, technological, environmental and legal policy). If we introduce economic and extra-economic shocks

REFERENCES

- A. M. Spence. "Job Market Signaling," Quarterly Journal of Economics, 87 (August 1973), 355-79. . Market Signaling (Cambridge: Harvard University Press, 1974a). "Competitive and Optimal Responses to Signals: Analysis of Efficiency and Distribution," Journal of Economic Theory, (March 1974b).
- Abor, J., & Fiador, V. (2013). Does corporate governance explain dividend policy in Sub-Saharan Africa?. International Journal of Law and Management, 55(3), 201-225.
- Adam, T. R., Fernando, C. S., & Golubeva, E. (2015). Managerial overconfidence and corporate risk management. Journal of Banking & Finance, 60, 195-208.
- Adams, R. B., & Ferreira, D. (2007). « A theory of friendly boards». The Journal of Finance, 62(1), p. 217-250.
- Adams, R.B., Almeida, H., Ferreira, D., (2005). « Powerful CEOs and their impact on corporate performance». Review of Financial Studies 18, p.1403–1432.
- Adjaoud, F., & Ben-Amar, W. (2010). « Corporate governance and dividend policy: shareholders' protection or expropriation? ». Journal of business finance & accounting, 37(5-6), p.648-667.
- Agbodjo, S., & Martinez, I. (2012, May). « La création de valeur actionnariale est-elle pertinente pour la prise de décision d'investissement? Une étude empirique du SBF250 par secteurs d'activité ». In Comptabilités et Innovation (pp. cd-rom).
- Agrawal, A., & Jayaraman, N. (1994). « The dividend policies of all-equity firms: A direct test of the free cash flow theory». Managerial and Decision Economics, 15(2), 139-148.
- Agyei, S. K., & Marfo-Yiadom, E. (2011). « Determinants of dividend policy of banks in Ghana». International Research Journal of Finance and Economics, 61(61), 99-108.
- Ahmed, A. S., & Duellman, S. (2013). « Managerial overconfidence and accounting conservatism ». Journal of Accounting Research, 51(1), p.1-30.
- Aivazian, V., Booth, L., & Cleary, S. (2003). Dividend policy and the organization of capital markets. Journal of multinational financial management, 13(2), 101-121.
- Al Shabibi, B. K., & Ramesh, G. (2011). An empirical study on the determinants of dividend policy in the UK. International Research Journal of Finance and Economics, 80, 105-120.
- Albouy et al. (2010), « The Perception of Dividends by French Managers: An International Comparison », Working paper, Université de Grenoble 2.
- Alexandre, H., & Paquerot, M. (2000). « Efficacité des structures de contrôle et enracinement des dirigeants ». Finance Contrôle Stratégie, 3(2), p.5-29.
- Alghazali, A., Fairchild, R., & Guney, Y. (2015). « Managerial Overconfidence, Payout Policy, and Corporate Governance: Evidence from UK Companies. World Academy of Science», Engineering and Technology, International Journal of Economics and Management Engineering, 2(11)

- Alicke, Mark D., 1985, Global self-evaluation as determined by the desirability and controllability of trait adjectives, *Journal of Personality and Social Psychology* 49, 1621–1630.
- Allen F. & Michaely R. (2003), « Payout Policy », *Handbook of the Economics of Finance* 1: 337-429.
- Allen, F., & Gale, D. (2000). Financial contagion. *Journal of political economy*, 108(1), 1-33.
- Allen, F., Bernardo, A., & Welch, I. (2000). A theory of dividends based on tax clienteles. *Journal of Finance*, 55, 2499–2536.
- Alli, K. L., Khan, A. Q., & Ramirez, G. G. (1993). Determinants of corporate dividend policy: A factorial analysis. *Financial Review*, 28(4), 523-547.
- Al-Malkawi, H. A. (2007). «Determinants of corporate dividend policy in Jordan: an application of the Tobit model». *Journal of Economic and Administrative Sciences*, 23(2), 44-70.
- Almeida, H., Campello, M., & Weisbach, M. S. (2004). The cash flow sensitivity of cash. *The Journal of Finance*, 59(4), 1777-1804.
- Al-Najjar, B., & Hussainey, K. (2009). The association between dividend payout and outside directorships. *Journal of Applied Accounting Research*, 10(1), 4-19.
- Alutto, J. A., & Hrebiniak, L. G. (1975). Research on commitment to employing organizations: Preliminary findings on a study of managers graduating from engineering and MBA programs. In *Academy of Management meetings*, New Orleans.
- Ambarish, R., John, K., & Williams, J. (1987). Efficient signalling with dividends and investments. *The Journal of Finance*, 42(2), 321-343.
- Amidu, M. (2007). « How does dividend policy affect performance of the firm on Ghana stock Exchange». *Investment Management and Financial Innovations*, 4(2), p.103-112.
- Amidu, M., & Abor, J. (2006). Determinants of dividend payout ratios in Ghana. *The journal of risk finance*, 7(2), 136-145.
- Anderson, C. R., & Paine, F. T. (1975). Managerial perceptions and strategic behavior. *Academy of Management journal*, 18(4), 811-823.
- Anderson, C. R., & Paine, F. T. (1975). Managerial perceptions and strategic behavior. *Academy of Management journal*, 18(4), 811-823.
- Anouar, K. (2013). L'incitation des dirigeants à distribuer de la valeur créée est-elle liée à une prime de dividende positive?
- Anouar, K., & Aubert, N. (2017). Does the catering theory of dividend apply to the French listed firms?. *Bankers Markets & Investors: an academic & professional review*, (145).
- Anouar, K., & Juhel, J. C. Excès de confiance des dirigeants et politique du dividende.

(2013)

- Anouar, K., & Juhel, J. C. Excès de confiance des dirigeants et politique du dividende. (2015)
- Aoki, M. (1984). The co-operative game theory of the firm. Oxford university press.
- Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The review of economic studies, 58(2), 277-297.
- Ariely, D., Loewenstein, G., & Prelec, D. (2003). "Coherent arbitrariness": Stable demand curves without stable preferences. The Quarterly Journal of Economics, 118(1), 73-106.
- Armstrong, V. S., & Hoffmeister, J. R. (2012). Multiple clientele influence on ex-dividend day price performance. Journal of Business Research, 65(9), 1235-1242.
- Arshad, Z., Akram, Y., Amjad, M., & Usman, M. (2013). Ownership structure and dividend policy. Interdisciplinary Journal of Contemporary Research in Business, 5(3), 378-401.
- Asem, E., & Alam, S. (2015). Market movements and the excess cash theory. The Quarterly Review of Economics and Finance, 55, 140-149.
- Asghar, M., Shah, S. Z. A., Hamid, K., & Suleman, M. T. (2011). Impact of dividend policy on stock price risk: Empirical evidence from equity market of Pakistan. Far East Journal of Psychology and Business, 4(1), 45-52.
- Ashton, D. J. (1991). Corporate financial policy: American analytics and UK taxation. Journal of Business Finance & Accounting, 18(4), 465-482.
- Ausubel, L. M. (1999). Adverse selection in the credit card market. working paper, University of Maryland.
- Azouzi, M. A., & Jarboui, A. (2012). «CEO emotional bias and capital structure choice. Bayesian network method». Business Excellence and Management, 2(2), p. 47-70.
- Azouzi, M. A., & Jarboui, A. (2014). CEO Emotional Intelligence and Firms' Financial Policies. Bayesian Network Method. Contemporary Economics, 8(1), 5-24.
- Azouzi, M. A., Ezzi, F., & Jarboui, A. (2016). Does CEO Emotional Intelligence Affect the Performance of the Company's Research and Development. Applied Finance Letters, 5(1), 38-51.
- Baker HK, & Smith DM (2005). Dividend policy and follow-the-leader behavior. American University, Kogod School of Business, Working Paper.
- Baker HK, Farrelly GE, Edleman RB (1985). A survey of management views on dividend policy. Financ. Manage. 14(3): 1007-1034.
- Baker M., & Wurgler J. (2004a), « A Catering Theory Of Dividends », The Journal of Finance 59(3): 1125-1165.
- Baker M., & Wurgler J. (2004b), « Appearing And Disappearing Dividends: The link to Catering incentives », Journal of financial economics 73(2): 271-288.

- Baker, H K, "The Relationship between Industry Classification and Dividend Policy", *Southern Business Review*, (Spring 1988), pp. 1-8.
- Baker, H. K. (Ed.). (2009). *Dividends and dividend policy* (Vol. 1). John Wiley & Sons.
- Baker, H. K., & Kapoor, S. (2015). Dividend policy in India: new survey evidence. *Managerial Finance*, 41(2), 182-204.
- Baker, H. K., & Powell, G. E. (2000). Determinants of corporate dividend policy: a survey of NYSE firms. *Financial Practice and education*, 10, 29-40.
- Baker, H. K., & Powell, G. E. (2000). Determinants of corporate dividend policy: a survey of NYSE firms. *Financial Practice and education*, 10, 29-40.
- Baker, H. K., Veit, E. T., & Powell, G. E. (2001). Factors influencing dividend policy decisions of Nasdaq firms. *Financial Review*, 36(3), 19-38.
- Baker, H., Saadi, S., Dutta, S., & Gandhi, D. (2007). The perception of dividends by Canadian managers: new survey evidence. *International Journal of Managerial Finance*, 3(1), 70-91.
- Baker, M., & Wurgler, J. (2000). The equity share in new issues and aggregate stock returns. *the Journal of Finance*, 55(5), 2219-2257.
- Baker, M., & Wurgler, J. (2002). Why are dividends disappearing? An empirical analysis.
- Baker, M., & Wurgler, J. (2007). Investor sentiment in the stock market. *Journal of economic perspectives*, 21(2), 129-152.
- Baker, M., & Wurgler, J. (2011). Behavioral corporate finance: An updated survey (No. w17333). National Bureau of Economic Research.
- Baker, M., & Wurgler, J. (2012). Behavioral corporate finance: A current survey.
- Baker, M., & Wurgler, J. (2013). Behavioral corporate finance: An updated survey. In *Handbook of the Economics of Finance* (Vol. 2, pp. 357-424). Elsevier.
- Baker, M., R. Ruback, and J. Wurgler, (2006). «Behavioral Corporate Finance: A Survey», In the *Handbook of Corporate Finance: Empirical Corporate Finance*, Espen Eckbo (Eds.), New York, Elsevier North Holland.
- Baker, M., Ruback, R. S., & Wurgler, J. (2004). Behavioral corporate finance: A survey (No. w10863). National Bureau of Economic Research.
- Baker, M., Ruback, R., & Wurgler, J. (2007) « Behavioral Corporate Finance: A Survey». In the *Handbook of Corporate Finance: Empirical Corporate Finance*, edited by Espen Eckbo. New York: Elsevier/North Holland, 2007.
- Baker, M., Wurgler, J., & Yuan, Y. (2012). Global, local, and contagious investor sentiment. *Journal of Financial Economics*, 104(2), 272-287.
- Baker, M., Yuan, Y., & Wurgler, J. (2009). Global and Local Investor Sentiment. Working paper, New York University, pp. 1--39.
- Balçılar, M., Demirer, R., & Hammoudeh, S. (2015). Global risk exposures and industry diversification with Shariah-compliant equity sectors. *Pacific-Basin Finance*

Journal, 35, 499-520.

- Banerjee, S., Humphery-Jenner, M., Nanda, V., & Tham, T. M. (2016). « Executive overconfidence and securities class actions».
- Barbé, E. (1996) 'Spain: the uses of foreign policy cooperation', in C. Hill (ed.), *The Actors in Europe's Foreign Policy*, London: Routledge.
- Barber, B. M., & Odean, T. (1999). The courage of misguided convictions. *Financial Analysts Journal*, 55(6), 41-55.
- Barber, B. M., & Odean, T. (2000). Trading is hazardous to your wealth: The common stock investment performance of individual investors. *The journal of Finance*, 55(2), 773-806.
- Barberis, N. C. (2013). Thirty years of prospect theory in economics: A review and assessment. *Journal of Economic Perspectives*, 27(1), 173-96.
- Barberis, N., & Shleifer, A. (2003). Style investing. *Journal of financial Economics*, 68(2), 161-199.
- Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. *Handbook of the Economics of Finance*, 1, 1053-1128.
- Barberis, N., Huang, M., & Santos, T. (2001). Prospect theory and asset prices. *The quarterly journal of economics*, 116(1), 1-53.
- Barberis, N., Shleifer, A., & Vishny, R. (1998). A model of investor sentiment. *Journal of financial economics*, 49(3), 307-343.
- Barclay, M. J., Smith, C. W., & Watts, R. L. (1995). The determinants of corporate leverage and dividend policies. *Journal of applied corporate finance*, 7(4), 4-19.
- Barnes, M. L., & Hughes, A. T. W. (2002). A quantile regression analysis of the cross section of stock market returns.
- Bar-Yosef, S., & Huffman, L. (1986). The information content of dividends: a signalling approach. *Journal of Financial and Quantitative Analysis*, 21(1), 47-58.
- Baur, M. N., Quintero, S., & Stevens, E. (1996). The 1986–88 stock market: Investor sentiment or fundamentals? *Managerial and Decision Economics*, 17(3), 319-329.
- Bazerman, C. (1990). Discourse analysis and social construction. *Annual Review of Applied Linguistics*, 11, 77-83.
- Bazerman, M. H., & Moore, D. A. (2008). *Judgment in managerial decision making*.
- Belsley, David A., Edwin Kuh, and Roy E. Welsch. *Regression diagnostics: Identifying influential data and sources of collinearity*. Vol. 571. John Wiley & Sons, 2005.
- Ben-David, I., Graham, J. & Harvey, C. (2010). « Managerial miscalibration » (Working paper N. 16215). Retrieved from National Bureau of Economic Research Website: <http://www.nber.org/papers/w16215>.

- Ben-David, I., Graham, J. & Harvey, C. (2013). « Managerial miscalibration ». *The Quarterly Journal of Economics* 128 (4): p.1547-84.
- Ben-David, I., Graham, J. R., & Harvey, C. R. (2007). « Managerial overconfidence and corporate policies » (No. w13711). National Bureau of Economic Research.
- Bertrand, M., Mehta, P., & Mullainathan, S. (2002). Ferreting out tunneling: An application to Indian business groups. *The Quarterly Journal of Economics*, 117(1), 121-148.
- Bessière, Véronique. "Excès de confiance des dirigeants et décisions financières: une synthèse." *Finance Contrôle Stratégie* 10.1 (2007): 39-66.
- Bhattacharya, S. (1979). Imperfect information, dividend policy, and "the bird in the hand" fallacy. *Bell journal of economics*, 10(1), 259-270.
- Bikhchandani S, Sharma S (2000). Herd behavior in financial markets- A review. International Monetary Fund. Working Papers 48.
- Bisin, Alberto, Alessandro Lizzeri, and Leeat Yariv. "Government policy with time inconsistent voters." *American Economic Review* 105.6 (2015): 1711-37.
- Black, F. (1976). The Dividend Puzzle, The harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don't fit together,". *The Journal of Portfolio Management*, 2(2)
- Black, F. (1976). The dividend puzzle. *The Journal of Portfolio Management*, 2(2), 5-8.
- Blanton, H., B.W. Pelham, T. DeHart and M. Carvallo (2001), «Overconfidence as Dissonance Reduction » *Journal of Experimental Social Psychology*, Vol. 37, p.373-385.
- Blundell, R., & Bond, S. (1998). « Initial conditions and moment restrictions in dynamic panel data models ». *Journal of econometrics*, 87(1), p.115-143.
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, 87(1), 115-143.
- Bokpin, G. A. (2011). « Ownership structure, corporate governance and dividend performance on the Ghana Stock Exchange ». *Journal of Applied Accounting Research*, 12(1), p. 61-73.
- Bonner, S. E., & Lewis, B. L. (1990). Determinants of auditor expertise. *Journal of Accounting Research*, 1-20.
- Bonner, S. E., & Pennington, N. (1991). Cognitive processes and knowledge as determinants of auditor expertise. *Journal of Accounting Literature*, 10(1), 1-50.
- Borokhovich, K. A., Brunarski, K. R., Harman, Y., & Kehr, J. B. (2005). Dividends, corporate monitors and agency costs. *Financial Review*, 40(1), 37-65.
- Boulton, T. J., & Campbell, T. C. (2013, August). Managerial Confidence and Initial Public Offerings. (Working Paper).
- Boulton, T. J., & Campbell, T. C. (2016). Managerial confidence and initial public offerings. *Journal of Corporate Finance*, 37, 375-392.

- Boulton, Thomas J., and T. Colin Campbell (2016). "Managerial confidence and initial public offerings." *Journal of Corporate Finance* 37 375-392.
- Boumosleh, A., & Cline, B. N. (2015). « Outside director stock options and dividend policy ». *Journal of Financial Services Research*, 47(3), p.381-410.
- Boumosleh, A., & Cline, B. N. (2015). Outside director stock options and dividend policy. *Journal of Financial Services Research*, 47(3), 381-410.
- Bouwman, C. H. (2009). « Managerial optimism and the market's reaction to dividend changes ». Case Western Reserve University Working Paper.
- Bowen, R. M., Daley, L. A., & Huber Jr, C. C. (1982). Evidence on the existence and determinants of inter-industry differences in leverage. *Financial Management*, 10-20.
- Bradley, M., Jarrell, G. A., & Kim, E. (1984). On the existence of an optimal capital structure: Theory and evidence. *The journal of Finance*, 39(3), 857-878.
- Brav, A., Graham, J. R., Harvey, C. R., & Michaely, R. (2005). Payout policy in the 21st century. *Journal of financial economics*, 77(3), 483-527.
- Brav, Alon, and James B. Heaton. "Did ERISA's prudent man rule change the pricing of dividend omitting firms?." (1998).
- Broihanne, M. H., Merli, M., & Roger, P. (2004). *Finance comportementale. Economica*.
- Broihanne, M. H., Merli, M., & Roger, P. (2004). *Finance comportementale. Economica*.
- Brown, G. W., & Cliff, M. T. (2004). Investor sentiment and the near-term stock market. *Journal of Empirical Finance*, 11(1), 1-27.
- Brown, G. W., & Cliff, M. T. (2005). Investor sentiment and asset valuation. *The Journal of Business*, 78(2), 405-440.
- Bulan, L., Subramanian, N., & Tanlu, L. (2007). On the timing of dividend initiations. *Financial Management*, 31-65.
- Busenitz, L. W., & Lau, C. M. (1996). A cross-cultural cognitive model of new venture creation. *Entrepreneurship theory and practice*, 20(4), 25-40.
- Callander, S. (2007). Bandwagons and momentum in sequential voting. *The Review of Economic Studies*, 74(3), 653-684.
- Calvi-Reveyron, M. (1999). « Risque de surinvestissement, signalisation et annonce du dividende: le cas français ». *Revue Finance Contrôle Stratégie*, 2(3), p.115-145.
- Camerer, C., & Lovallo, D. (1999). Overconfidence and excess entry: An experimental approach. *American economic review*, 89(1), 306-318.
- Campbell, J., Lettau, M., Malkiel, B., Xu, Y., 2001. Have individual stocks become more volatile? An empirical exploration of idiosyncratic risk. *Journal of Finance* 56, 1-43.
- Campbell, T. C., Gallmeyer, M., Johnson, S. A., Rutherford, J., & Stanley, B. W. (2011). «CEO optimism and forced turnover. *Journal of Financial Economics*, 101(3),

p. 695-712.

- Campbell, W. K., Goodie, A. S., & Foster, J. D. (2004). Narcissism, confidence, and risk attitude. *Journal of behavioral decision making*, 17(4), 297-311.
- Canay, I. A. (2011). A simple approach to quantile regression for panel data. *The Econometrics Journal*, 14(3), 368-386.
- Carlsson, G., & Karlsson, K. (1970). Age, cohorts and the generation of generations. *American Sociological Review*, 710-718.
- Carlsson, G., & Karlsson, K. (1970). Age, cohorts and the generation of generations. *American Sociological Review*, 710-718.
- Casey, K. M., & Dickens, R. N. (2000). The effects of tax and regulatory changes on commercial bank dividend policy. *The Quarterly Review of Economics and Finance*, 40(2), 279-293.
- Chakravarthy, B. S. (1986). Measuring strategic performance. *Strategic management journal*, 7(5), 437-458.
- Chang, K., Kang, E., & Li, Y. (2016). Effect of institutional ownership on dividends: An agency-theory-based analysis. *Journal of Business Research*, 69(7), 2551-2559.
- Chang, K., Kang, E., & Li, Y. (2016). Effect of institutional ownership on dividends: An agency-theory-based analysis. *Journal of Business Research*, 69(7), 2551-2559.
- Chang, R. P., & Rhee, S. G. (1990). The impact of personal taxes on corporate dividend policy and capital structure decisions. *Financial management*, 21-31.
- Charreaux, G. (2005). Pour une gouvernance d'entreprise «comportementale» Une réflexion exploratoire... *Revue française de gestion*, (4), 215-238.
- Chay, J. B., & Suh, J. (2009). Payout policy and cash-flow uncertainty. *Journal of Financial Economics*, 93(1), 88-107.
- Chay, J. B., & Suh, J. (2009). Payout policy and cash-flow uncertainty. *Journal of Financial Economics*, 93(1), 88-107.
- Cheah, F.S. and L.S. Lee, 2009. *Corporate governance in Malaysia: Principles and practices*. Kuala Lumpur: August Publishing Sdn Bhd.
- Chen, G., Firth, M., Gao, D. N., & Rui, O. M. (2006). «Ownership structure, corporate governance, and fraud: Evidence from China». *Journal of Corporate Finance*, 12(3), p.424-448.
- Chen, J., Bennett, A., & Zheng, T. (2006). Sector effects in developed vs. emerging markets. *Financial Analysts Journal*, 62(6), 40-51.
- Chen, S., Zheng & Wu, S. (2011). «Senior Manager Overconfidence, Managerial Discretion and Dividend Policy: A Study of Chinese Listed Companies». *African Journal of Business Management*. 5 (32): p.12641-12652.
- Chen, Z., Cheung, Y. L., Stouraitis, A., & Wong, A. W. (2005). « Ownership concentration, firm performance, and dividend policy in Hong Kong ». *Pacific-Basin Finance Journal*, 13(4), p.431-449.

- Cheraghi-Sohi, S., Bower, P., Kennedy, A., Morden, A., Rogers, A., Richardson, J., ... & Ong, B. N. (2013). Patient priorities in osteoarthritis and comorbid conditions: a secondary analysis of qualitative data. *Arthritis care & research*, 65(6), 920-927.
- Choi, S. J., & Pritchard, A. C. (2003). Behavioral Economics and the SEC. *Stanford Law Review*, 1-73.
- Chui, A. C., Titman, S., & Wei, K. J. (2010). Individualism and momentum around the world. *The Journal of Finance*, 65(1), 361-392.
- Combs, J. G., Ketchen, D. J., Perryman, A. A., & Donahue, M. S. (2007). «The moderating effect of CEO power on the board composition–firm performance relationship». *Journal of Management Studies*, 44(8), p.1299-1323.
- Conyon, M. J., & Peck, S. I. (1998). «Board size and corporate performance: evidence from
- Cooper, A. C., Woo, C. Y., & Dunkelberg, W. C. (1988). Entrepreneurs' perceived chances for success. *Journal of business venturing*, 3(2), 97-108.
- Cooper, M. J., Dimitrov, O., & Rau, P. R. (2001). A rose. com by any other name. *The journal of Finance*, 56(6), 2371-2388.
- Cordeiro, L. (2009). Managerial overconfidence and dividend policy». (February 15, 2009). Available at SSRN: <https://ssrn.com/abstract=1343805> or <http://dx.doi.org/10.2139/ssrn.1343805>
- Corredor, P., Ferrer, E., & Santamaria, R. (2013). Investor sentiment effect in stock markets: Stock characteristics or country-specific factors?. *International Review of Economics & Finance*, 27, 572-591.
- Corredor, P., Ferrer, E., & Santamaria, R. (2015). The impact of investor sentiment on stock returns in emerging markets: The case of Central European Markets. *Eastern European Economics*, 53(4), 328-355.
- Croci, E., Petmezas, D., & Vagenas-Nanos, E. (2010). «Managerial overconfidence in high and low valuation markets and gains to acquisitions». *International Review of Financial Analysis*, 19(5), p.368-378.
- Cuny, C. J., Martin, G. S., & Puthenpurackal, J. J. (2009). Stock options and total payout. *Journal of Financial and Quantitative Analysis*, 44(2), 391-410.
- Da, Z.; J. Engelberg; and P. Gao. (2015), "The Sum of All FEARS Investor Sentiment and Asset Prices." *Review of Financial Studies*, 28 1-32.
- Daft, R. L., & Weick, K. E. (1984). Toward a model of organizations as interpretation systems. *Academy of management review*, 9(2), 284-295.
- Dahlquist, M., Robertsson, G., & Rydqvist, K. (2014). Direct evidence of dividend tax clienteles. *Journal of Empirical Finance*, 28, 1-12.
- Damodar, N. (2004). Basic econometrics. The Mc-Graw Hill.
- Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor psychology and security market under-and overreactions. *the Journal of Finance*, 53(6), 1839-1885.

- Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor psychology and security market under-and overreactions. *the Journal of Finance*, 53(6), 1839-1885.
- Dann, L. Y. (1981). Common stock repurchases: An analysis of returns to bondholders and stockholders. *Journal of Financial Economics*, 9(2), 113-138.
- De Long, J. B., & Shleifer, A. (1991). «The stock market bubble of 1929: evidence from closed-end mutual funds». *The Journal of Economic History*, 51(3), p.675-700.
- De Long, J.B., Shleifer, A. (1991). The stock market bubble of 1929: Evidence from closed-end mutual funds. *The Journal of Economic History*, 51(3), 675-700.
- DeAngelo, H. and L. DeAngelo (2006), 'The irrelevance of the MM dividend irrelevance theorem'. *Journal of Financial Economics* 79, 293–315.
- DeAngelo, H., & Masulis, R. W. (1980). Leverage and dividend irrelevancy under corporate and personal taxation. *The Journal of Finance*, 35(2), 453-464.
- DeAngelo, H., DeAngelo, L. E., & Skinner, D. J. (2004). Are dividends disappearing? Dividend concentration and the consolidation of earnings. *Journal of Financial Economics*, 72, 425–456.
- DeAngelo, H., L. DeAngelo, and R. Stulz (2006), 'Dividend policy and the earned/contributed capital mix: A test of the life-cycle theory'
- DeAngelo, Harry and DeAngelo, Linda and Skinner, Douglas J., Corporate Payout Policy (May 7, 2009). *Foundations and Trends in Finance*, Vol. 3, Nos. 2-3, pp. 95-287, 2008. Available at SSRN: <https://ssrn.com/abstract=1400682>
- Deeney, P., Cummins, M., Dowling, M., & Bermingham, A. (2015). Sentiment in oil markets. *International Review of Financial Analysis*, 39, 179-185.
- DeFond, M. L., & Hung, M. (2003). An empirical analysis of analysts' cash flow forecasts. *Journal of accounting and economics*, 35(1), 73-100.
- DellaVigna, S., & Malmendier, U. (2006). Paying not to go to the gym. *American Economic Review*, 96(3), 694-719.
- Demil, B., Leca, B., & Naccache, P. (2001). LE TEMPS DE LA STRATEGIE:<>, MOYEN DE COORDINATION. *Revue française de gestion*, 83-94.
- Demirgünescedil, K. (2015). Determinants of Target Dividend Payout Ratio: A Panel ARDL Analysis. *International Journal of Economics and Financial Issues*, 5(2).
- Dempsey, S., Laber, G., & Rozeff, M. (1993). Dividend policies in practice: is there an industry effect? *Quarterly Journal of Business and Economics* 32, 3–13.
- Denis, D. J., & Sibilkov, V. (2009). Financial constraints, investment, and the value of cash holdings. *The Review of Financial Studies*, 23(1), 247-269.
- Denis, D.J., Sibilkov, V., 2010. Financial constraints, investments, and the value of cash holdings. *Review of Financial Studies* 23, 247–269.
- Desbrieres, P., 1988, L'effet de clientele des dividendes sur le marche francais: Un test empirique, *Finance* 9, 5-16.
- Deshmukh, S., Goel, A. M., & Howe, K. M. (2009). CEO overconfidence and dividend

policy (No. 2009-06). Working Paper, Federal Reserve Bank of Chicago.

- Deshmukh, S., Goel, A. M., & Howe, K. M. (2013). «CEO overconfidence and dividend policy». *Journal of Financial Intermediation*, 22(3), p.440-463.
- Dhanani, A. (2005). Corporate dividend policy: The views of British financial managers. *Journal of Business Finance & Accounting*, 32(7-8), 1625-1672.
- DiMaggio and Powell
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American sociological review*, 147-160.
- Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The law and economics of self-dealing. *Journal of financial economics*, 88(3), 430-465.
- Dong, M., Robinson, C. and Veld, C. (2005) 'Why individual investors want dividends', *Journal of Corporate Finance*, Vol. 12, No. 1, pp.121–158.
- Duncan, R. B. (1972). Characteristics of organizational environments and perceived environmental uncertainty. *Administrative science quarterly*, 313-327.
- Dusa, A., & Alrik, T. (2013). *Qualitative comparative analysis with R*. New York: Springer.
- Dutton, J. E., & Duncan, R. B. (1987). The influence of the strategic planning process on strategic change. *Strategic management journal*, 8(2), 103-116.
- Eades, K. M. (1982). Empirical evidence on dividends as a signal of firm value. *Journal of Financial and Quantitative Analysis*, 17(4), 471-500.
- Easterbrook, F. H. (1984). «Two agency-cost explanations of dividends». *The American Economic Review*, 74(4), p.650-659.
- Eisenberg, T., Sundgren, S. and Wells, M.T. (1998), «Larger board size and decreasing firm value in small firms », *Journal of Financial Economics*, Vol. 48, p. 35-54.
- Elton, E. J., & Gruber, M. J. (1970). Marginal stockholder tax rates and the clientele effect. *The Review of Economics and Statistics*, 68-74.
- Emery, D. R., Finnerty, J. D., & Stowe, J. D. (2004). *Corporate financial management*. Prentice Hall.
- Esqueda, O. A. (2016). Signaling, corporate governance, and the equilibrium dividend policy. *The Quarterly Review of Economics and Finance*, 59, 186-199.
- Ezzi, F., Azouzi, M. A., & Jarboui, A. (2016). Does CEO emotional intelligence affect the performance of the diversifiable companies?. *Cogent Economics & Finance*, 4(1), 1230958.
- Fabre, B., & François-Heude, A. (2009). «Optimism and overconfidence investors' biases: a methodological note». *Finance*, 30(1), p.79-119.
- Fairchild, R. (2007). Managing overconfidence, agency problems, financing decisions and firm performance.

- Fairchild, R. J. (2005). The effect of Managerial Overconfidence, asymmetric information, and moral hazard on capital structure decisions.
- Fama, E. F., & French, K. R. (2001). Disappearing dividends: changing firm characteristics or lower propensity to pay?. *Journal of Financial economics*, 60(1), 3-43.
- Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *The review of financial studies*, 15(1), 1-33.
- Fan, J. P., Wong, T. J., & Zhang, T. (2007). Politically connected CEOs, corporate governance, and Post-IPO performance of China's newly partially privatized firms. *Journal of financial economics*, 84(2), 330-357.
- Farrelly, G. E., Baker, H. K., & Edelman, R. B. (1986). Corporate Dividends-views of the Policy-makers. *Akron Business and Economic Review*, 17(4), 62-74.
- Fast, N. J., Sivanathan, N., Mayer, N. D., & Galinsky, A. D. (2012). Power and overconfident decision-making. *Organizational behavior and human decision processes*, 117(2), 249-260.
- Fast, N. J., Sivanathan, N., Mayer, N. D., & Galinsky, A. D. (2012). Power and overconfident decision-making. *Organizational behavior and human decision processes*, 117(2), 249-260.
- Fatemi, A., & Bildik, R. (2012). Yes, dividends are disappearing: Worldwide evidence. *Journal of Banking & Finance*, 36(3), 662-677.
- Fazzari, S., Hubbard, R. G., & Petersen, B. C. (1987). Financing constraints and corporate investment.
- Fenton-O'Creevy, M., Soane, E., Nicholson, N., & Willman, P. (2011). Thinking, feeling and deciding: The influence of emotions on the decision making and performance of traders. *Journal of Organizational Behavior*, 32(8), 1044-1061.
- Ferris, S. P., Jayaraman, N., & Sabherwal, S. (2009). Catering effects in corporate dividend policy: The international evidence. *Journal of Banking & Finance*, 33(9), 1730-1738.
- Ferris, S. P., Jayaraman, N., & Sabherwal, S. (2013). CEO overconfidence and international merger and acquisition activity. *Journal of Financial and Quantitative Analysis*, 48(1), 137-164.
- Ferris, S. P., Sen, N., & Yui, H. P. (2006). Are fewer firms paying more dividends?: The international evidence. *Journal of Multinational Financial Management*, 16(4), 333-362.
- Ferris, S. P., Sen, N., & Yui, H. P. (2006). Are fewer firms paying more dividends?: The international evidence. *Journal of Multinational Financial Management*, 16(4), 333-362.
- Ferris, S. P., Sen, N., & Yui, H. P. (2006). God save the queen and her dividends: Corporate payouts in the United Kingdom. *the Journal of Business*, 79(3), 1149-1173.
- Finter, P., Niessen-Ruenzi, A., & Ruenzi, S. (2012). The impact of investor sentiment on

the German stock market. *Zeitschrift für Betriebswirtschaft*, 82(2), 133-163.

- Fisher, K. L., & Statman, M. (2000). Cognitive biases in market forecasts. *Journal of Portfolio Management*, 27(1), 72-81.
- Fisher, K. L., & Statman, M. (2000). Investor sentiment and stock returns. *Financial Analysts Journal*, 56(2), 16-23.
- Fisher, K. L., & Statman, M. (2000). Investor sentiment and stock returns. *Financial Analysts Journal*, 56(2), 16-23.
- Fisher, K. L., & Statman, M. (2003). Consumer confidence and stock returns. *Journal of Portfolio Management*, 30(1), 115-127.
- Fiss, P. C. (2007). A set-theoretic approach to organizational configurations. *Academy of management review*, 32(4), 1180-1198.
- Fiss, P. C. (2011). Building better causal theories: A fuzzy set approach to typologies in organization research. *Academy of Management Journal*, 54(2), 393-420.
- Forti, C., & Schiozer, R. F. (2015). Bank dividends and signaling to information-sensitive depositors. *Journal of Banking & Finance*, 56, 1-11.
- Fracassi, C. (2008). Stock price sensitivity to dividend changes. Department of Finance-UCLA Anderson School of Management, 1-39.
- Frankfurter, G., Wood, B. G., & Wansley, J. (2003). Dividend policy: Theory and practice. Elsevier.
- Frankfurter, G., Wood, B. G., & Wansley, J. (2003). Dividend policy: Theory and practice. Elsevier.
- Galvao Jr, A. F. (2011). Quantile regression for dynamic panel data with fixed effects. *Journal of Econometrics*, 164(1), 142-157.
- Gao, Z., Ren, H., & Zhang, B. (2018). Googling investor sentiment around the world. *Journal of Financial and Quantitative Analysis*, 1-66.
- Garud, R., Jain, S., & Kumaraswamy, A. (2002). Institutional entrepreneurship in the sponsorship of common technological standards: The case of Sun Microsystems and Java. *Academy of management journal*, 45(1), 196-214.
- Gervais, S., Heaton, J. B., & Odean, T. (2003). Overconfidence, investment policy, and executive stock options.
- Gervais, S., Heaton, J. B., & Odean, T. (2011). Overconfidence, compensation contracts, and capital budgeting. *The Journal of Finance*, 66(5), 1735-1777.
- Gervais, S., Odean, T. (2001). «Learning to be overconfident». *the Review of financial studies*, 14(1), p.1-27.
- Gill, A. & Obradovich, J., & (2012). Corporate Governance, Institutional Ownership, and the Decision to Pay the Amount of Dividends: Evidence from USA. *International Research*
- Gill, A., Biger, N., & Tibrewala, R. (2010). Determinants of dividend payout ratios: evidence from United States. *The Open Business Journal*, 3(1).

- Goel, A. M. and Thakor, A., (2000). 'Rationality, overconfidence and leadership', Working Paper No. 00-022 (University of Michigan Business School Faculty).
- Goel, A. M., & Thakor, A. V. (2008). Overconfidence, CEO selection, and corporate governance. *The Journal of Finance*, 63(6), 2737-2784.
- Goel, A. M., and A. Thakor, 2007, "Overconfidence, CEO Selection and Corporate Governance," forthcoming in the *Journal of Finance*.
- Gordon, M. J. (1959). Dividends, earnings, and stock prices. *The review of economics and statistics*, 99-105.
- Gordon, M. J. (1962). *The investment, financing, and valuation of the corporation*. Homewood, IL: RD Irwin.
- Gordon, M. J. (1963), Optimal Investment and Financing Policy, *Journal of Finance*, 18 (2): 264- 272.
- Gordon, M. J., & Shapiro, E. (1956). Capital equipment analysis: the required rate of profit. *Management science*, 3(1), 102-110.
- Graham, B., Dodd, D. L. F., & TATHAM, C. (1951). *Security Analysis. Principles and Technique*. [By] B. Graham... D. Dodd... with the Collaboration of Charles Tatham... McGraw-Hill Book Company.
- Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of accounting and economics*, 40(1-3), 3-73.
- Graham, R. E. and Dodd, P., "Security Analysis", McGraw-Hill Book Co. 1951
- Greenfich, P. (2005). Behavioral finance definitions: Main concepts. disponible sur.
- Greenwood, R., Suddaby, R., & Hinings, C. R. (2002). Theorizing change: The role of professional associations in the transformation of institutionalized fields. *Academy of management journal*, 45(1), 58-80.
- Grossman, S. J., & Hart, O. D. (1980). Takeover bids, the free-rider problem, and the theory of the corporation. *The Bell Journal of Economics*, 42-64.
- Grubb, M. D. (2015). Overconfident consumers in the marketplace. *Journal of Economic Perspectives*, 29(4), 9-36.
- Grullon, G., & Michaely, R. (2002). Dividends, share repurchases, and the substitution hypothesis. *the Journal of Finance*, 57(4), 1649-1684.
- Grullon, G., Michaely, R., & Swaminathan, B. (2002). Are dividend changes a sign of firm maturity?. *The journal of Business*, 75(3), 387-424.
- Guest, P. M. (2009). The impact of board size on firm performance: Evidence from the UK. *The European Journal of Finance*, 15, 385–404.
- Gul, S., Sajid, M., Razzaq, N., Farrukh, M., & Khan, M. B. (2012). The Relationship between Dividend Policy and Shareholder's Wealth (Evidence from Pakistan).
- Guo, E., & Leinberger, G. (2012). Firm growth and financial choices in Pennsylvania firms: An empirical study about the pecking order theory. *Journal of Accounting and Finance*, 12(4), 123-142.

- Gupta, A., & Banga, C. (2010). The Determinants of Corporate Dividend Policy. *Decision* (0304-0941), 37(2).
- Hackbarth, D. (2008). «Managerial traits and capital structure decisions». *Journal of Financial and Quantitative Analysis*, 43(4), p.843-881
- Hammond, J. S., Keeney, R. L., & Raiffa, H. (2006). The hidden traps in decision making. *harvard business review*, 84(1), 118.
- Han, B. (2007). Investor sentiment and option prices. *The Review of Financial Studies*, 21(1), 387-414.
- Han, K. C., Lee, S. H., & Suk, D. Y. (1999). Institutional shareholders and dividends. *Journal of financial and Strategic Decisions*, 12(1), 53-62.
- Han, S. K. (1994). Mimetic isomorphism and its effect on the audit services market. *Social forces*, 73(2), 637-664.
- Harris, M., & Raviv, A. (1991). The theory of capital structure. *the Journal of Finance*, 46(1), 297-355.
- Haye, E. (2014). « Hedge Fund Ownership, Board Composition and Dividend Policy in the Telecommunications Industry». *International Journal of Financial Research*, 6(1), p.111.
- Heath, C., & Tversky, A. (1991). Preference and belief: Ambiguity and competence in choice under uncertainty. *Journal of risk and uncertainty*, 4(1), 5-28.
- Heaton, J. B. (2002). «Managerial optimism and corporate finance». *Financial management*, p.33-45.
- Heinkel, R. (1978). Dividend policy as a signal of firm value. *Essays on Financial Markets with Imperfect Information*, Ph. D. dissertation, UC Berkeley.
- Henderson group plc annual report 2015 <https://www.snl.com>
- Herve, F. ; Zouaoui, M ; Belvaux, B., (2019). Noise traders and smart money: Evidence from online searches, *Economics Modelling*, <http://doi.org:10.1016/j.economod>.
- Hess, P. J. (1981). Dividend yields and stock returns: A test for tax effects.
- Hirota, S., & Sunder, S. (2016). Price bubbles sans dividend anchors: Evidence from laboratory stock markets. In *Behavioral Interactions, Markets, and Economic Dynamics* (pp. 357-395). Springer, Tokyo.
- Hirshleifer, D., Low, A., Teoh, S. H. (2012). « Are overconfident CEOs better innovators? ». *The Journal of Finance*, 67(4), p.1457-1498.
- Hirshleifer, D., Low, A., Teoh, S.H. (2012). Are overconfident CEOs better innovators? *The Journal of Finance*, 67(4), 1457-1498.
- Hirshleifer, D., Low, A., Teoh, S.H. (2012). Are overconfident CEOs better innovators? *The Journal of Finance*, 67(4), 1457-1498.
- Ho, C., & Hung, C. H. (2009). Investor sentiment as conditioning information in asset pricing. *Journal of Banking & Finance*, 33(5), 892-903.

- Ho, H. (2003). Dividend policies in Australia and Japan. *International Advances in Economic Research*, 9(2), 91-100.
- Hoberg, G., & Prabhala, N. R. (2009). Dividend policy, risk, and catering. *Review of Financial Studies*, 22(1), 79-116.
- Hoberg, G., & Prabhala, N. R. (2009). Dividend policy, risk, and catering. *Review of Financial Studies*, 22(1), 79-116.
- Hogarth, R. M. (1981). Beyond discrete biases: Functional and dysfunctional aspects of judgmental heuristics. *Psychological Bulletin*, 90(2), 197.
- Holder, M. E., Langrehr, F. W., & Hexter, J. L. (1998). "Dividend policy determinants: An investigation of the influences of stakeholder theory." *Financial Management* 27(3):73.
- Hovakimian, G. (2009): "Determinants of investment–cash flow sensitivity." *Financial*
- Howatt, B., Zuber, R. A., Gandar, J. M., Lamb, R. P. (2009). «Dividends, earnings volatility and information». *Applied Financial Economics*, 19(7), p.551-562.
- Howe, J. S., & Shen, Y. P. (1998). Information associated with dividend initiations: Firm-specific or industry-wide?. *Financial management*, 17-26.
- Hribar, P., & Yang, H. (2011). CEO overconfidence, managerial earnings forecasts, and earnings management. Working Paper, University of Iowa and Cornell University.
- Hribar, P., & Yang, H. (2016). CEO overconfidence and management forecasting. *Contemporary Accounting Research*, 33(1), 204-227.
- Hsiao, C., Mountain D., Ho-Ilman K., 1995. Bayesian Integration of End-Use Metering and Conditional Demand Analysis, *Journal of Business and Economic Statistics*, 13, pp. 315-326.
- Hsieh, J., & Wang, Q. (2006). Determinants of the trends in aggregate corporate payout policy. Working Paper, George Mason University.
- Hsu, N. C., et al. (2013) "Enhanced Deep Blue aerosol retrieval algorithm: The second generation." *Journal of Geophysical Research: Atmospheres* 118.16 :9296-9315.
- <https://www.franklintempletonme.com>
- Hu, A., & Kumar, P. (2004). Managerial entrenchment and payout policy. *Journal of Financial and Quantitative Analysis*, 39(4), 759-790.
- Huberman, G. (2001). Familiarity breeds investment. *The Review of Financial Studies*, 14(3), 659-680. Hui and Li (2014);
- Iqbal, K. (2013). Determinants of organizational justice and its impact on job satisfaction. A Pakistan Base Survey. *International review of management and business research*, 2(1), 48.
- Iyer, Subramanian R., Harikumar Sankaran, and Ali Nejadmalayeri. "CEO Overconfidence and Agency Cost of Debt." (2015).
- J. Riley. "Competitive Signalling," *Journal of Economic Theory*, 10 (1975). . "Informational Equilibrium." Rand Working Paper R-2059. September 1976.

- Jain, B. A., Shekhar, C., & Torbey, V. (2009). Payout initiation by IPO firms: The choice between dividends and share repurchases. *The Quarterly Review of Economics and Finance*, 49(4), 1275-1297.
- Jain, R. (2007). Institutional and individual investor preferences for dividends and share repurchases. *Journal of Economics and Business*, 59(5), 406-429.
- Jensen, G. R., & Johnson, J. M. (1995). The dynamics of corporate dividend reductions. *Financial Management*, 31-51.
- Jensen, G. R., Solberg, D. P., & Zorn, T. S. (1992). Simultaneous determination of insider ownership, debt, and dividend policies. *Journal of Financial and Quantitative analysis*, 27(2), 247-263.
- Jensen, M. C. (1986). «Agency costs of free cash flow, corporate finance, and takeovers». *The American economic review*, 76(2), p.323-329.
- Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *the Journal of Finance*, 48(3), 831-880.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360.
- Jensen, M. C., & Smith, C. W. (1984). The theory of corporate finance: a historical overview.
- Jiraporn, P., Kim, J. C., & Kim, Y. S. (2011). «Dividend payouts and corporate governance quality: An empirical investigation». *Financial Review*, 46(2), p.251-279.
- John, K., & Williams, J. (1985). Dividends, dilution, and taxes: A signalling equilibrium. *the Journal of Finance*, 40(4), 1053-1070.
- Johnson DR, Hoopes DG. 2003. Managerial cognition, sunk costs, and the evolution of industry structure. *Strategic Management Journal* October Special Issue 24: 1057–1068.
- Johnson et al (1993)
- Jolls, C. (1998). Behavioral economics analysis of redistributive legal rules. *Vand. L. Rev.*, 51, 1653.
- Juhel, J. C., Anouar, K. (2014). « Excès de confiance des dirigeants et politique de distribution des dividendes» (No. hal-01527952).
- Juhel, J.C., Anouar, K. (2014). “Excès de confiance des dirigeants et politique de distribution des dividendes.” (No. hal-01527952).
- Julio, B., & Ikenberry, D. L. (2004). Reappearing dividends. *Journal of applied corporate finance*, 16(4), 89-100.
- Kahneman, D. (2011). «Don't Blink! The Hazards of Confidence». *New York Times*, 19.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: an analysis of decision under risk. *Econometrica*.
- Kale, J. R., & Noe, T. H. (1990). Dividends, uncertainty, and underwriting costs under asymmetric information». *Journal of financial Research*, 13(4), p.265-277.

- Kale, J. R., Kini, O., & Payne, J. D. (2012). The dividend initiation decision of newly public firms: Some evidence on signaling with dividends. *Journal of Financial and Quantitative Analysis*, 47(2), 365-396.
- Kalsie, A., & Shrivastav, S. M. (2016). Analysis of board size and firm performance: evidence from NSE companies using panel data approach. *Indian Journal of Corporate Governance*, 9(2), 148-172.
- Katona, G. (1975). *Psychological economics*. Elsevier.
- Kayhan, A., & Titman, S. (2007). Firms' histories and their capital structures. *Journal of financial Economics*, 83(1), 1-32.
- Kester, W. C. (1986). Capital and ownership structure: A comparison of United States and Japanese manufacturing corporations. *Financial management*, 5-16.
- Khoury, R. E., & Maladjian, C. (2014). Determinants of the dividend policy: An empirical study on the Lebanese Listed Banks. *International Journal of Economics and Finance*, 6(4).
- Koch, P. D., & Shenoy, C. (1999). The information content of dividend and capital structure policies. *Financial Management*, 16-35.
- Koenker, R. (2004). Quantile regression for longitudinal data. *Journal of Multivariate Analysis*, 91(1), 74-89.
- Koenker, R., & Bassett Jr, G. (1978). Regression quantiles. *Econometrica: journal of the Econometric Society*, 33-50.
- Korobkin, R. B., & Ulen, T. S. (2000). Law and behavioral science: Removing the rationality assumption from law and economics. *Cal. L. Rev.*, 88, 1051.
- Kouki, M., & Guizani, M. (2009). Ownership structure and dividend policy evidence from the Tunisian stock market. *European Journal of Scientific Research*, 25(1), 42-53.
- Krenn, M. (2014). «CEO Duality: Economic and Socio-Psychological Determinants». *Journal of Leadership, Accountability and Ethics*, 11(3), p.141.
- Kuo, J. M., Philip, D., & Zhang, Q. (2013). What drives the disappearing dividends phenomenon?. *Journal of Banking & Finance*, 37(9), 3499-3514.
- La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2002). Government ownership of banks. *Journal of Finance*, 57(1), 265-301.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (2000). Agency problems and dividend policies around the world. *The journal of finance*, 55(1), 1-33.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *The journal of finance*, 52(3), 1131-1150.
- Lakonishok, J., & Vermaelen, T. (1986). Tax-induced trading around ex-dividend days. *Journal of Financial Economics*, 16(3), 287-319.
- Lamont, O. A., & Stein, J. C. (2006). Investor sentiment and corporate finance: Micro and macro. *American Economic Review*, 96(2), 147-151.

- Landier, A., & Thesmar, D. (2003). Financial contracting with optimistic entrepreneurs: Theory and evidence.
- Larcker, D., & Tayan, B. (2011). Corporate governance matters. FTpress, New Jersey.
- Larwood, L., & Whittaker, W. (1977). Managerial myopia: Self-serving biases in organizational planning. *Journal of applied psychology*, 62(2), 194.
- Lebas, M. J. (1995). Performance measurement and performance management. *International journal of production economics*, 41(1-3), 23-35.
- Lee, K. F. (2011). Demographics, dividend clienteles and the dividend premium. *The Quarterly Review of Economics and Finance*, 51(4), 368-375.
- Lemmon, M. L., Roberts, M. R., & Zender, J. F. (2008). Back to the beginning: persistence and the cross-section of corporate capital structure. *The Journal of Finance*, 63(4), 1575-1608.
- Lemmon, M., & Portniaguina, E. (2006). Consumer confidence and asset prices: Some empirical evidence. *The Review of Financial Studies*, 19(4), 1499-1529.
- Lemmon, Roberts and Zender (2005)
- Leung, H., Tse, J., & Westerholm, P. J. (2017). CEO traders and corporate acquisitions. *Journal of Corporate Finance*.
- Leung, H., Tse, J., & Westerholm, P. J. (2017). CEO traders and corporate acquisitions. *Journal of Corporate Finance*.
- Li, W., & Lie, E. (2006). Dividend changes and catering incentives. *Journal of financial economics*, 80(2), 293-308.
- Li, W., & Wang, S. S. (2010). Daily institutional trades and stock price volatility in a retail investor dominated emerging market. *Journal of Financial Markets*, 13(4), 448-474.
- Lichtenstein, S., Fischhoff, B., & Phillips, L. D. (1977). Calibration of probabilities: The state of the art. In *Decision making and change in human affairs* (pp. 275-324). Springer, Dordrecht.
- Lim, H.M., 2004. Separating the wheat from chaff. The Edge Singapore.
- Lin, C., Chow, W.S., Madu, C.N., Kuei, C. and Pei Yu, P. (2005), "A structural equation model of supply chain quality management and organizational performance", *International Journal of Production Economics*, Vol. 96 No. 3, pp. 355-65.
- Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings, and taxes. *The American economic review*, 46(2), 97-113.
- Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings, and taxes. *The American Economic Review*, 46(2), 97-113.
- Lintner, J. (1962). Dividends, earnings, leverage, stock prices and the supply of capital to corporations. *The review of Economics and Statistics*, 243-269.
- Lipton, M., & Lorsch, J. W. (1992). «A modest proposal for improved corporate governance». *The business lawyer*, pp.59-77.

- Litzenberger, R. H., & Ramaswamy, K. (1980). Dividends, short selling restrictions, tax-induced investor clienteles and market equilibrium. *The Journal of Finance*, 35(2), 469-482.
- Lloyd, W. P., Jahera, J. S., & Page, D. E. (1985). Agency costs and dividend payout ratios. *Quarterly Journal of Business and Economics*, 19-29.
- Longest, K. C., & Vaisey, S. (2008). fuzzy: A program for performing qualitative comparative analyses (QCA) in Stata. *Stata Journal*, 8(1), 79.
- Lovallo, D., & Kahneman, D. (2003). Delusions of success. *Harvard business review*, 81(7), 56-63.
- Lowenstein, Louis, *What's Wrong with Wall Street: Short-term Gain and Absentee Shareholder*, Reading: Addison-Wesley, 1988
- Lyles, M. A., & Schwenk, C. R. (1992). Top management, strategy and organizational knowledge structures. *Journal of management studies*, 29(2), 155-174.
- M.J.Brouwman, P. Friskoff : “ How do financial analysts make decision ? A process model of the investment screening decision”, *Accounting Organization and Society* – 1987
- Mace, M. L. G. (1986). « Directors: Myth and reality».
- MacKay, P., & Phillips, G. M. (2005). How does industry affect firm financial structure?. *The Review of Financial Studies*, 18(4), 1433-1466.
- Maladjian, C., & Khoury, R. E. (2014). Determinants of the dividend policy: an empirical study on the Lebanese listed banks. *International Journal of Economics and Finance*, 6(4), 240-256.
- Malkiel, B. G., & Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The journal of Finance*, 25(2), 383-417.
- Malmendier, U. and Tate, G. (2005b) ‘Who makes acquisitions? CEO overconfidence and the market’s reaction’, Working Paper (Stanford University).
- Malmendier, U., & Shanthikumar, D. (2007). Are small investors naive about incentives? *Journal of Financial Economics*, 85(2), 57-489.
- Malmendier, U., & Tate, G. (2002). Does CEO Overconfidence Drive Corporate Acquisitions. Working paper, Harvard University.
- Malmendier, U., & Tate, G. (2015). Behavioral CEOs: The role of managerial overconfidence. *The Journal of Economic Perspectives*, 29(4), 37-60.
- Malmendier, U., & Tate, G., (2008). «Who makes acquisitions? CEO overconfidence and the market’s reaction». *Journal of Financial Economics* 89, p.20-43.
- Malmendier, U., Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market’s reaction. *Journal of Financial Economics*, 89, 20-43.
- Malmendier, U., Tate, G., (2005a). «CEO overconfidence and corporate investment». *Journal of Finance* 60, p.2661-2700.

- Malmendier, U., Tate, G., 2005. CEO overconfidence and corporate investment. *Journal of Finance*, 60, 2661-2700.
- Malmendier, U., Tate, G., Yan, J. (2007). «Corporate financial policies with overconfident managers » (No. w13570). National Bureau of Economic Research.
- Malmendier, U., Tate, G., Yan, J. (2007). "Corporate financial policies with overconfident managers" (No. w13570). National Bureau of Economic Research.
- Malmendier, U., Tate, G., Yan, J. (2011). Overconfidence and early-life experiences: The effect of managerial traits on corporate financial policies. *The Journal of Finance*, 66(5), 1687-1733.
- Malmendier, U., Tate, G., Yan, J., (2011). Overconfidence and Early-Life Experiences: The Effect of Managerial Traits on Corporate Financial Policies. *Journal of Finance* 66, 1687–1733.
- Mangot (2004), Mangot, M. 25 ans de finance comportementale ou l'e mergence d'un nouveau paradigme.
- Mansourinia, E., Emamgholipour, M., Rekabdarkolaei, E. A., & Hozoori, M. (2013). The effect of board size, board independence and CEO duality on dividend policy of companies: Evidence from Tehran stock exchange. *International Journal of Economy, Management and Social Sciences*, 2(6), 237-241.
- Marcelo, J. L. M., Quirós, J. L. M., & Martins, J. L. (2013). The role of country and industry factors during volatile times. *Journal of International Financial Markets, Institutions and Money*, 26, 273-290.
- March, J. G., & Shapira, Z. (1987). Managerial perspectives on risk and risk taking. *Management science*, 33(11), 1404-1418.
- March, J. G., & Shapira, Z. (1987). Managerial perspectives on risk and risk taking. *Management science*, 33(11), 1404-1418.
- March, J. G., & Simon, H. A. (1958), *Organizations*, Wiley-Blackwell.
- Margaritis, D., & Psillaki, M. (2010). «Capital structure, equity ownership and firm performance». *Journal of banking & finance*, 34(3), p.621-632.
- Markman, A. B., & Ross, B. H. (2003). Category use and category learning. *Psychological bulletin*, 129(4), 592.
- Markman, A. B., & Ross, B. H. (2003). Category use and category learning. *Psychological bulletin*, 129(4), 592.
- Marsh, T. A., & Merton, R. C. (1987). Dividend behavior for the aggregate stock market. *Journal of Business*, 1-40.
- Matta, E., & Beamish, P. W. (2008). The accentuated CEO career horizon problem: Evidence from international acquisitions. *Strategic Management Journal*, 29(7), 683-700.

- Matta, E., & Beamish, P. W. (2008). The accentuated CEO career horizon problem: Evidence from international acquisitions. *Strategic Management Journal*, 29(7), 683-700.
- McCabe, G. (2011). «The Empirical Relationship between Investment and Financing: A New Look». *Journal of Financial and Quantitative Analysis* Vol. (99) p.246-261
- Merrow, E. W., Phillips, K., & Myers, C. W. (1981). Understanding cost growth and performance shortfalls in pioneer process plants. Rand Corporation.
- Meyer, A. D., Tsui, A. S., & Hinings, C. R. (1993). Configurational approaches to organizational analysis. *Academy of Management journal*, 36(6), 1175-1195.
- Michaely, R. (1991). Ex-dividend day stock price behavior: The case of the 1986 Tax Reform Act. *The Journal of Finance*, 46(3), 845-859.
- Michel, A. (1979). Industry influence on dividend policy. *Financial Management*, 22-26.
- Michel, A. (1979). Industry influence on dividend policy. *Financial Management*, 8(3), 22-26.
- Michel, A. J., & Shaked, I. (1986). Country and industry influence on dividend policy: evidence from Japan and the USA. *Journal of Business Finance & Accounting*, 13(3), 365-381.
- Miller, M. H. (1986). Behavioral rationality in finance: The case of dividends. *Journal of Business*, S451-S468.
- Miller, M. H., & Rock, K. (1985). Dividend policy under asymmetric information. *The Journal of finance*, 40(4), 1031-1051.
- Miller, M. H., & Scholes, M. S. (1982). Dividends and taxes: Some empirical evidence. *Journal of Political Economy*, 90(6), 1118-1141.
- Miller, M., & Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares.
- Miller, M.H., & Modigliani, F. (1961). «Dividend policy, growth, and the valuation of shares». *the Journal of Business*, 34(4), p.411-433.
- Miller, Merton H. and Myron Scholes. (1978). "Dividends and Taxes." *Journal of Financial Economics* 6, no. 4: pp 333-364.).
- Milliken, F. J. (1987). Three types of perceived uncertainty about the environment: State, effect, and response uncertainty. *Academy of Management review*, 12(1), 133-143.
- Mitchell, O. S., & Utkus, S. P. (2004). Lessons from behavioral finance for retirement plan design. *Pension design and structure: New lessons from behavioral finance*, 18(1), 82-94.
- Mitchell, O. S., & Utkus, S. P. (2004). Lessons from behavioral finance for retirement plan design. *Pension design and structure: New lessons from behavioral finance*, 3-42.

- Mitchell, O. S., & Utkus, S. P. (Eds.). (2004). *Pension design and structure: New lessons from behavioral finance*. Oxford University Press.
- Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: a correction. *The American economic review*, 53(3), 433-443.
- Moore, D. A., Tenney, E. R., & Haran, U. (2015). Overprecision in judgment. *The Wiley Blackwell handbook of judgment and decision making*, 182-209
- Morck, R., Shleifer, A., Vishny, R. W. (1990). «Do managerial objectives drive bad acquisitions? ». *The Journal of Finance*, 45(1), p.31-48.
- Mori, N. (2010). Tax clientele effects of dividends under intertemporal consumption choices. *Journal of Banking & Finance*, 34(5), 1089-1097.
- Mullainathan, S. (2002). *Thinking through categories*. NBER working paper.
- Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of financial economics*, 5(2), 147-175.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of financial economics*, 13(2), 187-221.
- Narayan, P. K., Ahmed, H. A., & Narayan, S. (2017). Can investors gain from investing in certain sectors?. *Journal of International Financial Markets, Institutions and Money*, 48, 160-177.
- Neves, E., & Torre, C. D. L. (2006). Dividends: New evidence on the catering theory.
- Neves, E., & Torre, C. D. L. (2006). Dividends: New evidence on the catering theory.
- Nguyen, H. Faff, R. (2012). «Impact of board size and board diversity on firm value: Australian evidence». *Corporate Ownership and Control*, 4: p.24-32.
- Nguyen, T., & Schüßler, A. (2013). How to make better decisions. *Lessons learned from behavior-Alejandro José Useche Arévalo*, (21).
- Nichols, A. (2007). Causal inference with observational data. *The Stata Journal*, 7(4), 507-541.
- Nichols, A. (2008). Causal inference with observational data. *The Stata Journal*, 7(4), 507-541.
- Nissim, D., & Ziv, A. (2001). « Dividend changes and future profitability». *The Journal of Finance*, 56(6), p.2111-2133.
- Noe, T. H., & Rebello, M. J. (1996). Asymmetric information, managerial opportunism, financing, and payout policies. *The Journal of Finance*, 51(2), 637-660.
- Ntim, C. (2011). The King reports, independent non-executive directors and firm valuation on the Johannesburg stock exchange.
- Nutt, P. C. (1993). Flexible decision styles and the choices of top executives. *Journal of Management Studies*, 30(5), 695-721.

- O'Connell, P. G., & Teo, M. (2009). Institutional investors, past performance, and dynamic loss aversion. *Journal of Financial and Quantitative Analysis*, 44(1), 155-188.
- Obradovich, J., & Gill, A. (2013). The impact of corporate governance and financial leverage on the value of American firms.
- Odean, T. (1998). «Volume, volatility, price, and profit when all traders are above average». *The Journal of Finance*, 53(6), p.1887-1934.
- Odean, T. (1998). Are investors reluctant to realize their losses?. *The Journal of finance*, 53(5), 1775-1798.
- Odean, T. (1998). Volume, volatility, price, and profit when all traders are above average. *The journal of finance*, 53(6), 1887-1934.
- Odean, T. (1998). Volume, volatility, price, and profit when all traders are above average. *The journal of finance*, 53(6), 1887-1934.
- Odean, T. (1999). Do investors trade too much?. *American economic review*, 89(5), 1279-1298.
- Oliveira, R. F., Schiozer, R. F., Barros, L. A. B. C., 2015. Depositors perception of “too-big-to-fail”. *Review of Finance*, forthcoming.
- Oliver, J. D. (2005). The viable but nonculturable state in bacteria. *The Journal of Microbiology*, 43(1), 93-100.
- Ormos, M., & Timotity, D. (2016). Generalized asset pricing: expected downside risk-based equilibrium modeling. *Economic Modelling*, 52, 967-980.
- Ormos, M., & Timotity, D. (2016). Market microstructure during financial crisis: Dynamics of informed and heuristic-driven trading. *Finance Research Letters*, 19, 60-66.
- Ortoleva, P., & Snowberg, E. (2015). Are conservatives overconfident? *European Journal of Political Economy*, 40, 333-344.
- Ortoleva, P., & Snowberg, E. (2015). Overconfidence in political behavior. *American Economic Review*, 105(2), 504-35.
- Osobov, I., & Denis, D. J. (2005). «Disappearing dividends, catering incentives and agency costs: International evidence». *Work. Pap., Purdue Univ.*
- Osobov, I., & Denis, D. J. (2008). «Why do firms pay dividends? International evidence on the determinants of dividend policy». *Journal of Financial economics*, 89(1), p.62-82.
- Otoo, M. (1999). Consumer sentiment and the stock market.
- Palich, L. E., Bagby, D. R. (1995). «Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom». *Journal of business venturing*, 10(6), p.425-438.
- Palmberg J. (2015), “The performance effect of corporate board of directors”, *European Journal of Law and Economics*, 40(2), p. 273-292.

- Pan, L. H. (2009). Two essays on dividend policy, managerial compensation and corporate governance, Business Administration – Dissertations, Paper 15.
- Parrino, R., Sias, R. W., & Starks, L. T. (2003). Voting with their feet: Institutional ownership changes around forced CEO turnover. *Journal of financial economics*, 68(1), 3-46.
- Pearce, J. A., Zahra, S. A. (1991). «The relative power of CEOs and boards of directors: Associations with corporate performance». *Strategic management journal*, 12(2), p.135-153.
- Peek, E., Cuijpers, R., & Buijink, W. (2010). Creditors' and shareholders' reporting demands in public versus private firms: Evidence from Europe. *Contemporary Accounting Research*, 27(1), 49-91.
- Peng, L., & Xiong, W. (2006). Investor attention, overconfidence and category learning. *Journal of Financial Economics*, 80(3), 563-602.
- Peng, Lin, and Wei Xiong, (2006). Investor attention, overconfidence and category learning, *Journal of Financial Economics* 80, 563–602.
- Peng, Lin, Wei Xiong, and Tim Bollerslev, (2007). Investor attention and time-varying comovements, *European Financial Management* 13, 394–422.
- Pettit, R. R. (1977). Taxes, transactions costs and the clientele effect of dividends. *Journal of Financial Economics*, 5(3), 419-436.
- Plous, S. (1993). *The psychology of judgment and decision making*. McGraw-Hill Book Company.
- Porter, M. E. (1991). Towards a dynamic theory of strategy. *Strategic management journal*, 12(S2), 95-117.
- Porter, M. E. *Competitive strategy*. New York The Free Press, 1980.
- Priya, K., & Nimalathasan, B. (2013). Dividend policy ratios and firm performance: a case study of Selected Hotels & Restaurants in Sri Lanka. *Global Journal of Commerce and Management Perspectives*, 2(6), 16-22.
- Puri, M., & Robinson, D. T. (2007). Optimism and economic choice. *Journal of Financial Economics*, 86(1), 71-99.
- Qiu and Welch, 2006
- Qiu, L., & Welch, I. (2004). Investor sentiment measures (No. w10794). National Bureau of Economic Research.
- Quine, W. V. (1952). The problem of simplifying truth functions. *The American mathematical monthly*, 59(8), 521-531.
- Quine, W. V. (1955). A way to simplify truth functions. *The American Mathematical Monthly*, 62(9), 627-631.
- Rachlinski, J. J. (2004). Heuristics, biases, and governance. *Blackwell handbook of judgment and decision making*, 567.

- Ragin, C. (1987). The comparative method: Moving beyond qualitative and quantitative methods. Berkeley: University of California.
- Ragin, C. C. (2000). Fuzzy-set social science. University of Chicago Press.
- Ragin, C. C., & Fiss, P. C. (2008). Net effects analysis versus configurational analysis: An empirical demonstration. Redesigning social inquiry: Fuzzy sets and beyond, 190-212.
- Rajagopalan, N., Rasheed, A. M., & Datta, D. K. (1993). Strategic decision processes: Critical review and future directions. Journal of management, 19(2), 349-384.
- Ramadan, I. Z. (2015). The Jordanian Catering Theory of Dividends. International Journal of Business and Management, 10(2), 226.
- Rasheed, S., Sadaqat, S. E. H. R. I. S. H., Chughtai, S. (2012). « Managerial Overconfidence and Discretion: Do Managerial Hubris Affect the Dividend Policy in Pakistan». Journal of Business and Management, 6(4), p.50-62.
- Rashid, M., Mat Nor, F., & Ibrahim, I. (2013). Evidence of dividend catering theory in Malaysia: implications for investor sentiment.
- References to add:
- Richardson, S., I. Tuna and M. Wu, (2002). "Predicting Earnings Management: The case of earnings restatements, Working Paper, University of Pennsylvania.
- Rihoux, B., & Ragin, C. C. (2008). Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques (Vol. 51). Sage Publications.
- Ritter, J. R. (2003). Differences between European and American IPO markets. European financial management, 9(4), 421-434.
- Robin, A.J..(1991). "The Impact of the 1986 Tax Reform Act on Ex-dividend Day Returns," Financial Management 20, pp. 60-70.
- Roger, P., BROIHANNE, M. H., & Merli, M. (2012). In search of positive skewness: the case of individual investors (No. 2012-04). Laboratoire de Recherche en Gestion et Economie (LaRGE), Université de Strasbourg.
- Rosch, E. (1999). Principles of categorization. Concepts: core readings, 189. E. Rosch, B.B. Lloyd (Eds.), Cognition and categorization, Erlbaum, Hillsdale, NJ (1978)
- Ross, S. A. (1977). «The determination of financial structure: the incentive-signalling approach». The bell journal of economics, p.23-40.
- Rozeff, M. S. (1982). «Growth, beta and agency costs as determinants of dividend payout ratios». Journal of financial Research, 5(3), p.249-259.
- Russo, J. E., & Schoemaker, P. J. (1992). Managing overconfidence. Sloan management review, 33(2), 7-17.
- Salhin, A., Sherif, M., & Jones, E. (2016). Managerial sentiment, consumer confidence and sector returns. International Review of Financial Analysis, 47, 24-38.
- Sawicki, J. (2009). Corporate governance and dividend policy in Southeast Asia pre- and post-crisis. The European Journal of Finance, 15(2), 211-230.

- Schaefer, P. S., Williams, C. C., Goodie, A. S., & Campbell, W. K. (2004). Overconfidence and the big five. *Journal of research in Personality*, 38(5), 473-480.
- Scheier, M. F., Carver, C. S. (1985). «Optimism, coping, and health: assessment and implications of generalized outcome expectancies» *Health psychology*, 4(3), p.219.
- Schneider, C. Q., & Wagemann, C. (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge University Press.
- Schneider, S. C., & De Meyer, A. (1991). Interpreting and responding to strategic issues: The impact of national culture. *Strategic management journal*, 12(4), 307-320.
- Scholz, J. K. (1992). A direct examination of the dividend clientele hypothesis. *Journal of Public Economics*, 49(3), 261-285.
- Schrand, C. M., Zechman, S. L. C. (2012). «Executive overconfidence and the slippery slope to financial misreporting». *Journal of Accounting and Economics* 53, p.311–29.
- Schrand, C.M., Zechman, S.L.C. (2012). Executive overconfidence and the slippery slope to financial misreporting. *Journal of Accounting and Economics*, 53, 311-29.
- Schrand, C.M., Zechman, S.L.C. (2012). Executive overconfidence and the slippery slope to financial misreporting. *Journal of Accounting and Economics*, 53, 311-29.
- Scott Jr, J. H. (1977). Bankruptcy, secured debt, and optimal capital structure. *The journal of finance*, 32(1), 1-19.
- Shah, S. Z. A., & Hussain, Z. (2012). Impact of ownership structure on firm performance evidence from non-financial listed companies at Karachi Stock Exchange. *International Research Journal of Finance and Economics*, 84, 6-13.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of management review*, 25(1), 217-226.
- Shefrin, H. (1999). Irrational exuberance and option smiles. *Financial Analysts Journal*, 55(6), 91-103.
- Shefrin, H. (2001). Behavioral corporate finance. *Journal of applied corporate finance*, 14(3), 113-126.
- Shefrin, H. (2007). *Behavioral Corporate Finance: Behavioral Foundations; 2. Valuation; 3. Capital Budgeting; 4. Perceptions About Risk and Return; 5. Inefficient Markets and Corporate Decisions; 6. Capital Structure; 7. Dividend Policy; 8. Agency Conflicts and Corporate Governance; 9. Group Process; 10. Mergers and Acquisitions; 11. Application of Real-Option Techniques to Capital Budgeting and Capital Structure (on the website only)*. McGraw-Hill/Irwin.
- Shefrin, H. (2010). «Behavioralizing finance». *Foundations and Trends® in Finance*, 4 (1–2), 1-184.
- Shefrin, H. M., & Statman, M. (1984). Explaining investor preference for cash dividends. *Journal of financial economics*, 13(2), 253-282.
- Shiller, R. C. (2000). Irrational exuberance. *Philosophy & Public Policy Quarterly*, 20(1), 18-23.

- Shiller, R. J. (1980). Do stock prices move too much to be justified by subsequent changes in dividends?.
- Shleifer, A. (2000). *Inefficient Markets: An introduction to behavioural finance*. OUP Oxford.
- Shleifer, A. (2000). *Inefficient markets: An introduction to behavioural finance*. OUP Oxford.
- Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of political economy*, 94(3, Part 1), 461-488.
- Shleifer, A., & Vishny, R. W. (1989). Management entrenchment: The case of manager-specific investments. *Journal of financial economics*, 25(1), 123-139.
- Shleifer, A., & Vishny, R. W. (1997). The limits of arbitrage. *The Journal of finance*, 52(1), 35-55.
- Shleifer, A., & Vishny, R. W. (1997). The limits of arbitrage. *The Journal of finance*, 52(1), 35-55.
- Siegel, J. J. (1992). Equity risk premia, corporate profit forecasts, and investor sentiment around the stock crash of October 1987. *Journal of Business*, 557-570.
- Simon, D. P., & Wiggins III, R. A. (2001). S&P futures returns and contrary sentiment indicators. *Journal of Futures Markets: Futures, Options, and Other Derivative Products*, 21(5), 447-462.
- Simon, H. A. (1956). Rational choice and the structure of the environment. *Psychological review*, 63(2), 129.
- Simon, H. A. (2013). *Administrative behavior*. Simon and Schuster.
- Singhania, M. (2005). Trends in dividend payout: A study of select Indian companies. *Journal of Management Research*, 5(3), 129.
- Smircich, L., & Stubbart, C. (1985). Strategic management in an enacted world. *Academy of management Review*, 10(4), 724-736.
- Smith, D. A. (1996). Third World cities in global perspective: the political economy of uneven urbanization.
- Smith, M., & Liou, D. K. (2007). Industrial sector and financial distress. *Managerial Auditing Journal*, 22(4), 376-391.
- Snopek, L. (2012). *The complete guide to portfolio construction and management*. John Wiley & Sons.
- Soll, J. B. (1996). Determinants of overconfidence and miscalibration: The roles of random error and ecological structure. *Organizational Behavior and Human Decision Processes*, 65(2), 117-137.
- Solt, M. E., & Statman, M. (1988). How useful is the sentiment index?. *Financial Analysts Journal*, 44(5), 45-55.

- Stevenson, I. (2013). Does technology have an impact on learning? A fuzzy set analysis of historical data on the role of digital repertoires in shaping the outcomes of classroom pedagogy. *Computers & Education*, 69, 148-158.
- Stulz, R. (1990). Managerial discretion and optimal financing policies. *Journal of financial Economics*, 26(1), 3-27.
- Subramaniam, R., & Devi, S. S. (2011). Corporate governance and dividend policy in Malaysia. In *International Conference on Business Economics Research*, Kuala Lumpur, Malaysia. Retrieved from.
- Subramaniam, V., Tang, T. T., Yue, H., & Zhou, X. (2011). Firm structure and corporate cash holdings. *Journal of Corporate Finance*, 17(3), 759-773.
- Svenson, O. (1981). Are we all less risky and more skillful than our fellow drivers?. *Acta psychologica*, 47(2), 143-148.
- Svenson, O. (1981). Are we all less risky and more skillful than our fellow drivers?. *Acta psychologica*, 47(2), 143-148.
- Swell, M. (2008), "Behavioural Finance", www.behaviouralfinance.net (assessed on: July 29, 2009)
- Szyszka, A. (2013). *Behavioral finance and capital markets: How psychology influences investors and corporations*. Springer.
- Taylor, E. F., & Wheeler, J. A. (1975). *Introduction to general relativity*.
- Taylor, R. N. (1975). Age and experience as determinants of managerial information processing and decision-making performance. *Academy of Management Journal*, 18(1), 74-81.
- Taylor, S. E., Brown, J. D. (1988). «Illusion and well-being: a social psychological perspective on mental health». *Psychological bulletin*, 103(2), p.193.
- Tellier, (2003). "la dynamique des champs organisationnels : quels enseignements tirer du cas de la vidéo numérique » *Finance , Contrôle , stratégie* , vol .6(4).
- Thaler, R. H. (1999). Mental accounting matters. *Journal of Behavioral decision making*, 12(3), 183-206.
- Thaler, R. H. (Ed.). (2005). *Advances in behavioral finance* (Vol. 2). Princeton University Press.
- Thaler, R. H., & Shefrin, H. M. (1981). An economic theory of self-control. *Journal of political Economy*, 89(2), 392-406.
- Thim, C. K., Choong, Y. V., & Nee, C. S. (2011). Factors affecting financial distress: The case of Malaysian public listed firms. *Corporate Ownership and Control*, 8(4), 345-351.
- Tsuji, C. (2010). A Test of the catering theory of dividends: The case of the Japanese electric appliances industry. *Journal of Management Research*, 2(2).
- Turner, J. D., Ye, Q., & Zhan, W. (2013). Why do firms pay dividends?: Evidence from an early and unregulated capital market. *Review of Finance*, 17(5), 1787-1826.

- Veprauskaitė, E., Adams, M. (2013). «Do powerful chief executives influence the financial performance of UK firms? ». *The British accounting review*, 45(3), p.229-241.
- Vermaelen, T. (1981). Common stock repurchases and market signalling: An empirical study. *Journal of financial economics*, 9(2), 139-183.
- Vermaelen, T. (1984). Repurchase tender offers, signaling, and managerial incentives. *Journal of Financial and Quantitative Analysis*, 19(2), 163-181.
- Vieira, E. S. (2014). Inverse market reaction to dividend changes in the european context.
- Vieira, Elisabete S. (2011). 'Firm-Specific Factors And The Market Reaction To Dividend Change Announcements: Evidence From Europe'. *Marmara Journal Of European Studies* 19 (1): 1-25.
- Vink, M. P., & Van Vliet, O. (2009). Not quite crisp, not yet fuzzy? Assessing the potentials and pitfalls of multi-value QCA. *Field Methods*, 21(3), 265-289.
- Vis, B. (2012). The comparative advantages of fsQCA and regression analysis for moderately large-N analyses. *Sociological Methods & Research*, 41(1), 168-198.
- Von Eije, H., & Megginson, W. L. (2008). Dividends and share repurchases in the European Union. *Journal of financial economics*, 89(2), 347-374.
- Walter, J. E. (1956). Dividend policies and common stock prices. *the Journal of Finance*, 11(1), 29-41.
- Watts, R., 1973, "The Information Component of Dividends," *Journal of Business* 46, 191-211.
- Wei, G., & Xiao, J. Z. (2009). Equity ownership segregation, shareholder preferences, and dividend policy in China. *The British accounting review*, 41(3), 169-183.
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of personality and social psychology*, 39(5), 806.
- Wen, Y., Jia, J. (2010). «Institutional ownership, managerial ownership and dividend policy in bank holding companies». *International Review of Accounting, Banking and Finance*, 2(1), p.8-21.
- Weng, H., & Shinong, W. (2007). Institutional investors, corporate governance and their dividend policy. *China accounting review*, 5(10), 367-379.
- Whaley, R. E. (2000). The investor fear gauge. *The Journal of Portfolio Management*, 26(3),
- Whaley, R. E. (2008). Understanding vix.12-17.
- Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of management*, 17(3), 601-617.

- Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of management*, 17(3), 601-617.
- Woodside, A. G. (2013). Moving beyond multiple regression analysis to algorithms: Calling for adoption of a paradigm shift from symmetric to asymmetric thinking in data analysis and crafting theory.
- Woodside, A. G., & Zhang, M. (2012). Identifying x-consumers using causal recipes: "Whales" and "jumbo shrimps" casino gamblers. *Journal of Gambling Studies*, 28(1), 13-26.
- Wooldridge, J. M. (2002). Inverse probability weighted M-estimators for sample selection, attrition, and stratification. *Portuguese Economic Journal*, 1(2), 117-139.
- Wu, C. H., & Liu, V. W. (2011). Payout policy and CEO overconfidence. working Paper.
- Wu, C.H., & Liu, V.W., (2011). «Payout Policy and CEO Overconfidence». Working Paper. National Sun Yat-sen University, Taiwan.
- Wu, C.H., Liu, V.W. (2011). "Payout Policy and CEO Overconfidence." Working Paper. National Sun Yat-sen University, Taiwan.
- Wu, P. L., Yeh, S. S., & Woodside, A. G. (2014). Applying complexity theory to deepen service dominant logic: Configural analysis of customer experience-and-outcome assessments of professional services for personal transformations. *Journal of Business Research*, 67(8), 1647-1670.
- Wurgler, J., Baker, M., & Yuan, Y. (2009). Global, local, and contagious investor sentiment.
- Xiya, L., (2011). Study on the institutional investors holding shares and the listed companies' dividend policy. 3rd International Conference on Information and Financial Engineering. Singapore: IACSIT Press. pp: 442-446.
- Yakov and Li (2003) Amihud Yakov and Kefei Li, 2002, The declining information content of dividend announcements and the effect of institutional holdings, Working Paper, New York University, New York, NY.
- Yeo, H. J. (2018). Role of free cash flows in making investment and dividend decisions: The case of the shipping industry. *The Asian Journal of Shipping and Logistics*, 34(2), 113-118.
- Yermack, D. (1996). «Higher market valuation of companies with a small board of directors». *Journal of financial economics*, 40(2).
- Yim, S. (2013). The acquisitiveness of youth: CEO age and acquisition behavior. *Journal of financial economics*, 108(1), 250-273.
- Yu, J., & Yuan, Y. (2011). Investor sentiment and the mean–variance relation. *Journal of Financial Economics*, 100(2), 367-381.
- Zacharakis, A. and Shepherd, D. (2001), "The nature of information and overconfidence on venture capitalists' decision making", *Journal of Business Venturing*, Vol. 16, pp. 311-32.

- Zeckhauser and Pound (1990)
- Zhang, H. (2008). «Corporate governance and dividend policy: A comparison of Chinese firms listed in Hong Kong and in the Mainland». *China Economic Review*, 19(3), p.437-459.
- Zhao, Xin-gang. "On the relationship between fund holdings and cash dividend policy of listed companies." *Management Science & Engineering (ICMSE)*, 2014 International Conference on. IEEE, 2014.
- Zouaoui, M. (2005). "Le sentiment de l'investisseur et les rentabilités des actions: étude empirique sur le marché français." CERAG UMR 5820.
- Zouaoui, M., Nouyrigat, G., & Beer, F. (2011). How does investor sentiment affect stock market crises? Evidence from panel data. *Financial Review*, 46(4), 723-747.
- Zouaoui, Mohamed, Genevieve Nouyrigat, and Francisca Beer. "How does investor sentiment affect stock market crises? Evidence from panel data." *Financial Review* 46.4 (2011): 723-747.
- Zwiebel, J. (1996). «Dynamic capital structure under managerial entrenchment». *The American Economic Review*, p.1197-1215.

APPENDICES

//////////Dividend Policy, Catering dividend across - sectors Analysis: Inefficient market//////////

//////////Descriptive analysis//////////

Variable	Obs	Mean	Std. Dev.	Min	Max
PD	1,920	.1548039	2.331984	-15.78722	17.365
CASHFLOW	1,920	.0966671	.1123618	-.0753109	.4422723
MTB	1,920	2.26025	1.776321	.4440564	7.616354
NM	1,920	.0318042	.0828535	-.23	.15
GA	1,920	.0682747	.1670291	-.218874	.5074606
LEV	1,920	.27382	.2519746	.0029567	1
FIRMSIZE	1,920	13.38723	2.274659	9.639465	17.33198
FIRMAGE	1,920	3.465082	.8080655	2.012676	5.010635

tab YgFirm

YgFirm	Freq.	Percent	Cum.
0	975	50.78	50.78
1	945	49.22	100.00
Total	1,920	100.00	

sum PDinYg

Variable	Obs	Mean	Std. Dev.	Min	Max
PDinYg	1,920	.084775	1.091883	-2.501197	2.9425

. tab SmFirm

SmFirm	Freq.	Percent	Cum.
0	961	50.05	50.05
1	959	49.95	100.00
Total	1,920	100.00	

. sum PDinSm

Variable	Obs	Mean	Std. Dev.	Min	Max
PDinSm	1,920	.1092991	1.071041	-2.501197	2.9425

tab SmYg

SmYg	Freq.	Percent	Cum.
0	1,302	67.81	67.81
1	618	32.19	100.00
Total	1,920	100.00	

. sum PDinSmYg

Variable	Obs	Mean	Std. Dev.	Min	Max
PDinSmYg	1,920	.0651425	.8978211	-2.501197	2.9425

tab1 BigFirm Bigold OldFirm

-> tabulation of BigFirm

BigFirm	Freq.	Percent	Cum.
0	959	49.95	49.95
1	961	50.05	100.00
Total	1,920	100.00	

-> tabulation of Bigold

Bigold	Freq.	Percent	Cum.
--------	-------	---------	------

0	1,301	67.76	67.76
1	619	32.24	100.00
Total	1,920	100.00	

-> tabulation of oldFirm

oldFirm	Freq.	Percent	Cum.
0	976	50.83	50.83
1	944	49.17	100.00
Total	1,920	100.00	

. sum PDinBigOld

variable	Obs	Mean	Std. Dev.	Min	Max
PDinBigOld	1,920	.0707882	.787573	-2.501197	2.9425

. tab1 oldSec BigSec

-> tabulation of oldSec

oldSec	Freq.	Percent	Cum.
0	672	35.00	35.00
1	1,248	65.00	100.00
Total	1,920	100.00	

-> tabulation of BigSec

BigSec	Freq.	Percent	Cum.
0	1,072	55.83	55.83
1	848	44.17	100.00
Total	1,920	100.00	

////////test de difference de moyenne////////////////////////////////////

Shapiro-wilk w test for normal data

variable	Obs	W	V	z	Prob>z
pdt1	1920	0.81489	211.536	13.600	0.00000

on rejette l'hypothèse de normalité et on opte pour les tests non paramétriques : independent ttest : wilcoxon Rank Sum Test for Independent Samples

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	616	612812	591668
1	1304	1231348	1252492
combined	1920	1844160	1844160

unadjusted variance 1.286e+08

adjustment for ties -12016.869

adjusted variance 1.286e+08

Ho: pdt1(div==0) = pdt1(div==1)

z = 1.865

Prob > |z| = 0.0622

//////// variation sentiment between dividend payer and dividend non payers //////////

-> var4 = 1

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	222	46599	46287

1	194	40137	40449
combined	416	86736	86736

unadjusted variance 1496613.00
adjustment for ties -5837.53

adjusted variance 1490775.47

Ho: pdt1(div==0) = pdt1(div==1)
z = 0.256
Prob > |z| = 0.7983

-> var4 = 2

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	45	6075	5422.5
1	195	22845	23497.5
combined	240	28920	28920

unadjusted variance 176231.25
adjustment for ties -685.36

adjusted variance 175545.89

Ho: pdt1(div==0) = pdt1(div==1)
z = 1.557
Prob > |z| = 0.1194

-> var4 = 3

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	109	19403.5	19238.5
1	243	42724.5	42889.5
combined	352	62128	62128

unadjusted variance 779159.25
adjustment for ties -3037.33

adjusted variance 776121.92

Ho: pdt1(div==0) = pdt1(div==1)
z = 0.187
Prob > |z| = 0.8514

-> var4 = 4

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	64	5081	4640
1	80	5359	5800
combined	144	10440	10440

unadjusted variance 61866.67
adjustment for ties -238.69

adjusted variance 61627.97

Ho: pdt1(div==0) = pdt1(div==1)
z = 1.776
Prob > |z| = 0.0757

-> var4 = 5

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	15	931.5	967.5
1	113	7324.5	7288.5
combined	128	8256	8256

unadjusted variance 18221.25
adjustment for ties -70.07

adjusted variance 18151.18

Ho: pdt1(div==0) = pdt1(div==1)
z = -0.267
Prob > |z| = 0.7893

-> var4 = 6

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	37	5268.5	5938.5
1	283	46091.5	45421.5
combined	320	51360	51360

unadjusted variance 280099.25
adjustment for ties -1091.41

adjusted variance 279007.84

Ho: pdt1(div==0) = pdt1(div==1)
z = -1.268
Prob > |z| = 0.2046

-> var4 = 7

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	47	2687	2655.5
1	65	3641	3672.5
combined	112	6328	6328

unadjusted variance 28767.92
adjustment for ties -110.09

adjusted variance 28657.83

Ho: pdt1(div==0) = pdt1(div==1)
z = 0.186
Prob > |z| = 0.8524

-> var4 = 8

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	11	471.5	357.5
1	53	1608.5	1722.5
combined	64	2080	2080

unadjusted variance 3157.92
adjustment for ties -11.57

adjusted variance 3146.35

Ho: pdt1(div==0) = pdt1(div==1)
z = 2.032
Prob > |z| = 0.0421

-> var4 = 9

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	32	1040	1040
1	32	1040	1040
combined	64	2080	2080

unadjusted variance 5546.67
 adjustment for ties -28.44

adjusted variance 5518.22

Ho: pdt1(div==0) = pdt1(div==1)
 z = 0.000
 Prob > |z| = 1.0000

-> var4 = 10

Two-sample wilcoxon rank-sum (Mann-Whitney) test

div	obs	rank sum	expected
0	34	1457	1377
1	46	1783	1863
combined	80	3240	3240

unadjusted variance 10557.00
 adjustment for ties -39.59

adjusted variance 10517.41

Ho: pdt1(div==0) = pdt1(div==1)
 z = 0.780
 Prob > |z| = 0.4353

/////////////////////////test non parametrique d'analyse de la variance)
 ///://:////////////////////////////////

Kruskal-wallis equality-of-populations rank test

var4	Obs	Rank Sum
1	416	360828.00
2	240	196140.00
3	352	263538.00
4	144	227403.00
5	128	166056.00
6	320	243040.00
7	112	93940.00
8	64	114492.00
9	64	90708.00
10	80	88015.00

chi-squared = 544.618 with 9 d.f.
 probability = 0.0001

chi-squared with ties = 544.669 with 9 d.f.
 probability = 0.0001

*****Pairwise corelation Matrix (based on individual samples)and initial checking
 for Multicollinearity*****

. correlate div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE
 (obs=1,920)

FIRMAGE	div	PD	CASHFLOW	MTB	NM	GA	LEV	FIRMSIZE
div	1.0000							
PD	-0.0417	1.0000						
CASHFLOW	0.1313	0.0654	1.0000					
MTB	-0.1405	0.1366	0.1696	1.0000				

NM		0.2465	-0.0508	0.3062	0.0415	1.0000			
GA		-0.0090	0.0113	0.1512	0.2042	0.1122	1.0000		
LEV		0.1124	0.0268	0.4046	-0.0580	0.0901	-0.0048	1.0000	
FIRMSIZE		0.3465	-0.0247	-0.1064	-0.1929	0.1191	-0.1056	0.1460	1.0000
FIRMAGE		0.3112	-0.0309	-0.0173	-0.2310	0.0977	-0.0987	0.1762	0.4018

1.0000

*****Testing for Multicollinearity: Variance inflation factor*****

Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R- Squared
div	1.27	1.13	0.7877	0.2123
PD	1.03	1.01	0.9731	0.0269
CASHFLOW	1.46	1.21	0.6832	0.3168
MTB	1.16	1.08	0.8607	0.1393
NM	1.19	1.09	0.8406	0.1594
GA	1.07	1.04	0.9314	0.0686
LEV	1.29	1.14	0.7743	0.2257
FIRMSIZE	1.35	1.16	0.7388	0.2612
FIRMAGE	1.30	1.14	0.7712	0.2288
Mean VIF	1.24			

	Eigenval	Cond Index
1	5.8924	1.0000
2	1.0158	2.4085
3	0.8928	2.5691
4	0.7965	2.7199
5	0.5306	3.3323
6	0.3977	3.8492
7	0.2657	4.7095
8	0.1700	5.8868
9	0.0269	14.8042
10	0.0115	22.6034

Condition Number 22.6034

Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)

Det(correlation matrix) 0.3682

*****logistic model on panel data*****

***** normality test *****

quietly reg div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE, robust

. predict residu, resid

. sktest residu

Skewness/Kurtosis tests for Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
residu	1.9e+03	0.0000	0.0000	.	0.0000

//////////*Hausman test to choose between fixed and random models*//////////

note: multiple positive outcomes within groups encountered.
note: 58 groups (928 obs) dropped because of all positive or
all negative outcomes.

Conditional fixed-effects logistic regression Number of obs = 992
Group variable: id Number of groups = 62

obs per group:
 min = 16
 avg = 16.0
 max = 16

Log likelihood = -344.78058 LR chi2(8) = 165.50
 Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
PD	-.0001345	.0642373	-0.00	0.998	-.1260373 .1257683
CASHFLOW	6.867754	1.820167	3.77	0.000	3.300292 10.43522

MTB	.2008896	.069767	2.88	0.004	.0641487	.3376305
NM	-6.425823	1.735686	-3.70	0.000	-9.827704	-3.023941
GA	-.3745766	.6071754	-0.62	0.537	-1.564618	.8154653
LEV	-2.445732	.8308041	-2.94	0.003	-4.074078	-.8173855
FIRMSIZE	1.305107	.2604207	5.01	0.000	.7946919	1.815522
FIRIMAGE	2.952711	.5578572	5.29	0.000	1.859331	4.046091

```

Random-effects logistic regression      Number of obs      =      1,920
Group variable: id                    Number of groups   =      120

Random effects u_i ~ Gaussian          Obs per group:
                                      min =      16
                                      avg  =     16.0
                                      max  =      16

Integration method: mvaghermite        Integration pts.   =      12

Log likelihood = -619.3853              wald chi2(8)      =     115.61
                                      Prob > chi2        =      0.0000

```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0221407	.0635084	-0.35	0.727	-.1466149	.1023336
CASHFLOW	7.122297	1.629707	4.37	0.000	3.928131	10.31646
MTB	.134841	.0641368	2.10	0.036	.0091353	.2605468
NM	-4.584912	1.645418	-2.79	0.005	-7.809872	-1.359951
GA	-.2293716	.579298	-0.40	0.692	-1.364775	.9060317
LEV	-2.290527	.7056672	-3.25	0.001	-3.67361	-.907445
FIRMSIZE	.995706	.1636496	6.08	0.000	.6749587	1.316453
FIRIMAGE	2.708328	.4106853	6.59	0.000	1.903399	3.513256
_cons	-20.6088	2.409286	-8.55	0.000	-25.33091	-15.88668
/lnsig2u	2.977363	.2314103			2.523807	3.430919
sigma_u	4.431248	.5127183			3.532138	5.559228
rho	.8564995	.0284422			.7913297	.9037906

```

LR test of rho=0: chibar2(01) = 726.10      Prob >= chibar2 = 0.000

```

	---- Coefficients ----			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
PD	-.0001345	-.0221407	.0220062	.0096492
CASHFLOW	6.867754	7.122297	-.2545432	.8105951
MTB	.2008896	.134841	.0660486	.0274575
NM	-6.425823	-4.584912	-1.840911	.552452
GA	-.3745766	-.2293716	-.145205	.1818673
LEV	-2.445732	-2.290527	-.1552042	.4384851
FIRMSIZE	1.305107	.995706	.3094011	.2025778
FIRIMAGE	2.952711	2.708328	.2443837	.3775477

b = consistent under Ho and Ha; obtained from xtlogit
B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 20.81
Prob>chi2 = 0.0077

//////////Logit regression on Panel Data//////////

```

Conditional fixed-effects logistic regression      Number of obs      =      992
Group variable: id                    Number of groups   =      62

                                      obs per group:
                                      min =      16
                                      avg  =     16.0
                                      max  =      16

Log likelihood = -344.78058              LR chi2(8)        =     165.50
                                      Prob > chi2        =      0.0000

```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
-----	-------	-----------	---	------	----------------------	--

PD	-.0001345	.0642373	-0.00	0.998	-.1260373	.1257683
CASHFLOW	6.867754	1.820167	3.77	0.000	3.300292	10.43522
MTB	.2008896	.069767	2.88	0.004	.0641487	.3376305
NM	-6.425823	1.735686	-3.70	0.000	-9.827704	-3.023941
GA	-.3745766	.6071754	-0.62	0.537	-1.564618	.8154653
LEV	-2.445732	.8308041	-2.94	0.003	-4.074078	-.8173855
FIRMSIZE	1.305107	.2604207	5.01	0.000	.7946919	1.815522
FIRMAGE	2.952711	.5578572	5.29	0.000	1.859331	4.046091

//////////* testing PD//////////

*****Probability of Dividend firm Payer by Investor sentiment on Panel A: OLD Firms*****

Random-effects logistic regression Number of obs = 1,920
Group variable: id Number of groups = 120
Random effects u_i ~ Gaussian Obs per group:
 min = 16
 avg = 16.0
 max = 16
Integration method: mvaghermite Integration pts. = 12
Log likelihood = -619.36567 wald chi2(9) = 115.65
 Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0312325	.0796402	-0.39	0.695	-.1873244	.1248595
PDinOLD	.0246836	.1303167	0.19	0.850	-.2307325	.2800997
CASHFLOW	7.115166	1.630277	4.36	0.000	3.919882	10.31045
MTB	.1366029	.0648436	2.11	0.035	.0095117	.2636941
NM	-4.590682	1.64597	-2.79	0.005	-7.816724	-1.364639
GA	-.2374068	.5808601	-0.41	0.683	-1.375872	.9010582
LEV	-2.290804	.7056303	-3.25	0.001	-3.673814	-.9077944
FIRMSIZE	.9957888	.1636857	6.08	0.000	.6749708	1.316607
FIRMAGE	2.707535	.4107114	6.59	0.000	1.902555	3.512515
_cons	-20.60991	2.409365	-8.55	0.000	-25.33218	-15.88764
/lnsig2u	2.978603	.2314837			2.524903	3.432303
sigma_u	4.433998	.5131992			3.534075	5.563078
rho	.8566519	.0284261			.7915107	.903911

LR test of rho=0: chibar2(01) = 723.23 Prob >= chibar2 = 0.000

*****Probability of Dividend firm Payer by Investor sentiment on Panel B: BIG Firms*****

Random-effects logistic regression Number of obs = 1,920
Group variable: id Number of groups = 120
Random effects u_i ~ Gaussian obs per group:
 min = 16
 avg = 16.0
 max = 16
Integration method: mvaghermite Integration pts. = 12
Log likelihood = -619.21732 wald chi2(9) = 115.98
 Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0531477	.0829297	-0.64	0.522	-.2156869	.1093915
PDinBig	.0741697	.1274687	0.58	0.561	-.1756643	.3240037
CASHFLOW	7.141654	1.630946	4.38	0.000	3.945058	10.33825
MTB	.1357079	.0641743	2.11	0.034	.0099286	.2614872
NM	-4.561253	1.643567	-2.78	0.006	-7.782585	-1.339921
GA	-.2382988	.5796973	-0.41	0.681	-1.374485	.897887
LEV	-2.291662	.705988	-3.25	0.001	-3.675373	-.9079512
FIRMSIZE	.9925079	.1638032	6.06	0.000	.6714594	1.313556
FIRMAGE	2.702808	.4103128	6.59	0.000	1.89861	3.507006
_cons	-20.55073	2.409557	-8.53	0.000	-25.27337	-15.82808
/lnsig2u	2.977694	.2313449			2.524266	3.431122

sigma_u	4.431982	.5126584	3.53295	5.559793
rho	.8565402	.0284275	.7914056	.9038083

LR test of rho=0: chibar2(01) = 726.40 Prob >= chibar2 = 0.000

*****Probability of Dividend firm Payer by Investor sentiment on Panel C: OLD Firms and BIG Firms*****

Random-effects logistic regression Number of obs = 1,920
Group variable: id Number of groups = 120

Random effects u_i ~ Gaussian Obs per group:
min = 16
avg = 16.0
max = 16

Integration method: mvaghermite Integration pts. = 12

Log likelihood = -618.86182 wald chi2(9) = 116.63
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
PD	-.0554254	.071471	-0.78	0.438	-.1955059 .0846551
PDinBigOld	.1582318	.1551623	1.02	0.308	-.1458807 .4623444
CASHFLOW	7.113496	1.631741	4.36	0.000	3.915343 10.31165
MTB	.1398273	.0644024	2.17	0.030	.0136009 .2660538
NM	-4.524686	1.644571	-2.75	0.006	-7.747986 -1.301385
GA	-.2621566	.5803361	-0.45	0.651	-1.399595 .8752813
LEV	-2.299185	.7059901	-3.26	0.001	-3.6829 -.9154697
FIRMSIZE	.9927986	.1638389	6.06	0.000	.6716801 1.313917
FIRMAGE	2.702819	.4104735	6.58	0.000	1.898306 3.507332
_cons	-20.55685	2.407896	-8.54	0.000	-25.27624 -15.83746
/lnsig2u	2.981516	.2311994			2.528374 3.434659
sigma_u	4.440461	.5133159			3.540213 5.569635
rho	.8570093	.0283322			.7920829 .9041154

LR test of rho=0: chibar2(01) = 726.98 Prob >= chibar2 = 0.0000

*****Probability of Dividend firm Payer by Investor sentiment on Panel D: Young Firms*****

Random-effects logistic regression Number of obs = 1,920
Group variable: id Number of groups = 120

Random effects u_i ~ Gaussian Obs per group:
min = 16
avg = 16.0
max = 16

Integration method: mvaghermite Integration pts. = 12

Log likelihood = -619.37348 wald chi2(9) = 115.63
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
PD	-.0104222	.1024218	-0.10	0.919	-.2111653 .1903209
PDinYg	-.0188638	.129389	-0.15	0.884	-.2724616 .234734
CASHFLOW	7.116896	1.630216	4.37	0.000	3.921731 10.31206
MTB	.1361873	.0648252	2.10	0.036	.0091323 .2632423
NM	-4.588262	1.64573	-2.79	0.005	-7.813834 -1.362689
GA	-.2354367	.5808064	-0.41	0.685	-1.373796 .902923
LEV	-2.290704	.7056159	-3.25	0.001	-3.673686 -.9077222
FIRMSIZE	.9957736	.163668	6.08	0.000	.6749903 1.316557
FIRMAGE	2.707522	.4106955	6.59	0.000	1.902573 3.51247
_cons	-20.60941	2.409306	-8.55	0.000	-25.33156 -15.88725
/lnsig2u	2.978173	.2314787			2.524483 3.431863
sigma_u	4.433044	.5130777			3.533332 5.561854
rho	.8565991	.0284342			.7914413 .9038727

LR test of rho=0: chibar2(01) = 724.08 Prob >= chibar2 = 0.000

*****Probability of Dividend firm Payer by Investor sentiment on Panel E: Small Firms*****

Random-effects logistic regression
Group variable: id
Random effects u_i ~ Gaussian
Integration method: mvaghermite
Log likelihood = -619.21732

Number of obs = 1,920
Number of groups = 120
Obs per group:
min = 16
avg = 16.0
max = 16
Integration pts. = 12
wald chi2(9) = 115.98
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	.021022	.0976799	0.22	0.830	-.1704272	.2124711
PDinSm	-.0741697	.1274687	-0.58	0.561	-.3240037	.1756643
CASHFLOW	7.141654	1.630946	4.38	0.000	3.945058	10.33825
MTB	.1357079	.0641743	2.11	0.034	.0099286	.2614872
NM	-4.561253	1.643567	-2.78	0.006	-7.782585	-1.339921
GA	-.2382988	.5796973	-0.41	0.681	-1.374485	.897887
LEV	-2.291662	.705988	-3.25	0.001	-3.675373	-.9079512
FIRMSIZE	.9925079	.1638032	6.06	0.000	.6714594	1.313556
FIRMAGE	2.702808	.4103128	6.59	0.000	1.89861	3.507006
_cons	-20.55073	2.409557	-8.53	0.000	-25.27337	-15.82808
/lnsig2u	2.977694	.2313449			2.524266	3.431122
sigma_u	4.431982	.5126584			3.53295	5.559793
rho	.8565402	.0284275			.7914056	.9038083

LR test of rho=0: chibar2(01) = 726.40 Prob >= chibar2 = 0.000

*****Probability of Dividend firm Payer by Investor sentiment on Panel F: Young Firms & Small Firms*****

Random-effects logistic regression
Group variable: id
Random effects u_i ~ Gaussian
Integration method: mvaghermite
Log likelihood = -619.37772

Number of obs = 1,920
Number of groups = 120
Obs per group:
min = 16
avg = 16.0
max = 16
Integration pts. = 12
wald chi2(9) = 115.60
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0288035	.082958	-0.35	0.728	-.1913981	.1337911
PDinSmYg	.0157887	.1264191	0.12	0.901	-.2319881	.2635656
CASHFLOW	7.121771	1.629648	4.37	0.000	3.927721	10.31582
MTB	.1340589	.0644382	2.08	0.037	.0077623	.2603554
NM	-4.580884	1.646055	-2.78	0.005	-7.807092	-1.354675
GA	-.2259233	.5798916	-0.39	0.697	-1.36249	.9106434
LEV	-2.290892	.7056224	-3.25	0.001	-3.673886	-.9078972
FIRMSIZE	.9960712	.1636436	6.09	0.000	.6753356	1.316807
FIRMAGE	2.709462	.4108316	6.60	0.000	1.904247	3.514677
_cons	-20.61583	2.409932	-8.55	0.000	-25.33921	-15.89245
/lnsig2u	2.977004	.231452			2.523367	3.430642
sigma_u	4.430454	.5127187			3.531361	5.558459
rho	.8564554	.0284546			.791257	.9037666

LR test of rho=0: chibar2(01) = 724.04 Prob >= chibar2 = 0.000

end of do-file////////////////////////////////////

*****Analysis By Sectors : Old Sectors and Big Sector*****

```

-----
-> secteur = 1
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |      416   25.96635   19.05626         1     117
-----

-----
-> secteur = 2
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |      240   57.23333   44.57793         6     162
-----

-----
-> secteur = 3
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |      352   49.72727   46.42102         1     180
-----

-----
-> secteur = 4
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |      144   29.50694   13.70366         2      53
-----

-----
-> secteur = 5
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |      128   66.95313   50.52665        17     162
-----

-----
-> secteur = 6
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |      320   61.95938   52.34975         1     193
-----

-----
-> secteur = 7
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |      112   17.35714    7.739983         1      36
-----

-----
-> secteur = 8
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |       64    50.75    60.62479         4     162
-----

-----
-> secteur = 9
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |       64    60.75    14.56894        42      91
-----

-----
-> secteur = 10
  variable |      Obs      Mean   Std. Dev.      Min      Max
-----+-----
    age |       80    38.1    16.26023         1      61
-----

. bysort secteur: sum FIRMSIZE
-----

```

-> secteur = 1

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	416	12.57793	2.002171	9.639465	17.33198

-> secteur = 2

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	240	14.18882	2.090985	9.639465	17.33198

-> secteur = 3

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	352	13.38681	2.035121	9.639465	17.33198

-> secteur = 4

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	144	12.06327	1.712785	9.639465	16.28378

-> secteur = 5

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	128	15.18723	2.122317	11.08295	17.33198

-> secteur = 6

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	320	14.22319	2.183587	9.639465	17.33198

-> secteur = 7

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	112	11.42835	1.183226	9.639465	14.07644

-> secteur = 8

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	64	14.49721	3.084246	9.639465	17.33198

-> secteur = 9

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	64	14.27408	2.156739	9.639465	16.37863

-> secteur = 10

variable	Obs	Mean	Std. Dev.	Min	Max
FIRMSIZE	80	12.49679	1.837091	9.639465	15.95887

*****Dividend payer propability by old sectors*****

.

-> oldSec = 0

```

Random-effects logistic regression      Number of obs   =      672
Group variable: id                    Number of groups =      42

Random effects u_i ~ Gaussian          Obs per group:
                                     min =      16
                                     avg =     16.0
                                     max =      16

Integration method: mvaghermite        Integration pts. =      12

Log likelihood = -226.84639            wald chi2(8)    =     43.44
                                      Prob > chi2       =     0.0000

```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.001027	.1046255	-0.01	0.992	-.2060892	.2040353
CASHFLOW	8.071303	4.621876	1.75	0.081	-.987407	17.13001
MTB	.3503774	.1233346	2.84	0.004	.108646	.5921088
NM	-6.834387	3.74277	-1.83	0.068	-14.17008	.5013081
GA	-.298644	.9417392	-0.32	0.751	-2.144419	1.547131
LEV	-1.751475	1.317789	-1.33	0.184	-4.334295	.8313444
FIRMSIZE	1.110174	.3962	2.80	0.005	.3336364	1.886712
FIRMAGE	3.672632	.9392419	3.91	0.000	1.831752	5.513513
_cons	-26.53062	4.719451	-5.62	0.000	-35.78058	-17.28067
/lnsig2u	3.454538	.416183			2.638834	4.270242
sigma_u	5.625271	1.170571			3.74124	8.458069
rho	.9058249	.035503			.8096884	.9560347

LR test of rho=0: chibar2(01) = 301.82 Prob >= chibar2 = 0.000

```

-----
-> OldSec = 1

```

```

Random-effects logistic regression      Number of obs   =    1,248
Group variable: id                    Number of groups =     78

Random effects u_i ~ Gaussian          Obs per group:
                                     min =     16
                                     avg =    16.0
                                     max =     16

Integration method: mvaghermite        Integration pts. =     12

Log likelihood = -387.13834            wald chi2(8)    =    64.47
                                      Prob > chi2       =    0.0000

```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0314163	.081312	-0.39	0.699	-.190785	.1279523
CASHFLOW	6.647206	1.799411	3.69	0.000	3.120426	10.17399
MTB	.0022332	.0783858	0.03	0.977	-.1514001	.1558665
NM	-3.900928	1.970805	-1.98	0.048	-7.763635	-.0382205
GA	-.1371085	.7476698	-0.18	0.854	-1.602514	1.328297
LEV	-3.123216	.8896725	-3.51	0.000	-4.866942	-1.37949
FIRMSIZE	.8668908	.1803598	4.81	0.000	.513392	1.22039
FIRMAGE	2.100109	.4537844	4.63	0.000	1.210708	2.98951
_cons	-15.99899	2.939596	-5.44	0.000	-21.7605	-10.23749
/lnsig2u	2.661959	.2944286			2.084889	3.239028
sigma_u	3.784749	.5571691			2.836142	5.050636
rho	.8132263	.0447206			.7097236	.8857637

LR test of rho=0: chibar2(01) = 370.00 Prob >= chibar2 = 0.000

```

end of do-file

```

```

*****Dividend payer propability by Big sectors*****

```

```

-----
-> BigSec = 0

```

```

Random-effects logistic regression      Number of obs   =    1,072
Group variable: id                    Number of groups =     67

```

Random effects u_i ~ Gaussian

Obs per group:
min = 16
avg = 16.0
max = 16

Integration method: mvaghermite

Integration pts. = 12

Log likelihood = -329.54213

wald chi2(8) = 73.41
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	.0800903	.0891209	0.90	0.369	-.0945834	.254764
CASHFLOW	10.4109	2.562922	4.06	0.000	5.387668	15.43414
MTB	.2628535	.1003155	2.62	0.009	.0662388	.4594681
NM	-8.068668	2.622905	-3.08	0.002	-13.20947	-2.92787
GA	.0007717	.7785748	0.00	0.999	-1.525207	1.52675
LEV	-1.19335	.9704387	-1.23	0.219	-3.095375	.708675
FIRMSIZE	1.29377	.2780785	4.65	0.000	.7487465	1.838794
FIRMAGE	3.318849	.6441802	5.15	0.000	2.056279	4.581419
_cons	-26.8325	3.722526	-7.21	0.000	-34.12852	-19.53649
/lnsig2u	3.30398	.3192832			2.678196	3.929764
sigma_u	5.217352	.8329065			3.815601	7.134069
rho	.892173	.0307151			.81568	.9392843

LR test of rho=0: chibar2(01) = 449.88

Prob >= chibar2 = 0.000

-> BigSec = 1

Random-effects logistic regression
Group variable: id

Number of obs = 848
Number of groups = 53

Random effects u_i ~ Gaussian

Obs per group:
min = 16
avg = 16.0
max = 16

Integration method: mvaghermite

Integration pts. = 12

Log likelihood = -279.91635

wald chi2(8) = 46.81
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.1094638	.0939231	-1.17	0.244	-.2935498	.0746221
CASHFLOW	4.281713	2.07307	2.07	0.039	.2185702	8.344855
MTB	.0038674	.0878009	0.04	0.965	-.1682193	.1759541
NM	-1.353563	2.234153	-0.61	0.545	-5.732423	3.025297
GA	-.5097491	.9019814	-0.57	0.572	-2.2776	1.258102
LEV	-4.280223	1.170981	-3.66	0.000	-6.575303	-1.985142
FIRMSIZE	.7789004	.1944836	4.00	0.000	.3977196	1.160081
FIRMAGE	1.600424	.5213592	3.07	0.002	.5785788	2.622269
_cons	-13.17703	3.145384	-4.19	0.000	-19.34187	-7.012194
/lnsig2u	2.414168	.3525806			1.723123	3.105213
sigma_u	3.34372	.5894654			2.366853	4.723767
rho	.7726474	.0619355			.6300136	.8715088

LR test of rho=0: chibar2(01) = 235.29

Prob >= chibar2 = 0.000

end of do-file

. //////////////////////////////////////
. xtlogit div PD CASHFLOW MTB NM GA LEV FIRMAGE s1 s2 s3 s4 s5 s6 s7 s8 s9 s10 , re nolog
nocon

Random-effects logistic regression
Group variable: id

Number of obs = 1,920
Number of groups = 120

Random effects u_i ~ Gaussian

obs per group:
min = 16
avg = 16.0
max = 16

Integration method: mvaghermite

Integration pts. = 12

Log likelihood = -628.88738 wald chi2(17) = 111.50
 Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0371334	.0631276	-0.59	0.556	-.1608611	.0865944
CASHFLOW	5.826232	1.531473	3.80	0.000	2.824601	8.827863
MTB	.0841044	.0615566	1.37	0.172	-.0365443	.2047531
NM	-4.117533	1.619298	-2.54	0.011	-7.291298	-.943767
GA	.048553	.5613844	0.09	0.931	-1.05174	1.148846
LEV	-2.47163	.6743524	-3.67	0.000	-3.793336	-1.149923
FIRMSIZE	3.665062	.4350065	8.43	0.000	2.812465	4.517659
FIRMSIZE s1	-11.92392	1.651655	-7.22	0.000	-15.1611	-8.686735
s2	-9.418488	1.885423	-5.00	0.000	-13.11385	-5.723126
s3	-10.90581	1.800191	-6.06	0.000	-14.43412	-7.377504
s4	-12.93676	2.08206	-6.21	0.000	-17.01753	-8.856003
s5	-10.02551	2.208698	-4.54	0.000	-14.35447	-5.696538
s6	-6.790119	1.710098	-3.97	0.000	-10.14185	-3.438389
s7	-9.239531	2.008487	-4.60	0.000	-13.17609	-5.302968
s8	-7.489594	2.72439	-2.75	0.006	-12.8293	-2.149887
s9	-14.63258	2.758011	-5.31	0.000	-20.03818	-9.226979
s10	-12.2622	2.443836	-5.02	0.000	-17.05203	-7.47237
/lnsig2u	2.802913	.236849			2.338697	3.267128
sigma_u	4.06111	.4809348			3.219894	5.122097
rho	.8336979	.0328381			.7591179	.8885763

LR test of rho=0: chibar2(01) = 641.95 Prob >= chibar2 = 0.000

```

xtlogit div CASHFLOW PD LEV MTB GA NM FIRMSIZE FIRMSIZE s1 s2 s3 s4 s5 s6 s7 s8 s9 s10, fe
nocon
note: multiple positive outcomes within groups encountered.
note: 58 groups (928 obs) dropped because of all positive or
      all negative outcomes.
note: s1 omitted because of no within-group variance.
note: s2 omitted because of no within-group variance.
note: s3 omitted because of no within-group variance.
note: s4 omitted because of no within-group variance.
note: s5 omitted because of no within-group variance.
note: s6 omitted because of no within-group variance.
note: s7 omitted because of no within-group variance.
note: s8 omitted because of no within-group variance.
note: s9 omitted because of no within-group variance.
note: s10 omitted because of no within-group variance.

```

```

Iteration 0: log likelihood = -404.49676
Iteration 1: log likelihood = -345.97064
Iteration 2: log likelihood = -344.7821
Iteration 3: log likelihood = -344.78058
Iteration 4: log likelihood = -344.78058

```

Conditional fixed-effects logistic regression Number of obs = 992
 Group variable: id Number of groups = 62

obs per group:

min	=	16
avg	=	16.0
max	=	16

Log likelihood = -344.78058 LR chi2(8) = 165.50
 Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
CASHFLOW	6.867754	1.820167	3.77	0.000	3.300292	10.43522
PD	-.0001345	.0642373	-0.00	0.998	-.1260373	.1257683
LEV	-2.445732	.8308041	-2.94	0.003	-4.074078	-.8173855
MTB	.2008896	.069767	2.88	0.004	.0641487	.3376305
GA	-.3745766	.6071754	-0.62	0.537	-1.564618	.8154653
NM	-6.425823	1.735686	-3.70	0.000	-9.827704	-3.023941
FIRMSIZE	1.305107	.2604207	5.01	0.000	.7946919	1.815522
FIRMSIZE	2.952711	.5578572	5.29	0.000	1.859331	4.046091
s1	0	(omitted)				
s2	0	(omitted)				
s3	0	(omitted)				
s4	0	(omitted)				
s5	0	(omitted)				
s6	0	(omitted)				
s7	0	(omitted)				
s8	0	(omitted)				
s9	0	(omitted)				

s10 | 0 (omitted)

---- Coefficients ----				
	(b) fx	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
CASHFLOW	6.867754	7.2407	-.3729462	.8305477
PD	-.0001345	-.0147287	.0145942	.0050272
LEV	-2.445732	-2.413265	-.0324662	.4246885
MTB	.2008896	.1322748	.0686148	.0260523
GA	-.3745766	-.1810649	-.1935117	.1743516
NM	-6.425823	-4.400519	-2.025304	.5770874
FIRMSIZE	1.305107	.9338692	.371238	.20341
FIRMAGE	2.952711	2.803671	.1490404	.3627014

b = consistent under Ho and Ha; obtained from xtlogit
 B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 22.43
 Prob>chi2 = 0.0042
 (V_b-V_B is not positive definite)

.
 . xtsum

Variable		Mean	Std. Dev.	Min	Max	Observations	
id	overall	60.5	34.64884	1	120	N =	1920
	between		34.78505	1	120	n =	120
	within		0	60.5	60.5	T =	16
secteur	overall	4.041667	2.600023	1	10	N =	1920
	between		2.610244	1	10	n =	120
	within		0	4.041667	4.041667	T =	16
year	overall	2007.5	4.610973	2000	2015	N =	1920
	between		0	2007.5	2007.5	n =	120
	within		4.610973	2000	2015	T =	16
div	overall	.6791667	.4669185	0	1	N =	1920
	between		.3601701	0	1	n =	120
	within		.2988383	-.2583333	1.616667	T =	16
payout~v	overall	27.56386	26.01073	0	100	N =	1908
	between		18.52855	0	71.26044	n =	120
	within		18.32637	-43.69657	113.3976	T-bar =	15.9
totald~e	overall	2.65e+09	1.10e+10	0	1.90e+11	N =	1920
	between		9.05e+09	20062.5	7.92e+10	n =	120
	within		6.33e+09	-6.13e+10	1.14e+11	T =	16
totala~s	overall	3.33e+13	6.57e+14	28416	1.51e+16	N =	1920
	between		2.58e+14	9902898	2.20e+15	n =	120
	within		6.05e+14	-2.16e+15	1.33e+16	T =	16
lev	overall	.2897924	.3910618	0	9.277778	N =	1920
	between		.2664926	.0006811	1.32936	n =	120
	within		.2871692	-1.029651	8.275303	T =	16
cashflow	overall	5.80e+08	2.09e+09	-1.77e+10	2.21e+10	N =	1920
	between		1.86e+09	-1.98e+08	1.69e+10	n =	120
	within		9.67e+08	-1.97e+10	6.51e+09	T =	16
cashf	overall	11.85082	228.8314	-9.555555	7217.748	N =	1920
	between		126.7641	-.5986123	1388.795	n =	120
	within		190.841	-1319.54	5840.803	T =	16
pdt1	overall	.1548039	2.331984	-15.78722	17.365	N =	1920
	between		1.161542	-1.005519	4.8675	n =	120
	within		2.024726	-14.6269	12.6523	T =	16
netmar~n	overall	-.3111578	7.17567	-294.806	.682	N =	1920
	between		2.642303	-28.10194	.20225	n =	120
	within		6.675556	-267.0152	27.25478	T =	16
age	overall	45.21667	41.90516	1	193	N =	1920
	between		41.81447	8.5	185.5	n =	120
	within		4.610775	37.52917	52.77917	T =	16

ta	overall between within	3.33e+10	6.57e+11 2.58e+11 6.05e+11	28.416 9902.898 -2.16e+12	1.51e+13 2.20e+12 1.33e+13	N = n = T =	1920 120 16
firmsize	overall between within	13.41215	2.546015 2.400427 .8747484	3.346952 8.860841 6.607154	30.34398 20.52384 24.48066	N = n = T =	1920 120 16
growth	overall between within	.0646908	.5474443 .1429125 .5286122	-12.19572 -.8179377 -11.31309	6.880754 .355588 6.709139	N = n = T =	1920 120 16
mtbv	overall between within	2.543753	4.111423 1.783294 3.7079	-24.61569 .0466783 -24.83202	71.78001 12.69619 66.79833	N = n = T =	1920 120 16
CASHFLOW	overall between within	.0966671	.1123618 .0983269 .0550689	-.0753109 -.0753109 -.3777943	.4422723 .4422723 .4585675	N = n = T =	1920 120 16
PD	overall between within	.2011422	1.466057 .7691639 1.249934	-2.501197 -.3692802 -2.287811	2.9425 2.5275 3.33009	N = n = T =	1920 120 16
LEV	overall between within	.27382	.2519746 .2305326 .1037368	.0029567 .0031337 -.3494259	1 1 1.158405	N = n = T =	1920 120 16
MTB	overall between within	2.26025	1.776321 1.084129 1.410379	.4440564 .4661084 -1.851553	7.616354 6.175368 8.208311	N = n = T =	1920 120 16
GA	overall between within	.0682747	.1670291 .0616052 .1553486	-.218874 -.0866324 -.399083	.5074606 .2484838 .6447859	N = n = T =	1920 120 16
NM	overall between within	.0318042	.0828535 .0619308 .0553106	-.23 -.23 -.2764458	.15 .134625 .3153042	N = n = T =	1920 120 16
FIRMSIZE	overall between within	13.38723	2.274659 2.214808 .554113	9.639465 9.639465 10.60614	17.33198 17.33198 16.72023	N = n = T =	1920 120 16
firmage	overall between within	3.435631	.8972295 .8513254 .2931398	0 1.916991 1.505662	5.26269 5.222746 4.291229	N = n = T =	1920 120 16
FIRMAGE	overall between within	3.465082	.8080655 .787536 .1939198	2.012676 2.264714 2.851929	5.010635 5.010635 3.9846	N = n = T =	1920 120 16
OldFirm	overall between within	.4916667	.5000608 .4555428 .2101514	0 0 -.4458333	1 1 1.429167	N = n = T =	1920 120 16
PDinOLD	overall between within	.1113321	.9737612 .5379345 .8130801	-2.501197 -.539641 -2.377621	2.9425 2.5275 3.409567	N = n = T =	1920 120 16
BigFirm	overall between within	.5005208	.50013 .4663363 .1853654	0 0 -.4369792	1 1 1.438021	N = n = T =	1920 120 16
PDinBig	overall between within	.0918431	1.011079 .5367649 .858147	-2.501197 -.4453785 -2.39711	2.9425 2.5275 3.343631	N = n = T =	1920 120 16
BigOld	overall between within	.3223958	.4675153 .4282099 .1914162	0 0 -.6151042	1 1 1.197396	N = n = T =	1920 120 16
PDinBi~d	overall between within	.0707882	.787573 .4426565 .652578	-2.501197 -.539641 -2.418165	2.9425 2.5275 3.369023	N = n = T =	1920 120 16
OldSec	overall between within	.65	.4770939 .4789695 0	0 0 .65	1 1 .65	N = n = T =	1920 120 16
BigSec	overall between within	.4416667	.4967149 .4986677 0	0 0 .4416667	1 1 .4416667	N = n = T =	1920 120 16

LEV	-2.445732	.8308041	-2.94	0.003	-4.074078	-.8173855
FIRMSIZE	1.305107	.2604207	5.01	0.000	.7946919	1.815522
FIRMAGE	2.952711	.5578572	5.29	0.000	1.859331	4.046091

Average marginal effects	Number of obs	=	992
Model VCE : OIM			

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-8.32e-09	3.98e-06	-0.00	0.998	-7.80e-06	7.78e-06
CASHFLOW	.0004251	.0001434	2.97	0.003	.0001441	.000706
MTB	.0000124	4.25e-06	2.92	0.003	4.10e-06	.0000208
NM	-.0003977	.0001498	-2.65	0.008	-.0006914	-.000104
GA	-.0000232	.0000375	-0.62	0.536	-.0000966	.0000503
LEV	-.0001514	.0000716	-2.11	0.035	-.0002917	-.000011
FIRMSIZE	.0000808	.0000132	6.10	0.000	.0000548	.0001067
FIRMAGE	.0001827	.0000585	3.12	0.002	.0000681	.0002974

```
. ////////////////////////////////////////////////// ME Small Sector//////////////////////////////////////
bysort SmallSec : xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE, re nolog
```

```
Random-effects logistic regression      Number of obs   =    1,168
Group variable: id                    Number of groups =     73
```

```
Integration method: mvaghermite      Integration pts. =      12
```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0201014	.0867481	-0.23	0.817	-.1901244	.1499217
CASHFLOW	6.084166	1.962384	3.10	0.002	2.237964	9.930369
MTB	-.0259298	.0817364	-0.32	0.751	-.1861301	.1342705
NM	-2.994734	2.065285	-1.45	0.147	-7.042618	1.05315
GA	-.451975	.8014355	-0.56	0.573	-2.02276	1.11881
LEV	-3.813431	.9772206	-3.90	0.000	-5.728749	-1.898114
FIRMSIZE	.8823617	.1918641	4.60	0.000	.5063149	1.258408
FIRMAGE	1.834389	.4658143	3.94	0.000	.9214099	2.747369
_cons	-14.79819	3.054541	-4.84	0.000	-20.78498	-8.811398
/lnsig2u	2.681698	.3105458			2.073039	3.290357
sigma_u	3.822287	.5934977			2.819388	5.181934
rho	.8162059	.0465862			.7072762	.8908555

```
-> SmallSec = 1
```

```
Random-effects logistic regression
Group variable: id
Number of obs   =    752
Number of groups =    47
```

Integration method: mvaghermite Integration pts. = 12

Log likelihood = -267.24288 Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0095975	.0960102	-0.10	0.920	-.1977739	.178579
CASHFLOW	8.461107	3.150052	2.69	0.007	2.287119	14.63509
MTB	.3230058	.1149645	2.81	0.005	.0976796	.5483321
NM	-7.214921	3.074016	-2.35	0.019	-13.23988	-1.18996
GA	.0223407	.8623286	0.03	0.979	-1.667792	1.712474
LEV	-1.237284	1.207558	-1.02	0.306	-3.604054	1.129486
FIRMSIZE	.9879025	.3216559	3.07	0.002	.3574686	1.618336
FIRMAGE	3.676402	.8103886	4.54	0.000	2.08807	5.264735
_cons	-25.13157	4.070031	-6.17	0.000	-33.10868	-17.15446
/lnsig2u	3.24476	.3684908			2.522531	3.966988
sigma_u	5.06513	.9332269			3.529886	7.268095
rho	.8863423	.0371216			.791119	.9413728

LR test of rho=0: chibar2(01) = 329.89 Prob >= chibar2 = 0.000

. margin, dydx(*)predict(pu0), if SmallSec ==1

Average marginal effects Number of obs = 752

Model VCE : OIM

Expression : Pr(div=1 assuming u_i=0), predict(pu0)
dy/dx w.r.t. : PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.001067	.0107028	-0.10	0.921	-.0220442	.0199102
CASHFLOW	.9406966	.3300951	2.85	0.004	.293722	1.587671
MTB	.0359114	.0119493	3.01	0.003	.0124913	.0593316
NM	-.802147	.3399923	-2.36	0.018	-1.46852	-.1357744
GA	.0024838	.0959147	0.03	0.979	-.1855056	.1904732
LEV	-.1375599	.1378377	-1.00	0.318	-.4077169	.1325971
FIRMSIZE	.1098339	.0303108	3.62	0.000	.0504258	.169242
FIRMAGE	.4087384	.0806499	5.07	0.000	.2506674	.5668094

//////////Marginal Effect Young Sector//////////

bysort YNGSec : xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE, re nolog

-> YNGSec = 0

Random-effects logistic regression Number of obs = 1,248
Group variable: id Number of groups = 78

Random effects u_i ~ Gaussian Obs per group:
min = 16
avg = 16.0
max = 16

Integration method: mvaghermite Integration pts. = 12

Log likelihood = -387.13834 wald chi2(8) = 64.47
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0314163	.081312	-0.39	0.699	-.190785	.1279523
CASHFLOW	6.647206	1.799411	3.69	0.000	3.120426	10.17399
MTB	.0022332	.0783858	0.03	0.977	-.1514001	.1558665
NM	-3.900928	1.970805	-1.98	0.048	-7.763635	-.0382205
GA	-.1371085	.7476698	-0.18	0.854	-1.602514	1.328297
LEV	-3.123216	.8896725	-3.51	0.000	-4.866942	-1.37949
FIRMSIZE	.8668908	.1803598	4.81	0.000	.513392	1.22039
FIRMAGE	2.100109	.4537844	4.63	0.000	1.210708	2.98951
_cons	-15.99899	2.939596	-5.44	0.000	-21.7605	-10.23749
/lnsig2u	2.661959	.2944286			2.084889	3.239028
sigma_u	3.784749	.5571691			2.836142	5.050636
rho	.8132263	.0447206			.7097236	.8857637

LR test of rho=0: chibar2(01) = 370.00 Prob >= chibar2 = 0.000

-> YNGSec = 1

```
Random-effects logistic regression      Number of obs    =      672
Group variable: id                    Number of groups  =      42

Random effects u_i ~ Gaussian          Obs per group:
                                     min =      16
                                     avg  =     16.0
                                     max  =      16

Integration method: mvaghermite        Integration pts.  =      12

Log likelihood = -226.84639             wald chi2(8)     =     43.44
                                     Prob > chi2       =     0.0000
```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.001027	.1046255	-0.01	0.992	-.2060892	.2040353
CASHFLOW	8.071303	4.621876	1.75	0.081	-.987407	17.13001
MTB	.3503774	.1233346	2.84	0.004	.108646	.5921088
NM	-6.834387	3.74277	-1.83	0.068	-14.17008	.5013081
GA	-.298644	.9417392	-0.32	0.751	-2.144419	1.547131
LEV	-1.751475	1.317789	-1.33	0.184	-4.334295	.8313444
FIRMSIZE	1.110174	.3962	2.80	0.005	.3336364	1.886712
FIRIMAGE	3.672632	.9392419	3.91	0.000	1.831752	5.513513
_cons	-26.53062	4.719451	-5.62	0.000	-35.78058	-17.28067
/lnsig2u	3.454538	.416183			2.638834	4.270242
sigma_u	5.625271	1.170571			3.74124	8.458069
rho	.9058249	.035503			.8096884	.9560347

LR test of rho=0: chibar2(01) = 301.82 Prob >= chibar2 = 0.000

. margin, dydx(*)predict(pu0), if YNGSec ==1

```
Average marginal effects      Number of obs    =      672
Model VCE      : OIM
```

Expression : Pr(div=1 assuming u_i=0), predict(pu0)
dy/dx w.r.t. : PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRIMAGE

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.000106	.0108051	-0.01	0.992	-.0212837	.0210716
CASHFLOW	.83339	.4600933	1.81	0.070	-.0683763	1.735156
MTB	.0361777	.0115997	3.12	0.002	.0134426	.0589127
NM	-.7056741	.3782619	-1.87	0.062	-1.447054	.0357055
GA	-.030836	.096669	-0.32	0.750	-.2203038	.1586318
LEV	-.1808459	.1389371	-1.30	0.193	-.4531575	.0914658
FIRMSIZE	.1146293	.0308688	3.71	0.000	.0541275	.1751312
FIRIMAGE	.379212	.1027214	3.69	0.000	.1778818	.5805422

////////// Marginal Effect BigSector//////////

bysort BigSec : xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRIMAGE, re nolog

-> BigSec = 0

```
Random-effects logistic regression      Number of obs    =     1,072
Group variable: id                    Number of groups  =      67

Random effects u_i ~ Gaussian          obs per group:
                                     min =      16
                                     avg  =     16.0
                                     max  =      16

Integration method: mvaghermite        Integration pts.  =      12

Log likelihood = -329.54213             wald chi2(8)     =     73.41
                                     Prob > chi2       =     0.0000
```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
-----	-------	-----------	---	------	----------------------	--

PD	.0800903	.0891209	0.90	0.369	-.0945834	.254764
CASHFLOW	10.4109	2.562922	4.06	0.000	5.387668	15.43414
MTB	.2628535	.1003155	2.62	0.009	.0662388	.4594681
NM	-8.068668	2.622905	-3.08	0.002	-13.20947	-2.92787
GA	.0007717	.7785748	0.00	0.999	-1.525207	1.52675
LEV	-1.19335	.9704387	-1.23	0.219	-3.095375	.708675
FIRMSIZE	1.29377	.2780785	4.65	0.000	.7487465	1.838794
FIRMAGE	3.318849	.6441802	5.15	0.000	2.056279	4.581419
_cons	-26.8325	3.722526	-7.21	0.000	-34.12852	-19.53649

/lnsig2u	3.30398	.3192832			2.678196	3.929764

sigma_u	5.217352	.8329065			3.815601	7.134069
rho	.892173	.0307151			.81568	.9392843

LR test of rho=0: chibar2(01) = 449.88				Prob >= chibar2 = 0.000		

-> BigSec = 1

Random-effects logistic regression	Number of obs	=	848
Group variable: id	Number of groups	=	53
Random effects u_i ~ Gaussian	obs per group:		
	min	=	16
	avg	=	16.0
	max	=	16
Integration method: mvaghermite	Integration pts.	=	12
Log likelihood = -279.91635	wald chi2(8)	=	46.81
	Prob > chi2	=	0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.1094638	.0939231	-1.17	0.244	-.2935498	.0746221
CASHFLOW	4.281713	2.07307	2.07	0.039	.2185702	8.344855
MTB	.0038674	.0878009	0.04	0.965	-.1682193	.1759541
NM	-1.353563	2.234153	-0.61	0.545	-5.732423	3.025297
GA	-.5097491	.9019814	-0.57	0.572	-2.2776	1.258102
LEV	-4.280223	1.170981	-3.66	0.000	-6.575303	-1.985142
FIRMSIZE	.7789004	.1944836	4.00	0.000	.3977196	1.160081
FIRMAGE	1.600424	.5213592	3.07	0.002	.5785788	2.622269
_cons	-13.17703	3.145384	-4.19	0.000	-19.34187	-7.012194

/lnsig2u	2.414168	.3525806			1.723123	3.105213

sigma_u	3.34372	.5894654			2.366853	4.723767
rho	.7726474	.0619355			.6300136	.8715088

LR test of rho=0: chibar2(01) = 235.29				Prob >= chibar2 = 0.000		

. margin, dydx(*)predict(pu0), if BigSec ==1

Average marginal effects	Number of obs	=	848
Model VCE : OIM			

Expression : Pr(div=1 assuming u_i=0), predict(pu0)
dy/dx w.r.t. : PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.009542	.0082072	-1.16	0.245	-.0256279	.0065438
CASHFLOW	.3732391	.1878049	1.99	0.047	.0051482	.74133
MTB	.0003371	.0076537	0.04	0.965	-.0146639	.0153381
NM	-.1179908	.1940937	-0.61	0.543	-.4984074	.2624258
GA	-.0444351	.0792658	-0.56	0.575	-.1997931	.1109229
LEV	-.3731092	.1007698	-3.70	0.000	-.5706143	-.1756041
FIRMSIZE	.0678971	.0178787	3.80	0.000	.0328556	.1029387
FIRMAGE	.1395098	.0447268	3.12	0.002	.0518468	.2271727

//////////Marginal Effect Old Sector//////////

. bysort OldSec : xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE, re nolog

-> oldSec = 0

Random-effects logistic regression
Group variable: id
Random effects u_i ~ Gaussian
Integration method: mvaghermite
Log likelihood = -226.84639

Number of obs = 672
Number of groups = 42
Obs per group:
min = 16
avg = 16.0
max = 16
Integration pts. = 12
wald chi2(8) = 43.44
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.001027	.1046255	-0.01	0.992	-.2060892	.2040353
CASHFLOW	8.071303	4.621876	1.75	0.081	-.987407	17.13001
MTB	.3503774	.1233346	2.84	0.004	.108646	.5921088
NM	-6.834387	3.74277	-1.83	0.068	-14.17008	.5013081
GA	-.298644	.9417392	-0.32	0.751	-2.144419	1.547131
LEV	-1.751475	1.317789	-1.33	0.184	-4.334295	.8313444
FIRMSIZE	1.110174	.3962	2.80	0.005	.3336364	1.886712
FIRIMAGE	3.672632	.9392419	3.91	0.000	1.831752	5.513513
_cons	-26.53062	4.719451	-5.62	0.000	-35.78058	-17.28067
/lnsig2u	3.454538	.416183			2.638834	4.270242
sigma_u	5.625271	1.170571			3.74124	8.458069
rho	.9058249	.035503			.8096884	.9560347

LR test of rho=0: chibar2(01) = 301.82 Prob >= chibar2 = 0.000

-> oldSec = 1

Random-effects logistic regression
Group variable: id
Random effects u_i ~ Gaussian
Integration method: mvaghermite
Log likelihood = -387.13834

Number of obs = 1,248
Number of groups = 78
Obs per group:
min = 16
avg = 16.0
max = 16
Integration pts. = 12
wald chi2(8) = 64.47
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0314163	.081312	-0.39	0.699	-.190785	.1279523
CASHFLOW	6.647206	1.799411	3.69	0.000	3.120426	10.17399
MTB	.0022332	.0783858	0.03	0.977	-.1514001	.1558665
NM	-3.900928	1.970805	-1.98	0.048	-7.763635	-.0382205
GA	-.1371085	.7476698	-0.18	0.854	-1.602514	1.328297
LEV	-3.123216	.8896725	-3.51	0.000	-4.866942	-1.37949
FIRMSIZE	.8668908	.1803598	4.81	0.000	.513392	1.22039
FIRIMAGE	2.100109	.4537844	4.63	0.000	1.210708	2.98951
_cons	-15.99899	2.939596	-5.44	0.000	-21.7605	-10.23749
/lnsig2u	2.661959	.2944286			2.084889	3.239028
sigma_u	3.784749	.5571691			2.836142	5.050636
rho	.8132263	.0447206			.7097236	.8857637

LR test of rho=0: chibar2(01) = 370.00 Prob >= chibar2 = 0.000

. margin, dydx(*)predict(pu0), if oldSec ==1

Average marginal effects
Model VCE : OIM
Expression : Pr(div=1 assuming u_i=0), predict(pu0)
dy/dx w.r.t. : PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRIMAGE

Number of obs = 1,248

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.002496	.006463	-0.39	0.699	-.0151633	.0101712
CASHFLOW	.5281242	.1549832	3.41	0.001	.2243627	.8318858


```

. ///////////////Logit by sectors//////////////////////////////////////////s1...10
note: new_1 omitted because of collinearity

Random-effects logistic regression                Number of obs   =       1,920
Group variable: id                             Number of groups =         120

Random effects u_i ~ Gaussian                   obs per group:
                                                min =          16
                                                avg =         16.0
                                                max =          16

Integration method: mvaghermite                 Integration pts. =          12

                                                wald chi2(17)   =       115.05
Log likelihood = -610.99676                     Prob > chi2      =       0.0000

```

LR test of rho=0: chibar2(01) = 580.28		Prob >= chibar2 = 0.000	
///XTLOGIT ON PANEL DATA AND MARGINAL EFFECT/SECTOR 6 INDUSTRIAL SECTOR/////			
Random-effects logistic regression	Number of obs	=	320
Group variable: id	Number of groups	=	20
Random effects u_i ~ Gaussian	Obs per group:		
	min	=	16
	avg	=	16.0
	max	=	16
Integration method: mvaghermite	Integration pts.	=	12
	wald chi2(8)	=	14.69
Log likelihood = -53.608521	Prob > chi2	=	0.0654

254

```

sigma_u | 6.450856 2.763047 2.786304 14.93503
rho      | .9267346 .0581642 .7023649 .9854652
-----+-----
LR test of rho=0: chibar2(01) = 51.00          Prob >= chibar2 = 0.000

```

```

.
Average marginal effects      Number of obs      =      320
Model VCE      : OIM

```

```

Expression      : Pr(div=1 assuming u_i=0), predict(pu0)
dy/dx w.r.t.    : PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE

```

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
PD	.0118614	.0138013	0.86	0.390	-.0151887	.0389115
CASHFLOW	.3184146	.3832992	0.83	0.406	-.432838	1.069667
MTB	.0010205	.0059065	0.17	0.863	-.0105561	.0125971
NM	-.1501384	.2019535	-0.74	0.457	-.54596	.2456832
GA	-.0076528	.0424101	-0.18	0.857	-.0907751	.0754695
LEV	-.0908731	.101392	-0.90	0.370	-.2895978	.1078516
FIRMSIZE	.0348001	.0449377	0.77	0.439	-.0532762	.1228765
FIRMAGE	.0634323	.07219	0.88	0.380	-.0780574	.2049221

```

.
//////////Marginal effect all sample//////////

```

```

. xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE, fe nolog
note: multiple positive outcomes within groups encountered.
note: 58 groups (928 obs) dropped because of all positive or
      all negative outcomes.

```

```

Conditional fixed-effects logistic regression      Number of obs      =      992
Group variable: id                                Number of groups     =      62

```

```

Obs per group:
      min =      16
      avg =     16.0
      max =      16

```

```

Log likelihood = -344.78058      LR chi2(8)      =     165.50
                                Prob > chi2      =     0.0000

```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0001345	.0642373	-0.00	0.998	-.1260373	.1257683
CASHFLOW	6.867754	1.820167	3.77	0.000	3.300292	10.43522
MTB	.2008896	.069767	2.88	0.004	.0641487	.3376305
NM	-6.425823	1.735686	-3.70	0.000	-9.827704	-3.023941
GA	-.3745766	.6071754	-0.62	0.537	-1.564618	.8154653
LEV	-2.445732	.8308041	-2.94	0.003	-4.074078	-.8173855
FIRMSIZE	1.305107	.2604207	5.01	0.000	.7946919	1.815522
FIRMAGE	2.952711	.5578572	5.29	0.000	1.859331	4.046091

```

.
end of do-file

```

```

Average marginal effects      Number of obs      =      992
Model VCE      : OIM

```

```

Expression      : Pr(div|fixed effect is 0), predict(pu0)
dy/dx w.r.t.    : PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE

```

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-8.32e-09	3.98e-06	-0.00	0.998	-7.80e-06	7.78e-06
CASHFLOW	.0004251	.0001434	2.97	0.003	.0001441	.000706
MTB	.0000124	4.25e-06	2.92	0.003	4.10e-06	.0000208
NM	-.0003977	.0001498	-2.65	0.008	-.0006914	-.000104
GA	-.0000232	.0000375	-0.62	0.536	-.0000966	.0000503
LEV	-.0001514	.0000716	-2.11	0.035	-.0002917	-.000011
FIRMSIZE	.0000808	.0000132	6.10	0.000	.0000548	.0001067
FIRMAGE	.0001827	.0000585	3.12	0.002	.0000681	.0002974

```

.
end of do-file

```

```

////////////////SYF: SECTOR YOUNG FIRMS////////////////////////////////////
. xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE s11 s14 s17 , fe nolog
note: multiple positive outcomes within groups encountered.
note: 58 groups (928 obs) dropped because of all positive or
      all negative outcomes.
note: s11 omitted because of no within-group variance.
note: s14 omitted because of no within-group variance.
note: s17 omitted because of no within-group variance.

Conditional fixed-effects logistic regression   Number of obs   =       992
Group variable: id                           Number of groups  =        62

                                           Obs per group:
                                                min =       16
                                                avg =      16.0
                                                max =       16

                                           LR chi2(8)       =      165.50
                                           Prob > chi2      =      0.0000

Log likelihood = -344.78058

```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0001345	.0642373	-0.00	0.998	-.1260373	.1257683
CASHFLOW	6.867754	1.820167	3.77	0.000	3.300292	10.43522
MTB	.2008896	.069767	2.88	0.004	.0641487	.3376305
NM	-6.425823	1.735686	-3.70	0.000	-9.827704	-3.023941
GA	-.3745766	.6071754	-0.62	0.537	-1.564618	.8154653
LEV	-2.445732	.8308041	-2.94	0.003	-4.074078	-.8173855
FIRMSIZE	1.305107	.2604207	5.01	0.000	.7946919	1.815522
FIRMAGE	2.952711	.5578572	5.29	0.000	1.859331	4.046091
s11	0	(omitted)				
s14	0	(omitted)				
s17	0	(omitted)				

```

. est store fixed

. xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE s11 s14 s17 , re nolog

Random-effects logistic regression   Number of obs   =      1,920
Group variable: id                  Number of groups  =       120

Random effects u_i ~ Gaussian        Obs per group:
                                      min =       16
                                      avg =      16.0
                                      max =       16

Integration method: mvaghermite      Integration pts.  =        12

                                           wald chi2(11)    =      116.29
                                           Prob > chi2      =      0.0000

Log likelihood = -617.01159

```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0202992	.0637391	-0.32	0.750	-.1452256	.1046271
CASHFLOW	7.075996	1.62525	4.35	0.000	3.890564	10.26143
MTB	.133675	.0645041	2.07	0.038	.0072493	.2601007
NM	-4.487321	1.64408	-2.73	0.006	-7.709658	-1.264984
GA	-.2250799	.5799807	-0.39	0.698	-1.361821	.9116613
LEV	-2.382581	.7149133	-3.33	0.001	-3.783785	-.9813763
FIRMSIZE	.968203	.1646023	5.88	0.000	.6455884	1.290818
FIRMAGE	2.687529	.4149702	6.48	0.000	1.874202	3.500855
s11	-1.633754	1.01563	-1.61	0.108	-3.624353	.3568445
s14	-2.091231	1.528577	-1.37	0.171	-5.087187	.9047252
s17	2.037784	1.787189	1.14	0.254	-1.465042	5.540611
_cons	-19.75098	2.56226	-7.71	0.000	-24.77292	-14.72905
/lnsig2u	2.929496	.2332105			2.472411	3.38658
sigma_u	4.326452	.504487			3.442527	5.437339
rho	.8505153	.0296502			.7827159	.8998656

```

LR test of rho=0: chibar2(01) = 671.57      Prob >= chibar2 = 0.000

```

```

. est store random

. hausman fixed random

```

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.

```

b = consistent under Ho and Ha; obtained from xtlogit
B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test:  Ho:  difference in coefficients not systematic

      chi2(8) = (b-B)'[(v_b-v_B)^(-1)](b-B)
            =          31.41
      Prob>chi2 =          0.0001

```

```

Average marginal effects      Number of obs      =      416
Model VCE      : OIM

Expression      : Pr(div=1 assuming u_i=0), predict(pu0)
dy/dx w.r.t.   : PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE

```

```
*//////////////////SOF: FIXED // RANDOM //////////////////////////////////
```

```
obs per group:    min =      16
                  avg =    16.0
                  max =      16
```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0001345	.0642373	-0.00	0.998	-.1260373	.1257683
CASHFLOW	6.867754	1.820167	3.77	0.000	3.300292	10.43522
MTB	.2008896	.069767	2.88	0.004	.0641487	.3376305
NM	-6.425823	1.735686	-3.70	0.000	-9.827704	-3.023941
GA	-.3745766	.6071754	-0.62	0.537	-1.564618	.8154653
LEV	-2.445732	.8308041	-2.94	0.003	-4.074078	-.8173855
FIRMSIZE	1.305107	.2604207	5.01	0.000	.7946919	1.815522
FIRMAGE	2.952711	.5578572	5.29	0.000	1.859331	4.046091
s12	0	(omitted)				
s13	0	(omitted)				
s15	0	(omitted)				
s16	0	(omitted)				
s18	0	(omitted)				
s19	0	(omitted)				

```

-----
s110 | 0 (omitted)
-----

. est store fixed

. xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE s12 s13 s15 s16 s18 s19 s110 , re
nolog

Random-effects logistic regression               Number of obs   =       1,920
Group variable: id                             Number of groups  =        120

Random effects u_i ~ Gaussian                   Obs per group:
                                                min =           16
                                                avg =          16.0
                                                max =           16

Integration method: mvaghermite                 Integration pts.  =         12

Log likelihood = -612.84492                     wald chi2(15)    =       111.92
                                                Prob > chi2      =        0.0000

```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0187484	.063746	-0.29	0.769	-.1436883	.1061916
CASHFLOW	7.110594	1.623467	4.38	0.000	3.928658	10.29253
MTB	.1287447	.0646231	1.99	0.046	.0020857	.2554036
NM	-4.511004	1.639461	-2.75	0.006	-7.724288	-1.29772
GA	-.1720024	.5801594	-0.30	0.767	-1.309094	.9650892
LEV	-2.436129	.7162045	-3.40	0.001	-3.839864	-1.032394
FIRMSIZE	.9248476	.1641814	5.63	0.000	.603058	1.246637
FIRMAGE	2.765196	.4247053	6.51	0.000	1.932789	3.597603
s12	1.48269	1.318085	1.12	0.261	-1.10071	4.06609
s13	.2752075	1.111694	0.25	0.804	-1.903673	2.454088
s15	-.2549804	1.737051	-0.15	0.883	-3.659537	3.149576
s16	4.016508	1.333861	3.01	0.003	1.402189	6.630827
s18	2.987864	2.518994	1.19	0.236	-1.949274	7.925001
s19	-3.898882	2.25757	-1.73	0.084	-8.323638	.5258738
s110	-.2919202	2.00012	-0.15	0.884	-4.212083	3.628243
_cons	-20.59263	2.457111	-8.38	0.000	-25.40847	-15.77678
/lnsig2u	2.840376	.2392575			2.37144	3.309312
sigma_u	4.137898	.4950116			3.273042	5.23128
rho	.8388273	.0323467			.7650543	.8926849

```

LR test of rho=0: chibar2(01) = 617.13          Prob >= chibar2 = 0.000

```

```

. est store random

. hausman fixed random

```

	---- Coefficients ----		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
PD	-.0001345	-.0187484	.0186139	.0079293
CASHFLOW	6.867754	7.110594	-.2428404	.823021
MTB	.2008896	.1287447	.0721449	.0262925
NM	-6.425823	-4.511004	-1.914819	.5698888
GA	-.3745766	-.1720024	-.2025742	.1791004
LEV	-2.445732	-2.436129	-.0096025	.4210541
FIRMSIZE	1.305107	.9248476	.3802596	.2021471
FIRMAGE	2.952711	2.765196	.1875149	.3617044

```

b = consistent under Ho and Ha; obtained from xtlogit
B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
        = 2.57
Prob>chi2 = 0.9584
(V_b-V_B is not positive definite)

```

```

. xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE s12 s13 s15 s16 s18 s19 s110 , re
nolog

Random-effects logistic regression               Number of obs   =       1,920
Group variable: id                             Number of groups  =        120

Random effects u_i ~ Gaussian                   obs per group:
                                                min =           16
                                                avg =          16.0
                                                max =           16

```

Integration pts. = 12

```
wald chi2(15)      =    111.92
Prob > chi2        =    0.0000
```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0187484	.063746	-0.29	0.769	-.1436883	.1061916
CASHFLOW	7.110594	1.623467	4.38	0.000	3.928658	10.29253
MTB	.1287447	.0646231	1.99	0.046	.0020857	.2554036
NM	-4.511004	1.639461	-2.75	0.006	-7.724288	-1.29772
GA	-.1720024	.5801594	-0.30	0.767	-1.309094	.9650892
LEV	-2.436129	.7162045	-3.40	0.001	-3.839864	-1.032394
FIRMSIZE	.9248476	.1641814	5.63	0.000	.603058	1.246637
FIRMAGE	2.765196	.4247053	6.51	0.000	1.932789	3.597603
s12	1.48269	1.318085	1.12	0.261	-1.10071	4.06609
s13	.2752075	1.111694	0.25	0.804	-1.903673	2.454088
s15	-.2549804	1.737051	-0.15	0.883	-3.659537	3.149576
s16	4.016508	1.333861	3.01	0.003	1.402189	6.630827
s18	2.987864	2.518994	1.19	0.236	-1.949274	7.925001
s19	-3.898882	2.25757	-1.73	0.084	-8.323638	.5258738
s110	-.2919202	2.00012	-0.15	0.884	-4.212083	3.628243
_cons	-20.59263	2.457111	-8.38	0.000	-25.40847	-15.77678
/lnsig2u	2.840376	.2392575			2.37144	3.309312
sigma_u	4.137898	.4950116			3.273042	5.23128
rho	.8388273	.0323467			.7650543	.8926849

LR test of rho=0: chibar2(01) = 617.13 Prob >= chibar2 = 0.000

```
. margin, dydx(*)predict(pu0)
```

Number of obs = 1,920

Model VCE : OIM

Expression : $\Pr(\text{div}=1 \text{ assuming } u_i=0), \text{predict}(pu_0)$

dy/dx w.r.t. : PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE s12 s13 s15 s16 s18 s19 s110

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0017457	.0059478	-0.29	0.769	-.0134033	.0099118
CASHFLOW	.6620862	.1532757	4.32	0.000	.3616713	.962501
MTB	.0119878	.0058989	2.03	0.042	.0004261	.0235494
NM	-.4200315	.1532097	-2.74	0.006	-.720317	-.119746
GA	-.0160156	.0539831	-0.30	0.767	-.1218205	.0897893
LEV	-.2268344	.0669529	-3.39	0.001	-.3580597	-.0956091
FIRMSIZE	.086115	.0125065	6.89	0.000	.0616028	.1106272
FIRMAGE	.2574747	.0381615	6.75	0.000	.1826795	.3322699
s12	.1380572	.120382	1.15	0.251	-.0978873	.3740016
s13	.0256253	.1029802	0.25	0.803	-.1762121	.2274627
s15	-.0237419	.1623194	-0.15	0.884	-.341882	.2943982
s16	.3739876	.111921	3.34	0.001	.1546265	.5933488
s18	.2782078	.2329292	1.19	0.232	-.1783249	.7347406
s19	-.3630352	.2134584	-1.70	0.089	-.781406	.0553356
s110	-.0271815	.1866312	-0.15	0.884	-.3929718	.3386089

[illegible]

```
. xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE s11 s14 s17 s110 , fe nolog
```

note: multiple positive outcomes within groups encountered.

note: 58 groups (928 obs) dropped because of all positive or

all negative outcomes.

note: s11 omitted because of no within-group variance.

note: s14 omitted because of no within-group variance.

note: s17 omitted because of no within-group variance.

note: s110 omitted because of no within-group variance.

Number of obs = 992

Number of groups = 62

obs per group:

```
min = 16
```

```
min = 10
avg = 16.0
```

```
avg = 10.0
max = 16
```

```
LR chi2(8)          =    165.50
Prob > chi2         =    0.0000
```

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0001345	.0642373	-0.00	0.998	-.1260373	.1257683
CASHFLOW	6.867754	1.820167	3.77	0.000	3.300292	10.43522
MTB	.2008896	.069767	2.88	0.004	.0641487	.3376305
NM	-6.425823	1.735686	-3.70	0.000	-9.827704	-3.023941
GA	-.3745766	.6071754	-0.62	0.537	-1.564618	.8154653
LEV	-2.445732	.8308041	-2.94	0.003	-4.074078	-.8173855
FIRMSIZE	1.305107	.2604207	5.01	0.000	.7946919	1.815522
FIRMAGE	2.952711	.5578572	5.29	0.000	1.859331	4.046091
s11	0	(omitted)				
s14	0	(omitted)				
s17	0	(omitted)				
s110	0	(omitted)				

. est store fixed

. xtlogit div PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE s11 s14 s17 s110 , re nolog

Random-effects logistic regression Number of obs = 1,920
Group variable: id Number of groups = 120

Random effects u_i ~ Gaussian Obs per group:
min = 16
avg = 16.0
max = 16

Integration method: mvaghermite Integration pts. = 12

Log likelihood = -616.7504 wald chi2(12) = 115.49
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0197578	.0637385	-0.31	0.757	-.1446829	.1051674
CASHFLOW	7.073372	1.624384	4.35	0.000	3.889637	10.25711
MTB	.1315775	.0645687	2.04	0.042	.0050252	.2581297
NM	-4.505118	1.644961	-2.74	0.006	-7.729183	-1.281053
GA	-.2150569	.5795537	-0.37	0.711	-1.350961	.9208476
LEV	-2.379142	.7139234	-3.33	0.001	-3.778406	-.979878
FIRMSIZE	.9546965	.1653101	5.78	0.000	.6306946	1.278698
FIRMAGE	2.693175	.4161078	6.47	0.000	1.877618	3.508731
s11	-1.76307	1.025056	-1.72	0.085	-3.772142	.2460024
s14	-2.226674	1.536402	-1.45	0.147	-5.237967	.7846181
s17	1.890497	1.792698	1.05	0.292	-1.623126	5.40412
s110	-1.556837	2.038932	-0.76	0.445	-5.55307	2.439396
_cons	-19.46328	2.582265	-7.54	0.000	-24.52442	-14.40213
/lnsig2u	2.924742	.2338029			2.466497	3.382987
sigma_u	4.316181	.5045677			3.432361	5.427581
rho	.8499099	.0298246			.7817083	.8995414

LR test of rho=0: chibar2(01) = 665.25 Prob >= chibar2 = 0.000

. est store random

. hausman fixed random

	---- Coefficients ----		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
PD	-.0001345	-.0197578	.0196233	.0079898
CASHFLOW	6.867754	7.073372	-.2056177	.821209
MTB	.2008896	.1315775	.0693121	.0264259
NM	-6.425823	-4.505118	-1.920704	.5538116
GA	-.3745766	-.2150569	-.1595197	.1810508
LEV	-2.445732	-2.379142	-.0665896	.4249104
FIRMSIZE	1.305107	.9546965	.3504106	.2012251
FIRMAGE	2.952711	2.693175	.2595364	.3715628

b = consistent under Ho and Ha; obtained from xtlogit
B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 43.03
Prob>chi2 = 0.0000

Integration method: mvaghermite

Integration pts. = 12

Log likelihood = -612.85627

wald chi2(14) = 111.92
Prob > chi2 = 0.0000

div	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0189279	.063731	-0.30	0.766	-.1438384	.1059825
CASHFLOW	7.102596	1.622195	4.38	0.000	3.923152	10.28204
MTB	.1288889	.0646247	1.99	0.046	.0022267	.255551
NM	-4.507577	1.639285	-2.75	0.006	-7.720517	-1.294637
GA	-.173076	.5801877	-0.30	0.765	-1.310223	.964071
LEV	-2.442751	.7151652	-3.42	0.001	-3.844449	-1.041053
FIRMSIZE	.9253606	.1641883	5.64	0.000	.6035574	1.247164
FIRMAGE	2.761427	.423901	6.51	0.000	1.930597	3.592258
s12	1.519544	1.299589	1.17	0.242	-1.027604	4.066692
s13	.3114153	1.089966	0.29	0.775	-1.824879	2.44771
s15	-.2167694	1.721898	-0.13	0.900	-3.591627	3.158088
s16	4.052772	1.316239	3.08	0.002	1.472992	6.632553
s18	3.023859	2.509993	1.20	0.228	-1.895637	7.943355
s19	-3.858775	2.243892	-1.72	0.085	-8.256722	.5391713
_cons	-20.62053	2.454956	-8.40	0.000	-25.43216	-15.80891
/lnsig2u	2.8407	.2392946			2.371691	3.309709
sigma_u	4.138569	.4951685			3.273454	5.232318
rho	.8388711	.0323446			.7650995	.8927229

LR test of rho=0: chibar2(01) = 617.33

Prob >= chibar2 = 0.000

. est store random

. hausman fixed random

---- Coefficients ----				
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
PD	-.0001345	-.0189279	.0187935	.0080494
CASHFLOW	6.867754	7.102596	-.2348415	.825526
MTB	.2008896	.1288889	.0720007	.0262884
NM	-6.425823	-4.507577	-1.918246	.5703932
GA	-.3745766	-.173076	-.2015006	.1790087
LEV	-2.445732	-2.442751	-.0029803	.4228169
FIRMSIZE	1.305107	.9253606	.3797466	.2021414
FIRMAGE	2.952711	2.761427	.191284	.3626467

b = consistent under Ho and Ha; obtained from xtlogit
B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 1.18
Prob>chi2 = 0.9969
(V_b-V_B is not positive definite)

. margin, dydx(*)predict(pu0)

Average marginal effects
Model VCE : OIM

Number of obs = 1,920

Expression : Pr(div=1 assuming u_i=0), predict(pu0)
dy/dx w.r.t. : PD CASHFLOW MTB NM GA LEV FIRMSIZE FIRMAGE s12 s13 s15 s16 s18 s19

Delta-method						
	dy/dx	Std. Err.	z	P> z	[95% Conf. Interval]	
PD	-.0017574	.0059301	-0.30	0.767	-.0133802	.0098654
CASHFLOW	.6594517	.1515163	4.35	0.000	.3624852	.9564182
MTB	.0119669	.0058855	2.03	0.042	.0004316	.0235022
NM	-.4185131	.152599	-2.74	0.006	-.7176016	-.1194245
GA	-.0160695	.0538325	-0.30	0.765	-.1215792	.0894402
LEV	-.2268011	.0669983	-3.39	0.001	-.3581154	-.0954868
FIRMSIZE	.0859166	.0124502	6.90	0.000	.0615145	.1103186
FIRMAGE	.2563891	.037412	6.85	0.000	.1830629	.3297153
s12	.1410844	.1186296	1.19	0.234	-.0914252	.3735941
s13	.0289139	.1006861	0.29	0.774	-.1684272	.2262549
s15	-.0201263	.1603199	-0.13	0.900	-.3343475	.2940949
s16	.3762861	.1107402	3.40	0.001	.1592393	.5933329
s18	.280755	.2318053	1.21	0.226	-.1735751	.735085
s19	-.3582741	.210793	-1.70	0.089	-.7714208	.0548725

```

-----
STATA (R)
Statistics/Data Analysis 13.0
MP - Parallel Edition

Copyright 1985-2013 StataCorp LP
StataCorp
4905 Lakeway Drive
College Station, Texas 77845 USA
800-STATA-PC http://www.stata.com
979-696-4600 stata@stata.com
979-696-4601 (fax)

```

```

3-user 8-core Stata network perpetual license:
Serial number: 501306208483
Licensed to: IDRE-UCLA
IDRE-UCLA

```

Notes:

1. (/v# option or -set maxvar-) 5000 maximum variables
- ```

. doedit "D:\Chap 1 + chap 2\fsqca\do.do"
. do "C:\Users\sana\AppData\Local\Temp\STD0b000000.tmp"
.
. xtset id year
 panel variable: id (strongly balanced)
 time variable: year, 2000 to 2015
 delta: 1 unit

```

```

////////////////////Descriptive analysis////////////////////

```

-> tabulation of CEO\_Dulality

| CEO_Dulality | Freq. | Percent | Cum.   |
|--------------|-------|---------|--------|
| 0            | 565   | 29.43   | 29.43  |
| 1            | 1,355 | 70.57   | 100.00 |
| Total        | 1,920 | 100.00  |        |

```

. tabstat PAYDIV Profitability cashflow lev firmsize firmage CEO_OW BS , statistics(mean max
min sd median
>)

```

| stats | PAYDIV   | Profit~y | cashflow | lev      | firmsize | firmage  | CEO_OW   | BS       |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|
| mean  | .2736138 | .028037  | .0684926 | .27382   | 13.38723 | 3.465082 | .1540195 | 9.151563 |
| max   | .990563  | .731     | .442272  | 1        | 17.332   | 5.01063  | .8445    | 23       |
| min   | 0        | -.499    | -.6388   | .002957  | 9.63947  | 2.01268  | 0        | 3        |
| sd    | .2595256 | .118398  | .1934194 | .2519746 | 2.27466  | .8080645 | .2259272 | 4.313949 |
| p50   | .2491    | .042     | .073625  | .219639  | 13.06145 | 3.4012   | .0109    | 9        |

```

////////////////////descriptive analysis////////////////////

```

```

. sortby lowpayout : sum young
command sortby is unrecognized
r(199);

```

-> lowpayout = 0

| variable   | Obs | Mean     | Std. Dev. | Min | Max |
|------------|-----|----------|-----------|-----|-----|
| invest     | 879 | .9362912 | .2443724  | 0   | 1   |
| debtind    | 879 | .5255973 | .4996286  | 0   | 1   |
| cepexov    | 879 | .6587031 | .4744148  | 0   | 1   |
| crispresid | 879 | .4937429 | .5002455  | 0   | 1   |
| crispc1    | 833 | .3889556 | .4878061  | 0   | 1   |

-> lowpayout = 1

| variable | Obs   | Mean     | Std. Dev. | Min | Max |
|----------|-------|----------|-----------|-----|-----|
| invest   | 1,041 | .93756   | .2420692  | 0   | 1   |
| debtind  | 1,041 | .4783862 | .4997727  | 0   | 1   |
| cepexov  | 1,040 | .3653846 | .4817695  | 0   | 1   |

|            |  |       |          |          |   |   |
|------------|--|-------|----------|----------|---|---|
| crispresid |  | 1,041 | .5052834 | .5002124 | 0 | 1 |
| crispc1    |  | 967   | .5791107 | .4939573 | 0 | 1 |

-> lowpayout = 0

-> tabulation of invest

| INVEST | Freq. | Percent | Cum.   |
|--------|-------|---------|--------|
| 0      | 56    | 6.37    | 6.37   |
| 1      | 823   | 93.63   | 100.00 |
| Total  | 879   | 100.00  |        |

-> tabulation of debtind

| DEBTIND | Freq. | Percent | Cum.   |
|---------|-------|---------|--------|
| 0       | 417   | 47.44   | 47.44  |
| 1       | 462   | 52.56   | 100.00 |
| Total   | 879   | 100.00  |        |

-> tabulation of cepexov

| CEPEX OV | Freq. | Percent | Cum.   |
|----------|-------|---------|--------|
| 0        | 300   | 34.13   | 34.13  |
| 1        | 579   | 65.87   | 100.00 |
| Total    | 879   | 100.00  |        |

-> tabulation of crispresid

| crispresid | Freq. | Percent | Cum.   |
|------------|-------|---------|--------|
| 0          | 445   | 50.63   | 50.63  |
| 1          | 434   | 49.37   | 100.00 |
| Total      | 879   | 100.00  |        |

-> tabulation of crispc1

| crispc1 | Freq. | Percent | Cum.   |
|---------|-------|---------|--------|
| 0       | 509   | 61.10   | 61.10  |
| 1       | 324   | 38.90   | 100.00 |
| Total   | 833   | 100.00  |        |

-> lowpayout = 1

-> tabulation of invest

| INVEST | Freq. | Percent | Cum.   |
|--------|-------|---------|--------|
| 0      | 65    | 6.24    | 6.24   |
| 1      | 976   | 93.76   | 100.00 |
| Total  | 1,041 | 100.00  |        |

-> tabulation of debtind

| DEBTIND | Freq. | Percent | Cum.   |
|---------|-------|---------|--------|
| 0       | 543   | 52.16   | 52.16  |
| 1       | 498   | 47.84   | 100.00 |
| Total   | 1,041 | 100.00  |        |

-> tabulation of cepexov

| CEPEX OV | Freq. | Percent | Cum.   |
|----------|-------|---------|--------|
| 0        | 660   | 63.46   | 63.46  |
| 1        | 380   | 36.54   | 100.00 |
| Total    | 1,040 | 100.00  |        |

-> tabulation of crispresid

| crispresid | Freq. | Percent | Cum.   |
|------------|-------|---------|--------|
| 0          | 515   | 49.47   | 49.47  |
| 1          | 526   | 50.53   | 100.00 |
| Total      | 1,041 | 100.00  |        |

-> tabulation of crispc1

| crispc1 | Freq. | Percent | Cum.   |
|---------|-------|---------|--------|
| 0       | 407   | 42.09   | 42.09  |
| 1       | 560   | 57.91   | 100.00 |
| Total   | 967   | 100.00  |        |

-> lowpayout = 0

| Variable | Obs | Mean     | Std. Dev. | Min       | Max      |
|----------|-----|----------|-----------|-----------|----------|
| CASHFLOW | 879 | .105103  | .0981916  | -.0753109 | .4422723 |
| LEV      | 879 | .2981139 | .2601123  | .0029567  | 1        |
| nm       | 879 | .0484255 | .062777   | -.23      | .15      |
| FIRMSIZE | 879 | 14.315   | 2.219404  | 9.639465  | 17.33198 |
| FIRMAGE  | 879 | 3.713989 | .7564727  | 2.012676  | 5.010635 |
| act_dir  | 879 | 13.95364 | 21.95001  | 0         | 84.45    |
| cum_fon  | 879 | .665529  | .4720738  | 0         | 1        |
| t_ca     | 879 | 10.75882 | 4.391293  | 3         | 23       |

-> lowpayout = 1

| Variable | Obs   | Mean     | Std. Dev. | Min       | Max      |
|----------|-------|----------|-----------|-----------|----------|
| CASHFLOW | 1,041 | .089544  | .122659   | -.0753109 | .4422723 |
| LEV      | 1,041 | .2533067 | .2431339  | .0029567  | 1        |
| nm       | 1,041 | .0177695 | .0943873  | -.23      | .15      |
| FIRMSIZE | 1,041 | 12.60383 | 2.011682  | 9.639465  | 17.33198 |
| FIRMAGE  | 1,041 | 3.254909 | .7906735  | 2.012676  | 5.010635 |
| act_dir  | 1,041 | 16.62488 | 23.06124  | 0         | 81.94    |
| cum_fon  | 1,041 | .7396734 | .4390237  | 0         | 1        |
| t_ca     | 1,041 | 7.794428 | 3.746025  | 3         | 21       |

-> highpayout = 0

| Variable | Obs   | Mean     | Std. Dev. | Min       | Max      |
|----------|-------|----------|-----------|-----------|----------|
| CASHFLOW | 1,041 | .089544  | .122659   | -.0753109 | .4422723 |
| LEV      | 1,041 | .2533067 | .2431339  | .0029567  | 1        |
| nm       | 1,041 | .0177695 | .0943873  | -.23      | .15      |
| FIRMSIZE | 1,041 | 12.60383 | 2.011682  | 9.639465  | 17.33198 |
| FIRMAGE  | 1,041 | 3.254909 | .7906735  | 2.012676  | 5.010635 |
| act_dir  | 1,041 | 16.62488 | 23.06124  | 0         | 81.94    |
| cum_fon  | 1,041 | .7396734 | .4390237  | 0         | 1        |
| t_ca     | 1,041 | 7.794428 | 3.746025  | 3         | 21       |

-> highpayout = 1

| variable | obs | Mean     | Std. Dev. | Min       | Max      |
|----------|-----|----------|-----------|-----------|----------|
| CASHFLOW | 879 | .105103  | .0981916  | -.0753109 | .4422723 |
| LEV      | 879 | .2981139 | .2601123  | .0029567  | 1        |
| nm       | 879 | .0484255 | .062777   | -.23      | .15      |
| FIRMSIZE | 879 | 14.315   | 2.219404  | 9.639465  | 17.33198 |
| FIRMAGE  | 879 | 3.713989 | .7564727  | 2.012676  | 5.010635 |
| act_dir  | 879 | 13.95364 | 21.95001  | 0         | 84.45    |
| cum_fon  | 879 | .665529  | .4720738  | 0         | 1        |

|      |  |     |          |          |   |    |
|------|--|-----|----------|----------|---|----|
| t_ca |  | 879 | 10.75882 | 4.391293 | 3 | 23 |
|------|--|-----|----------|----------|---|----|

Summary statistics: p50  
by categories of: highpayout

| highpayout | CASHFLOW | LEV      | nm   | FIRMSIZE | FIRMAGE  | act_dir | t_ca |
|------------|----------|----------|------|----------|----------|---------|------|
| 0          | .0709763 | .2058045 | .037 | 12.35983 | 3.178054 | 2.17    | 7    |
| 1          | .0758719 | .2309786 | .047 | 14.571   | 3.663562 | .4      | 11   |
| Total      | .0736248 | .2196392 | .042 | 13.06142 | 3.401197 | 1.09    | 9    |

Summary statistics: p50  
by categories of: lowpayout

| lowpayout | CASHFLOW | LEV      | nm   | FIRMSIZE | FIRMAGE  | act_dir | t_ca |
|-----------|----------|----------|------|----------|----------|---------|------|
| 0         | .0758719 | .2309786 | .047 | 14.571   | 3.663562 | .4      | 11   |
| 1         | .0709763 | .2058045 | .037 | 12.35983 | 3.178054 | 2.17    | 7    |
| Total     | .0736248 | .2196392 | .042 | 13.06142 | 3.401197 | 1.09    | 9    |

-> lowpayout = 0

| Variable | Obs | Mean     | Std. Dev. | Min | Max |
|----------|-----|----------|-----------|-----|-----|
| young    | 879 | .4425484 | .4969711  | 0   | 1   |

-> lowpayout = 1

| Variable | Obs   | Mean     | Std. Dev. | Min | Max |
|----------|-------|----------|-----------|-----|-----|
| young    | 1,041 | .6263208 | .4840125  | 0   | 1   |

. bysort lowpayout : tab1 young

-> lowpayout = 0

-> tabulation of young

| Young | Freq. | Percent | Cum.   |
|-------|-------|---------|--------|
| 0     | 490   | 55.75   | 55.75  |
| 1     | 389   | 44.25   | 100.00 |
| Total | 879   | 100.00  |        |

-> lowpayout = 1

-> tabulation of young

| Young | Freq. | Percent | Cum.   |
|-------|-------|---------|--------|
| 0     | 389   | 37.37   | 37.37  |
| 1     | 652   | 62.63   | 100.00 |
| Total | 1,041 | 100.00  |        |

. bysort lowpayout: tab1 Duality

-> lowpayout = 0

-> tabulation of Duality

| Duality | Freq. | Percent | Cum.   |
|---------|-------|---------|--------|
| 0       | 294   | 33.45   | 33.45  |
| 1       | 585   | 66.55   | 100.00 |
| Total   | 879   | 100.00  |        |

-> lowpayout = 1

-> tabulation of Duality

| Duality | Freq. | Percent | Cum.   |
|---------|-------|---------|--------|
| 0       | 271   | 26.03   | 26.03  |
| 1       | 770   | 73.97   | 100.00 |
| Total   | 1,041 | 100.00  |        |

//////////pairwise correlation matrix//////////

|           | payout-v | CASHFLOW | nm      | LEV     | FIRMSIZE | FIRMAGE | t_ca    | act_dir | cum_fon | invest  | crispr-d | debtind | cepexov | young  | crispc1 |
|-----------|----------|----------|---------|---------|----------|---------|---------|---------|---------|---------|----------|---------|---------|--------|---------|
| payoutdiv | 1.0000   |          |         |         |          |         |         |         |         |         |          |         |         |        |         |
| CASHFLOW  | 0.1195   | 1.0000   |         |         |          |         |         |         |         |         |          |         |         |        |         |
| nm        | 0.2021   | 0.3202   | 1.0000  |         |          |         |         |         |         |         |          |         |         |        |         |
| LEV       | 0.1035   | 0.4029   | 0.0916  | 1.0000  |          |         |         |         |         |         |          |         |         |        |         |
| FIRMSIZE  | 0.3493   | -0.1020  | 0.1235  | 0.1454  | 1.0000   |         |         |         |         |         |          |         |         |        |         |
| FIRMAGE   | 0.2598   | -0.0174  | 0.0976  | 0.1725  | 0.3913   | 1.0000  |         |         |         |         |          |         |         |        |         |
| t_ca      | 0.3172   | 0.1064   | 0.0722  | 0.2844  | 0.6986   | 0.3913  | 1.0000  |         |         |         |          |         |         |        |         |
| act_dir   | -0.0265  | -0.0080  | 0.0340  | -0.1427 | -0.3652  | -0.0644 | -0.3825 | 1.0000  |         |         |          |         |         |        |         |
| cum_fon   | -0.0469  | 0.0074   | -0.0667 | -0.0072 | -0.0932  | -0.1913 | -0.0743 | 0.2429  | 1.0000  |         |          |         |         |        |         |
| invest    | 0.0005   | 0.0281   | -0.0250 | 0.0050  | -0.0141  | -0.0159 | -0.0063 | -0.0029 | -0.0050 | 1.0000  |          |         |         |        |         |
| crispr-d  | -0.0114  | 0.0505   | 0.0674  | -0.0012 | -0.0368  | -0.0681 | -0.0497 | -0.0025 | 0.0143  | 0.2511  | 1.0000   |         |         |        |         |
| debtind   | 0.0756   | 0.1038   | 0.0846  | 0.7039  | 0.2339   | 0.2617  | 0.2554  | -0.1100 | -0.0397 | 0.0100  | -0.0081  | 1.0000  |         |        |         |
| cepexov   | 0.2641   | 0.1929   | 0.1983  | 0.2407  | 0.6964   | 0.3780  | 0.6048  | -0.3244 | -0.1128 | -0.0002 | -0.0018  | 0.2472  | 1.0000  |        |         |
| young     | -0.1775  | -0.0209  | -0.1140 | -0.1102 | -0.1982  | -0.2676 | -0.1940 | -0.1359 | -0.1025 | 0.0043  | 0.0631   | -0.0714 | -0.1674 | 1.0000 |         |
| crispc1   | -0.1681  | 0.0168   | -0.0881 | -0.3973 | -0.5402  | -0.3159 | -0.4106 | 0.2031  | 0.0829  | 0.0977  | 0.4251   | -0.5829 | -0.3914 | 0.1453 | 1.0000  |

| Variable  | VIF  | SQRT VIF | Tolerance | R-Squared |
|-----------|------|----------|-----------|-----------|
| payoutdiv | 1.25 | 1.12     | 0.8008    | 0.1992    |
| CASHFLOW  | 1.71 | 1.31     | 0.5857    | 0.4143    |
| nm        | 1.23 | 1.11     | 0.8115    | 0.1885    |
| LEV       | 2.68 | 1.64     | 0.3736    | 0.6264    |
| FIRMSIZE  | 3.87 | 1.97     | 0.2587    | 0.7413    |
| FIRMAGE   | 1.43 | 1.20     | 0.6971    | 0.3029    |
| t_ca      | 2.39 | 1.55     | 0.4182    | 0.5818    |
| act_dir   | 1.40 | 1.18     | 0.7138    | 0.2862    |
| cum_fon   | 1.14 | 1.07     | 0.8793    | 0.1207    |
| invest    | 1.07 | 1.04     | 0.9330    | 0.0670    |
| crispr-d  | 1.61 | 1.27     | 0.6219    | 0.3781    |
| debtind   | 3.02 | 1.74     | 0.3312    | 0.6688    |
| cepexov   | 2.39 | 1.55     | 0.4176    | 0.5824    |
| young     | 1.19 | 1.09     | 0.8375    | 0.1625    |
| crispc1   | 3.12 | 1.77     | 0.3203    | 0.6797    |
| Mean VIF  | 1.97 |          |           |           |

|    | Eigenval | Cond Index |
|----|----------|------------|
| 1  | 10.2442  | 1.0000     |
| 2  | 1.3624   | 2.7422     |
| 3  | 0.9199   | 3.3372     |
| 4  | 0.7320   | 3.7411     |
| 5  | 0.6103   | 4.0970     |
| 6  | 0.4775   | 4.6319     |
| 7  | 0.4564   | 4.7374     |
| 8  | 0.3415   | 5.4769     |
| 9  | 0.2742   | 6.1124     |
| 10 | 0.2105   | 6.9755     |
| 11 | 0.1313   | 8.8340     |
| 12 | 0.0973   | 10.2632    |
| 13 | 0.0727   | 11.8736    |
| 14 | 0.0459   | 14.9471    |
| 15 | 0.0206   | 22.3212    |
| 16 | 0.0035   | 53.9620    |

Condition Number 53.9620  
 Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)  
 Det(correlation matrix) 0.0068

. pwcorr payoutdiv CASHFLOW nm LEV FIRMSIZE FIRMAGE t\_ca act\_dir cum\_fon invest crispresid debttind cepexov  
young crispc1, sig star (.05)

|            | payout~v           | CASHFLOW           | nm                 | LEV                | FIRMSIZE           | FIRMAGE            | t_ca               |
|------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| payoutdiv  | 1.0000             |                    |                    |                    |                    |                    |                    |
| CASHFLOW   | 0.1123*<br>0.0000  | 1.0000             |                    |                    |                    |                    |                    |
| nm         | 0.1953*<br>0.0000  | 0.3062*<br>0.0000  | 1.0000             |                    |                    |                    |                    |
| LEV        | 0.1038*<br>0.0000  | 0.4046*<br>0.0000  | 0.0901*<br>0.0001  | 1.0000             |                    |                    |                    |
| FIRMSIZE   | 0.3451*<br>0.0000  | -0.1064*<br>0.0000 | 0.1191*<br>0.0000  | 0.1460*<br>0.0000  | 1.0000             |                    |                    |
| FIRMAGE    | 0.2643*<br>0.0000  | -0.0173<br>0.4496  | 0.0977*<br>0.0000  | 0.1762*<br>0.0000  | 0.4018*<br>0.0000  | 1.0000             |                    |
| t_ca       | 0.3114*<br>0.0000  | 0.1062*<br>0.0000  | 0.0705*<br>0.0020  | 0.2850*<br>0.0000  | 0.6941*<br>0.0000  | 0.3968*<br>0.0000  | 1.0000             |
| act_dir    | -0.0183<br>0.4237  | -0.0046<br>0.8398  | 0.0351<br>0.1245   | -0.1419*<br>0.0000 | -0.3675*<br>0.0000 | -0.0708*<br>0.0019 | -0.3880*<br>0.0000 |
| cum_fon    | -0.0563*<br>0.0139 | 0.0075<br>0.7420   | -0.0692*<br>0.0024 | -0.0123<br>0.5916  | -0.0916*<br>0.0001 | -0.1910*<br>0.0000 | -0.0706*<br>0.0020 |
| invest     | -0.0024<br>0.9175  | 0.0304<br>0.1831   | -0.0255<br>0.2635  | 0.0057<br>0.8020   | -0.0154<br>0.5013  | -0.0185<br>0.4180  | -0.0063<br>0.7829  |
| crispresid | -0.0216<br>0.3460  | 0.0543*<br>0.0174  | 0.0540*<br>0.0180  | -0.0029<br>0.8980  | -0.0526*<br>0.0211 | -0.0890*<br>0.0001 | -0.0595*<br>0.0091 |
| debtind    | 0.0807*<br>0.0004  | 0.1020*<br>0.0000  | 0.0925*<br>0.0000  | 0.7044*<br>0.0000  | 0.2394*<br>0.0000  | 0.2724*<br>0.0000  | 0.2615*<br>0.0000  |
| cepexov    | 0.2577*<br>0.0000  | 0.1825*<br>0.0000  | 0.1792*<br>0.0000  | 0.2410*<br>0.0000  | 0.6945*<br>0.0000  | 0.3841*<br>0.0000  | 0.6029*<br>0.0000  |
| young      | -0.1767*<br>0.0000 | -0.0159<br>0.4869  | -0.1105*<br>0.0000 | -0.1054*<br>0.0000 | -0.2019*<br>0.0000 | -0.2628*<br>0.0000 | -0.1900*<br>0.0000 |
| crispc1    | -0.1681*<br>0.0000 | 0.0180<br>0.4460   | -0.0871*<br>0.0002 | -0.3970*<br>0.0000 | -0.5399*<br>0.0000 | -0.3177*<br>0.0000 | -0.4101*<br>0.0000 |
|            | act_dir            | cum_fon            | invest             | crispr~d           | debtind            | cepexov            | young              |
| act_dir    | 1.0000             |                    |                    |                    |                    |                    |                    |
| cum_fon    | 0.2381*<br>0.0000  | 1.0000             |                    |                    |                    |                    |                    |
| invest     | -0.0059<br>0.7965  | -0.0029<br>0.9006  | 1.0000             |                    |                    |                    |                    |
| crispresid | -0.0043<br>0.8518  | 0.0149<br>0.5153   | 0.2593*<br>0.0000  | 1.0000             |                    |                    |                    |
| debtind    | -0.1168*<br>0.0000 | -0.0469*<br>0.0401 | 0.0064<br>0.7783   | -0.0104<br>0.6483  | 1.0000             |                    |                    |
| cepexov    | -0.3227*<br>0.0000 | -0.1112*<br>0.0000 | 0.0020<br>0.9299   | -0.0109<br>0.6319  | 0.2507*<br>0.0000  | 1.0000             |                    |
| young      | -0.1210*<br>0.0000 | -0.1116*<br>0.0000 | 0.0069<br>0.7624   | 0.0826*<br>0.0003  | -0.0700*<br>0.0021 | -0.1584*<br>0.0000 | 1.0000             |
| crispc1    | 0.2003*<br>0.0000  | 0.0836*<br>0.0004  | 0.0995*<br>0.0000  | 0.4287*<br>0.0000  | -0.5834*<br>0.0000 | -0.3899*<br>0.0000 | 0.1424*<br>0.0000  |
|            | crispc1            |                    |                    |                    |                    |                    |                    |
| crispc1    | 1.0000             |                    |                    |                    |                    |                    |                    |

////////////////////  
\*\*\*\*\*Pearson Chi - Squared Test\*\*\*\*\*

H0: the level of oveconfidence is independent of ceo turnover

| Oveconfide<br>ncedummy | CEO Turnover |       | Total |
|------------------------|--------------|-------|-------|
|                        | 0            | 1     |       |
| 0                      | 11           | 110   | 121   |
| 1                      | 200          | 1,599 | 1,799 |
| Total                  | 211          | 1,709 | 1,920 |

Pearson chi2(1) = 0.4759 Pr = 0.490  
 === we accept the null H0: that the level of oveconfidence is independent of ceo turnover

////////////////test de moyenne non paramétriques////////////////

Two-sample wilcoxon rank-sum (Mann-whitney) test

| invest   | obs  | rank sum  | expected  |
|----------|------|-----------|-----------|
| 0        | 119  | 113157.5  | 113585.5  |
| 1        | 1789 | 1708028.5 | 1707600.5 |
| combined | 1908 | 1821186   | 1821186   |

unadjusted variance 33867410

adjustment for ties -946428.46

adjusted variance 32920981

Ho: payout~v(invest==0) = payout~v(invest==1)

z = -0.075  
 Prob > |z| = 0.9405

.

Two-sample wilcoxon rank-sum (Mann-whitney) test

| debtind  | obs  | rank sum | expected |
|----------|------|----------|----------|
| 0        | 957  | 869083   | 913456.5 |
| 1        | 951  | 952103   | 907729.5 |
| combined | 1908 | 1821186  | 1821186  |

unadjusted variance 1.448e+08

adjustment for ties -4045972.7

adjusted variance 1.407e+08

Ho: payout~v(debtind==0) = payout~v(debtind==1)

z = -3.740  
 Prob > |z| = 0.0002

Two-sample wilcoxon rank-sum (Mann-whitney) test

| cepexov  | obs  | rank sum  | expected |
|----------|------|-----------|----------|
| 0        | 954  | 749203.5  | 910116   |
| 1        | 953  | 1070074.5 | 909162   |
| combined | 1907 | 1819278   | 1819278  |

unadjusted variance 1.446e+08

adjustment for ties -4025085.3

adjusted variance 1.405e+08

Ho: payout~v(cepexov==0) = payout~v(cepexov==1)

z = -13.574  
 Prob > |z| = 0.0000

Two-sample wilcoxon rank-sum (Mann-whitney) test

| crispc1  | obs  | rank sum | expected |
|----------|------|----------|----------|
| 0        | 905  | 896440.5 | 809522.5 |
| 1        | 883  | 702925.5 | 789843.5 |
| combined | 1788 | 1599366  | 1599366  |

unadjusted variance 1.191e+08

adjustment for ties -3281880



adjusted variance 1.159e+08

Ho: payout~v(crispc1==0) = payout~v(crispc1==1)

z = 8.075  
Prob > |z| = 0.0000

Two-sample wilcoxon rank-sum (Mann-whitney) test

| crispresid | obs  | rank sum | expected |
|------------|------|----------|----------|
| 0          | 949  | 912501.5 | 905820.5 |
| 1          | 959  | 908684.5 | 915365.5 |
| combined   | 1908 | 1821186  | 1821186  |

unadjusted variance 1.448e+08

adjustment for ties -4045901.5

adjusted variance 1.407e+08

Ho: payout~v(crispr~d==0) = payout~v(crispr~d==1)

z = 0.563  
Prob > |z| = 0.5733

Two-sample wilcoxon rank-sum (Mann-whitney) test

| young    | obs  | rank sum | expected |
|----------|------|----------|----------|
| 0        | 874  | 941427.5 | 834233   |
| 1        | 1034 | 879758.5 | 986953   |
| combined | 1908 | 1821186  | 1821186  |

unadjusted variance 1.438e+08

adjustment for ties -4017560.8

adjusted variance 1.397e+08

Ho: payout~v(young==0) = payout~v(young==1)

z = 9.068  
Prob > |z| = 0.0000

////////////////////GMM////////////////////////////////////

Arellano-Bond dynamic panel-data estimation  
Group variable: id  
Time variable: year

Number of obs = 1,656  
Number of groups = 120

Obs per group:  
min = 9  
avg = 13.8  
max = 14

Number of instruments = 115

wald chi2(10) = 1.18e+07  
Prob > chi2 = 0.0000

Two-step results

| payoutdiv | Coef.     | Std. Err. | z      | P> z  | [95% Conf. Interval] |
|-----------|-----------|-----------|--------|-------|----------------------|
| payoutdiv |           |           |        |       |                      |
| L1.       | .4460959  | .0004988  | 894.38 | 0.000 | .4451184 .4470735    |
| invest    | 1.156489  | .0585447  | 19.75  | 0.000 | 1.041743 1.271234    |
| act_dir   | .069313   | .0055101  | 12.58  | 0.000 | .0585134 .0801126    |
| cum_fon   | -.817063  | .0906543  | -9.01  | 0.000 | -.9947422 -.6393837  |
| t_ca      | -1.023215 | .0310086  | -33.00 | 0.000 | -1.083991 -.9624394  |
| FIRMSIZE  | -1.755686 | .1575757  | -11.14 | 0.000 | -2.064528 -1.446843  |
| FIRMAGE   | 9.673794  | .3233253  | 29.92  | 0.000 | 9.040088 10.3075     |
| CASHFLOW  | 8.116153  | .9742275  | 8.33   | 0.000 | 6.206702 10.0256     |
| nm        | 4.995361  | .7555101  | 6.61   | 0.000 | 3.514588 6.476134    |
| LEV       | -8.681462 | .395663   | -21.94 | 0.000 | -9.456947 -7.905977  |
| _cons     | 13.46415  | 1.456278  | 9.25   | 0.000 | 10.60989 16.3184     |

Warning: gmm two-step standard errors are biased; robust standard errors are recommended.

Instruments for differenced equation

GMM-type: L(2/.)payoutdiv

Standard: D.invest D.act\_dir D.cum\_fon D.t\_ca D.FIRMSIZE D.FIRMAGE  
D.CASHFLOW D.nm D.LEV

Instruments for level equation

Standard: \_cons

```
. estat abond
```

Arellano-Bond test for zero autocorrelation in first-differenced errors

| Order | z       | Prob > z |
|-------|---------|----------|
| 1     | -6.403  | 0.0000   |
| 2     | -.77954 | 0.4357   |

H0: no autocorrelation

```
. estat sargan
```

Sargan test of overidentifying restrictions

H0: overidentifying restrictions are valid

chi2(104) = 108.6457  
Prob > chi2 = 0.3581

note: nm dropped from div() because of collinearity  
note: nm dropped because of collinearity

System dynamic panel-data estimation  
Group variable: id  
Time variable: year

Number of obs = 1,782  
Number of groups = 120  
Obs per group:  
min = 11  
avg = 14.85  
max = 15

Number of instruments = 129

wald chi2(10) = 949431.19  
Prob > chi2 = 0.0000

Two-step results

| payoutdiv | Coef.     | Std. Err. | z      | P> z  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| payoutdiv |           |           |        |       |                      |           |
| L1.       | .4806254  | .0022543  | 213.20 | 0.000 | .476207              | .4850438  |
| invest    | 1.144379  | .0763111  | 15.00  | 0.000 | .9948121             | 1.293946  |
| act_dir   | -.0412646 | .0047718  | -8.65  | 0.000 | -.0506171            | -.0319122 |
| cum_fon   | 2.448054  | .2372576  | 10.32  | 0.000 | 1.983037             | 2.91307   |
| t_ca      | -.225762  | .0353891  | -6.38  | 0.000 | -.2951234            | -.1564006 |
| FIRMSIZE  | 1.952749  | .0928045  | 21.04  | 0.000 | 1.770856             | 2.134643  |
| FIRMAGE   | -.7417029 | .2842362  | -2.61  | 0.009 | -1.298796            | -.1846102 |
| CASHFLOW  | 14.24392  | 1.776758  | 8.02   | 0.000 | 10.76154             | 17.72631  |
| nm        | 3.132137  | .7455694  | 4.20   | 0.000 | 1.670848             | 4.593426  |
| LEV       | -3.250059 | .5952446  | -5.46  | 0.000 | -4.416717            | -2.083401 |
| _cons     | -9.930289 | 1.129435  | -8.79  | 0.000 | -12.14394            | -7.716637 |

Warning: gmm two-step standard errors are biased; robust standard errors are recommended.

Instruments for differenced equation

GMM-type: L(2/.)payoutdiv  
Standard: D.invest D.act\_dir D.cum\_fon D.t\_ca D.FIRMSIZE D.FIRMAGE  
D.CASHFLOW D.nm D.LEV

Instruments for level equation

GMM-type: LD.payoutdiv  
Standard: \_cons

```
. estat abond, artests(2)
```

Arellano-Bond test for zero autocorrelation in first-differenced errors

| Order | z       | Prob > z |
|-------|---------|----------|
| 1     | -6.4037 | 0.0000   |
| 2     | -.67529 | 0.4995   |

H0: no autocorrelation

```
. estat abond, artests(1)
```

Arellano-Bond test for zero autocorrelation in first-differenced errors

| Order | z       | Prob > z |
|-------|---------|----------|
| 1     | -6.4037 | 0.0000   |

H0: no autocorrelation

```
. estat sargan
```

Sargan test of overidentifying restrictions

H0: overidentifying restrictions are valid

```

 chi2(118) = 112.7368
 Prob > chi2 = 0.6195

. est store Model1
2)
note: nm dropped from div() because of collinearity
note: nm dropped because of collinearity

Arellano-Bond dynamic panel-data estimation Number of obs = 1,656
Group variable: id Number of groups = 120
Time variable: year

Obs per group:
 min = 9
 avg = 13.8
 max = 14

Number of instruments = 115 wald chi2(10) = 1.31e+07
 Prob > chi2 = 0.0000

Two-step results
-----+-----+-----+-----+-----+-----+-----+
 payoutdiv | Coef. Std. Err. z P>|z| [95% Conf. Interval]
-----+-----+-----+-----+-----+-----+-----+
 payoutdiv |
 L1. | .4496942 .0006349 708.30 0.000 .4484498 .4509386
 crispresid |
 act_dir | 1.742971 .0485328 35.91 0.000 1.647848 1.838093
 cum_fon | .0678057 .0055304 12.26 0.000 .0569663 .0786451
 t_ca | -.7056092 .0845232 -8.35 0.000 -.8712717 -.5399467
 FIRMSIZE | -1.014832 .0415762 -24.41 0.000 -1.09632 -.9333442
 FIRMAGE | -1.828261 .1813519 -10.08 0.000 -2.183704 -1.472817
 CASHFLOW | 12.45865 .3741343 33.30 0.000 11.72536 13.19194
 nm | 6.971497 .8646343 8.06 0.000 5.276845 8.666149
 LEV | 4.351729 .8122687 5.36 0.000 2.759711 5.943746
 _cons | -8.055768 .4085115 -19.72 0.000 -8.856436 -7.255101
 _cons | 5.217934 1.787347 2.92 0.004 1.714798 8.72107
-----+-----+-----+-----+-----+-----+-----+

Warning: gmm two-step standard errors are biased; robust standard
errors are recommended.
Instruments for differenced equation
 GMM-type: L(2/.)payoutdiv
 Standard: D.crispresid D.act_dir D.cum_fon D.t_ca D.FIRMAGE
 D.CASHFLOW D.nm D.LEV
Instruments for level equation
 Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors
-----+-----+-----+
 Order | z Prob > z |
-----+-----+-----+
 1 | -6.4274 0.0000 |
 2 | -7.571 0.4490 |
-----+-----+-----+
 H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
 H0: overidentifying restrictions are valid

 chi2(104) = 108.8953
 Prob > chi2 = 0.3519

note: nm dropped from div() because of collinearity
note: nm dropped because of collinearity

```

```

System dynamic panel-data estimation Number of obs = 1,782
Group variable: id Number of groups = 120
Time variable: year

Obs per group:
 min = 11
 avg = 14.85
 max = 15

Number of instruments = 129 wald chi2(10) = 2.27e+06
 Prob > chi2 = 0.0000

Two-step results
-----+-----+-----+-----+-----+-----+-----+
 payoutdiv | Coef. Std. Err. z P>|z| [95% Conf. Interval]
-----+-----+-----+-----+-----+-----+-----+
 payoutdiv |
 L1. | .4867503 .0020063 242.62 0.000 .4828181 .4906825
-----+-----+-----+-----+-----+-----+-----+

```

|            |           |          |        |       |           |           |
|------------|-----------|----------|--------|-------|-----------|-----------|
| crispresid | 1.628305  | .0437269 | 37.24  | 0.000 | 1.542602  | 1.714009  |
| act_dir    | -.0403549 | .0045311 | -8.91  | 0.000 | -.0492356 | -.0314741 |
| cum_fon    | 2.396166  | .2588273 | 9.26   | 0.000 | 1.888873  | 2.903458  |
| t_ca       | -.2216595 | .0357865 | -6.19  | 0.000 | -.2917997 | -.1515193 |
| FIRMSIZE   | 2.071836  | .0829689 | 24.97  | 0.000 | 1.90922   | 2.234452  |
| FIRIMAGE   | .8514955  | .3592142 | 2.37   | 0.018 | .1474486  | 1.555542  |
| CASHFLOW   | 15.32317  | 1.618452 | 9.47   | 0.000 | 12.15106  | 18.49528  |
| nm         | .2318544  | .8392543 | 0.28   | 0.782 | -1.413054 | 1.876763  |
| LEV        | -3.427811 | .6208196 | -5.52  | 0.000 | -4.644595 | -2.211027 |
| _cons      | -17.02439 | .9532748 | -17.86 | 0.000 | -18.89277 | -15.15601 |

Warning: gmm two-step standard errors are biased; robust standard errors are recommended.

Instruments for differenced equation

GMM-type: L(2/.)payoutdiv

Standard: D.crispresid D.act\_dir D.cum\_fon D.t\_ca D.FIRMSIZE

D.FIRIMAGE D.CASHFLOW D.nm D.LEV

Instruments for level equation

GMM-type: LD.payoutdiv

Standard: \_cons

. estat abond, artests(2)

Arellano-Bond test for zero autocorrelation in first-differenced errors

| Order | z       | Prob > z |
|-------|---------|----------|
| 1     | -6.4641 | 0.0000   |
| 2     | -.63221 | 0.5272   |

H0: no autocorrelation

. estat abond, artests(1)

Arellano-Bond test for zero autocorrelation in first-differenced errors

| Order | z       | Prob > z |
|-------|---------|----------|
| 1     | -6.4641 | 0.0000   |

H0: no autocorrelation

. estat sargan

Sargan test of overidentifying restrictions

H0: overidentifying restrictions are valid

chi2(118) = 114.4373

Prob > chi2 = 0.5756

. est store Model2

note: nm dropped because of collinearity

Arellano-Bond dynamic panel-data estimation

Group variable: id

Time variable: year

Number of obs = 1,656

Number of groups = 120

Obs per group:

min = 9

avg = 13.8

max = 14

Number of instruments = 115

wald chi2(10) = 5.55e+06

Prob > chi2 = 0.0000

Two-step results

| payoutdiv | Coef.     | Std. Err. | z      | P> z  | [95% Conf. Interval] |
|-----------|-----------|-----------|--------|-------|----------------------|
| payoutdiv |           |           |        |       |                      |
| L1.       | .4449268  | .000525   | 847.44 | 0.000 | .4438978 .4459559    |
| debtind   | -.4487922 | .2712961  | -1.65  | 0.098 | -.9805229 .0829384   |
| act_dir   | .0681891  | .0051679  | 13.19  | 0.000 | .0580602 .0783179    |
| cum_fon   | -.6682729 | .081236   | -8.23  | 0.000 | -.8274926 -.5090531  |
| t_ca      | -1.038073 | .0306949  | -33.82 | 0.000 | -1.098234 -.9779119  |
| FIRMSIZE  | -1.72757  | .163848   | -10.54 | 0.000 | -2.048706 -1.406433  |
| FIRIMAGE  | 9.644745  | .4213058  | 22.89  | 0.000 | 8.819001 10.47049    |
| CASHFLOW  | 9.558448  | 1.068112  | 8.95   | 0.000 | 7.464986 11.65191    |
| nm        | 5.236265  | .7132869  | 7.34   | 0.000 | 3.838248 6.634282    |
| LEV       | -8.080106 | .5255927  | -15.37 | 0.000 | -9.110248 -7.049963  |
| _cons     | 14.45217  | 2.08486   | 6.93   | 0.000 | 10.36592 18.53842    |

Warning: gmm two-step standard errors are biased; robust standard errors are recommended.

Instruments for differenced equation

GMM-type: L(2/.)payoutdiv

```

Standard: D.debtind D.act_dir D.cum_fon D.t_ca D.FIRMSIZE D.FIRIMAGE
D.CASHFLOW D.nm D.LEV
Instruments for level equation
Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors
+-----+
| Order | z Prob > z |
+-----+
| 1 |-6.4138 0.0000 |
| 2 |-.80701 0.4197 |
+-----+
H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
H0: overidentifying restrictions are valid

chi2(104) = 112.4793
Prob > chi2 = 0.2681

note: nm dropped from div() because of collinearity
note: nm dropped because of collinearity

System dynamic panel-data estimation
Group variable: id
Time variable: year

Number of obs = 1,782
Number of groups = 120
obs per group:
 min = 11
 avg = 14.85
 max = 15

Number of instruments = 129
wald chi2(10) = 7.49e+06
Prob > chi2 = 0.0000

Two-step results
+-----+
| payoutdiv | Coef. Std. Err. z P>|z| [95% Conf. Interval] |
+-----+
| payoutdiv |
L1.	.483916 .0014911 324.53 0.000 .4809934 .4868385
debtind	.3302408 .3003731 1.10 0.272 -.2584797 .9189613
act_dir	-.0440462 .0067282 -6.55 0.000 -.0572333 -.0308592
cum_fon	2.268741 .1785805 12.70 0.000 1.91873 2.618753
t_ca	-.2581625 .0310076 -8.33 0.000 -.3189363 -.1973888
FIRMSIZE	2.002674 .1022546 19.59 0.000 1.802259 2.203089
FIRIMAGE	-.6520768 .2067221 -3.15 0.002 -1.057245 -.2469089
CASHFLOW	17.33793 1.530269 11.33 0.000 14.33866 20.3372
nm	1.835375 .9083013 2.02 0.043 .0551372 3.615613
LEV	-4.850581 .8591903 -5.65 0.000 -6.534563 -3.166599
_cons	-9.394793 1.355854 -6.93 0.000 -12.05222 -6.737367
+-----+

Warning: gmm two-step standard errors are biased; robust standard
errors are recommended.
Instruments for differenced equation
GMM-type: L(2/.)payoutdiv
Standard: D.debtind D.act_dir D.cum_fon D.t_ca D.FIRMSIZE D.FIRIMAGE
D.CASHFLOW D.nm D.LEV
Instruments for level equation
GMM-type: LD.payoutdiv
Standard: _cons

. estat abond, artests(2)

Arellano-Bond test for zero autocorrelation in first-differenced errors
+-----+
| Order | z Prob > z |
+-----+
| 1 |-6.4423 0.0000 |
| 2 |-.66302 0.5073 |
+-----+
H0: no autocorrelation

. estat abond, artests(1)

Arellano-Bond test for zero autocorrelation in first-differenced errors
+-----+
| Order | z Prob > z |
+-----+
| 1 |-6.4423 0.0000 |
+-----+
H0: no autocorrelation

```

```

. estat sargan
Sargan test of overidentifying restrictions
H0: overidentifying restrictions are valid

 chi2(118) = 116.6558
 Prob > chi2 = 0.5177

. est store Model3

note: nm dropped from div() because of collinearity
note: nm dropped because of collinearity

Arellano-Bond dynamic panel-data estimation Number of obs = 1,656
Group variable: id Number of groups = 120
Time variable: year Obs per group:
 min = 9
 avg = 13.8
 max = 14

Number of instruments = 115 Wald chi2(10) = 1.79e+07
 Prob > chi2 = 0.0000

Two-step results
-----+-----+-----+-----+-----+-----+-----+-----+
 payoutdiv | Coef. Std. Err. z P>|z| [95% Conf. Interval]
-----+-----+-----+-----+-----+-----+-----+
 payoutdiv |
 L1. | .4461266 .0005122 870.94 0.000 .4451226 .4471306
 cepexov | .1603846 .1335948 1.20 0.230 - .1014564 .4222256
 act_dir | .0706463 .0054858 12.88 0.000 .0598943 .0813983
 cum_fon | - .7227866 .1027237 -7.04 0.000 - .9241214 - .5214518
 t_ca | -1.027979 .0310187 -33.14 0.000 -1.088775 - .9671836
 FIRMSIZE | -1.745033 .166231 -10.50 0.000 -2.07084 -1.419227
 FIRMAGE | 9.623427 .3277344 29.36 0.000 8.981079 10.26577
 CASHFLOW | 8.967875 .8886027 10.09 0.000 7.226246 10.7095
 nm | 4.741244 .812502 5.84 0.000 3.148769 6.333718
 LEV | -8.589742 .4896303 -17.54 0.000 -9.5494 -7.630084
 _cons | 14.59309 1.575787 9.26 0.000 11.5046 17.68158
-----+-----+-----+-----+-----+-----+
Warning: gmm two-step standard errors are biased; robust standard
errors are recommended.
Instruments for differenced equation
 GMM-type: L(2/.)payoutdiv
 Standard: D.cepexov D.act_dir D.cum_fon D.t_ca D.FIRMSIZE D.FIRMAGE
 D.CASHFLOW D.nm D.LEV
Instruments for level equation
 Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors
-----+-----+-----+
 Order | z Prob > z
-----+-----+-----+
 1 | -6.4186 0.0000
 2 | - .79837 0.4247
-----+-----+-----+
H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
H0: overidentifying restrictions are valid

 chi2(104) = 111.0975
 Prob > chi2 = 0.2990

note: nm dropped from div() because of collinearity
note: nm dropped because of collinearity

System dynamic panel-data estimation Number of obs = 1,782
Group variable: id Number of groups = 120
Time variable: year obs per group:
 min = 11
 avg = 14.85
 max = 15

Number of instruments = 129 Wald chi2(10) = 842191.56
 Prob > chi2 = 0.0000

Two-step results
-----+-----+-----+-----+-----+-----+-----+
 payoutdiv | Coef. Std. Err. z P>|z| [95% Conf. Interval]
-----+-----+-----+-----+-----+-----+-----+

```

|           |           |          |        |       |           |           |
|-----------|-----------|----------|--------|-------|-----------|-----------|
| payoutdiv |           |          |        |       |           |           |
| L1.       | .4843197  | .0022923 | 211.28 | 0.000 | .4798269  | .4888125  |
| cepexov   | .2905969  | .1660206 | 1.75   | 0.080 | -.0347976 | .6159913  |
| act_dir   | -.0464563 | .0056487 | -8.22  | 0.000 | -.0575275 | -.035385  |
| cum_fon   | 2.254442  | .1997305 | 11.29  | 0.000 | 1.862977  | 2.645906  |
| t_ca      | -.2900529 | .0215396 | -13.47 | 0.000 | -.3322697 | -.2478361 |
| FIRMSIZE  | 1.989203  | .08465   | 23.50  | 0.000 | 1.823292  | 2.155114  |
| FIRMAGE   | -.4915938 | .3020739 | -1.63  | 0.104 | -1.083648 | .1004601  |
| CASHFLOW  | 17.67815  | 1.761759 | 10.03  | 0.000 | 14.22517  | 21.13114  |
| nm        | 1.600744  | .8661631 | 1.85   | 0.065 | -.0969047 | 3.298392  |
| LEV       | -3.972351 | .5856625 | -6.78  | 0.000 | -5.120228 | -2.824474 |
| _cons     | -9.716086 | 1.670493 | -5.82  | 0.000 | -12.99019 | -6.441979 |

Warning: gmm two-step standard errors are biased; robust standard errors are recommended.

Instruments for differenced equation

GMM-type: L(2/.)payoutdiv

Standard: D.cepexov D.act\_dir D.cum\_fon D.t\_ca D.FIRMSIZE D.FIRMAGE  
D.CASHFLOW D.nm D.LEV

Instruments for level equation

GMM-type: LD.payoutdiv

Standard: \_cons

. estat abund, artests(2)

Arellano-Bond test for zero autocorrelation in first-differenced errors

| Order | z       | Prob > z |
|-------|---------|----------|
| 1     | -6.4426 | 0.0000   |
| 2     | -.6679  | 0.5042   |

H0: no autocorrelation

. estat abund, artests(1)

Arellano-Bond test for zero autocorrelation in first-differenced errors

| Order | z       | Prob > z |
|-------|---------|----------|
| 1     | -6.4426 | 0.0000   |

H0: no autocorrelation

. estat sargan

Sargan test of overidentifying restrictions

H0: overidentifying restrictions are valid

chi2(118) = 116.9031  
Prob > chi2 = 0.5112

. est store Model4

note: nm dropped from div() because of collinearity

note: nm dropped because of collinearity

Arellano-Bond dynamic panel-data estimation

Number of obs = 1,656

Group variable: id

Number of groups = 120

Time variable: year

Obs per group:

min = 9  
avg = 13.8  
max = 14

Number of instruments = 115

wald chi2(10) = 6.17e+06

Prob > chi2 = 0.0000

Two-step results

| payoutdiv | Coef.     | Std. Err. | z      | P> z  | [95% Conf. Interval] |
|-----------|-----------|-----------|--------|-------|----------------------|
| payoutdiv |           |           |        |       |                      |
| L1.       | .4455852  | .0005956  | 748.16 | 0.000 | .4444179 .4467525    |
| young     | 2.082996  | .0503757  | 41.35  | 0.000 | 1.984262 2.181731    |
| act_dir   | .0702339  | .0051465  | 13.65  | 0.000 | .060147 .0803207     |
| cum_fon   | -.733719  | .1008073  | -7.28  | 0.000 | -.9312977 -.5361402  |
| t_ca      | -.9967084 | .0328559  | -30.34 | 0.000 | -1.061105 -.9323121  |
| FIRMSIZE  | -1.649764 | .1628532  | -10.13 | 0.000 | -1.968951 -1.330578  |
| FIRMAGE   | 10.51802  | .379762   | 27.70  | 0.000 | 9.773696 11.26234    |
| CASHFLOW  | 8.361381  | 1.116003  | 7.49   | 0.000 | 6.174056 10.54871    |
| nm        | 5.361035  | .8256266  | 6.49   | 0.000 | 3.742836 6.979233    |
| LEV       | -8.634898 | .4702176  | -18.36 | 0.000 | -9.556508 -7.713289  |
| _cons     | 8.855721  | 1.450048  | 6.11   | 0.000 | 6.013679 11.69776    |

```

Warning: gmm two-step standard errors are biased; robust standard
errors are recommended.
Instruments for differenced equation
GMM-type: L(2/.)payoutdiv
Standard: D.young D.act_dir D.cum_fon D.t_ca D.FIRMSIZE D.FIRMA
GE
D.CASHFLOW D.nm D.LEV
Instruments for level equation
Standard: _cons
```

```
. estat abond
```

```
Arellano-Bond test for zero autocorrelation in first-differenced errors
```

| Order | z       | Prob >  z |
|-------|---------|-----------|
| 1     | -6.3968 | 0.0000    |
| 2     | -.80779 | 0.4192    |

```
H0: no autocorrelation
```

```
. estat sargan
```

```
Sargan test of overidentifying restrictions
H0: overidentifying restrictions are valid
```

```
chi2(104) = 110.1441
Prob > chi2 = 0.3213
```

```
. xtddpsys payoutdiv young nm act_dir cum_fon t_ca FIRMSIZE FIRMA
GE CASHFLOW nm LEV, lags(1)
twostep artests(2)
note: nm dropped from div() because of collinearity
note: nm dropped because of collinearity
```

```
System dynamic panel-data estimation
Group variable: id
Time variable: year

Number of obs = 1,782
Number of groups = 120

obs per group:
min = 11
avg = 14.85
max = 15
```

```
Number of instruments = 129
wald chi2(10) = 646749.72
Prob > chi2 = 0.0000
```

```
Two-step results
```

| payoutdiv | Coef.     | Std. Err. | z      | P> z  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| payoutdiv |           |           |        |       |                      |           |
| L1.       | .486589   | .0024828  | 195.98 | 0.000 | .4817228             | .4914552  |
| young     | 2.640857  | .1096531  | 24.08  | 0.000 | 2.42594              | 2.855773  |
| act_dir   | -.0351445 | .0051852  | -6.78  | 0.000 | -.0453073            | -.0249817 |
| cum_fon   | 2.494037  | .2836105  | 8.79   | 0.000 | 1.938171             | 3.049904  |
| t_ca      | -.2257199 | .0386144  | -5.85  | 0.000 | -.3014027            | -.1500372 |
| FIRMSIZE  | 1.972556  | .0941409  | 20.95  | 0.000 | 1.788043             | 2.157068  |
| FIRMA     | .7735723  | .3150413  | 2.46   | 0.014 | .1561027             | 1.391042  |
| CASHFLOW  | 18.35495  | 1.215732  | 15.10  | 0.000 | 15.97216             | 20.73774  |
| nm        | 1.899224  | .898976   | 2.11   | 0.035 | .1372631             | 3.661184  |
| LEV       | -3.626268 | .5939416  | -6.11  | 0.000 | -4.790372            | -2.462164 |
| _cons     | -16.53634 | 1.481278  | -11.16 | 0.000 | -19.43959            | -13.63309 |

```

Warning: gmm two-step standard errors are biased; robust standard
errors are recommended.
Instruments for differenced equation
GMM-type: L(2/.)payoutdiv
Standard: D.young D.act_dir D.cum_fon D.t_ca D.FIRMSIZE D.FIRMA
GE
D.CASHFLOW D.nm D.LEV
Instruments for level equation
GMM-type: LD.payoutdiv
Standard: _cons
```

```
. estat abond, artests(2)
```

```
Arellano-Bond test for zero autocorrelation in first-differenced errors
```

| Order | z       | Prob >  z |
|-------|---------|-----------|
| 1     | -6.4246 | 0.0000    |
| 2     | -.66908 | 0.5034    |

```
H0: no autocorrelation
```

```
. estat abond, artests(1)
```

```
Arellano-Bond test for zero autocorrelation in first-differenced errors
```



```

+-----+
| Order | z Prob > z |
+-----+
| 1 |-6.4246 0.0000 |
+-----+
H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
H0: overidentifying restrictions are valid

 chi2(118) = 114.0517
 Prob > chi2 = 0.5857

. est store Model5

note: nm dropped from div() because of collinearity
note: nm dropped because of collinearity

Arellano-Bond dynamic panel-data estimation Number of obs = 1,656
Group variable: id Number of groups = 120
Time variable: year Obs per group:
 min = 9
 avg = 13.8
 max = 14

Number of instruments = 115 wald chi2(10) = 4.87e+06
 Prob > chi2 = 0.0000

Two-step results
+-----+
| payoutdiv | Coef. Std. Err. z P>|z| [95% Conf. Interval]
+-----+
| payoutdiv |
| L1. | .4495685 .000867 518.54 0.000 .4478692 .4512677
| crispcl | 3.454865 .1022234 33.80 0.000 3.254511 3.65522
| act_dir | .0597878 .0063727 9.38 0.000 .0472975 .072278
| cum_fon | -.9789181 .1679232 -5.83 0.000 -1.308042 -.6497946
| t_ca | -1.060785 .0426324 -24.88 0.000 -1.144343 -.9772275
| FIRMSIZE | -1.727306 .2399038 -7.20 0.000 -2.197509 -1.257103
| FIRMAGE | 11.62505 .5113274 22.74 0.000 10.62286 12.62723
| CASHFLOW | 7.825325 .730392 10.71 0.000 6.393783 9.256867
| nm | 5.313165 .860663 6.17 0.000 3.626296 7.000033
| LEV | -5.929961 .390072 -15.20 0.000 -6.694488 -5.165434
| _cons | 5.742898 2.388428 2.40 0.016 1.061664 10.42413
+-----+
Warning: gmm two-step standard errors are biased; robust standard
errors are recommended.
Instruments for differenced equation
GMM-type: L(2/.)payoutdiv
Standard: D.crispc1 D.act_dir D.cum_fon D.t_ca D.FIRMSIZE D.FIRMAGE
D.CASHFLOW D.nm D.LEV
Instruments for level equation
Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors
+-----+
| Order | z Prob > z |
+-----+
| 1 |-6.4245 0.0000 |
| 2 | -.742 0.4581 |
+-----+
H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
H0: overidentifying restrictions are valid

 chi2(104) = 112.512
 Prob > chi2 = 0.2674
note: nm dropped from div() because of collinearity
note: nm dropped because of collinearity

System dynamic panel-data estimation Number of obs = 1,782
Group variable: id Number of groups = 120
Time variable: year Obs per group:
 min = 11
 avg = 14.85
 max = 15

Number of instruments = 129 wald chi2(10) = 1.41e+06

```

Prob > chi2 = 0.0000

Two-step results

| payoutdiv | Coef.     | Std. Err. | z      | P> z  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| payoutdiv |           |           |        |       |                      |           |
| L1.       | .4805299  | .0026933  | 178.42 | 0.000 | .4752513             | .4858086  |
| crispc1   | 3.006686  | .133903   | 22.45  | 0.000 | 2.744241             | 3.269131  |
| act_dir   | -.0395964 | .0073202  | -5.41  | 0.000 | -.0539437            | -.0252492 |
| cum_fon   | 2.196671  | .171719   | 12.79  | 0.000 | 1.860108             | 2.533234  |
| t_ca      | -.1552423 | .0486905  | -3.19  | 0.001 | -.2506738            | -.0598107 |
| FIRMSIZE  | 2.099754  | .1189595  | 17.65  | 0.000 | 1.866597             | 2.33291   |
| FIRMAGE   | -.6881051 | .3922211  | -1.75  | 0.079 | -1.456844            | .0806341  |
| CASHFLOW  | 11.44443  | 1.846147  | 6.20   | 0.000 | 7.826052             | 15.06282  |
| nm        | 2.904585  | .8673664  | 3.35   | 0.001 | 1.204578             | 4.604592  |
| LEV       | -2.488198 | .8061298  | -3.09  | 0.002 | -4.068183            | -.9082127 |
| _cons     | -13.1735  | 2.305396  | -5.71  | 0.000 | -17.69199            | -8.655003 |

Warning: gmm two-step standard errors are biased; robust standard errors are recommended.

Instruments for differenced equation

GMM-type: L(2/.)payoutdiv  
Standard: D.crispc1 D.act\_dir D.cum\_fon D.t\_ca D.FIRMSIZE D.FIRMAGE D.CASHFLOW D.nm D.LEV

Instruments for level equation

GMM-type: LD.payoutdiv  
Standard: \_cons

. estat abond, artests(2)

Arellano-Bond test for zero autocorrelation in first-differenced errors

| Order | z       | Prob > z |
|-------|---------|----------|
| 1     | -6.4036 | 0.0000   |
| 2     | -.64414 | 0.5195   |

H0: no autocorrelation

. estat abond, artests(1)

Arellano-Bond test for zero autocorrelation in first-differenced errors

| Order | z       | Prob > z |
|-------|---------|----------|
| 1     | -6.4036 | 0.0000   |

H0: no autocorrelation

. estat sargan

Sargan test of overidentifying restrictions

H0: overidentifying restrictions are valid

chi2(118) = 108.0573  
Prob > chi2 = 0.7332

. est store Model6

. outreg2 [Model1 Model2 Model3 Model4 Model5 Model6] using data2, word replace ctitle (GMM)  
label symbol(\*\*\*, \*\*, \*) alpha(0.01, 0.05, 0.1) keep(payoutdiv age\_dir nm act\_dir cu  
> m\_fon t\_ca FIRMSIZE FIRMAGE CASHFLOW nm LEV invest crispresid debtind cepexov crispc1 young  
)  
data2.rtf  
dir : seeout  
. shellout using "data2.rtf"

////////////////////////////////QCA-FUZZY SET////////////////////////////////////

. do "C:\Users\sana\AppData\Local\Temp\STD0b000000.tmp"

| bestfit | Freq. | Percent | Cum.  |
|---------|-------|---------|-------|
| OFRBDW  | 43    | 2.24    | 2.24  |
| OFRBDw  | 159   | 8.28    | 10.52 |
| OFRbdw  | 39    | 2.03    | 12.55 |
| OFRBdw  | 154   | 8.02    | 20.57 |

|        |       |        |        |
|--------|-------|--------|--------|
| OFRbdw | 64    | 3.33   | 23.91  |
| OFRbdw | 31    | 1.61   | 25.52  |
| OFRbdw | 6     | 0.31   | 25.83  |
| OFRbdw | 28    | 1.46   | 27.29  |
| OFRBDW | 47    | 2.45   | 29.74  |
| OFRBDW | 194   | 10.10  | 39.84  |
| OFRbdw | 24    | 1.25   | 41.09  |
| OFRbdw | 59    | 3.07   | 44.17  |
| OFRbdw | 24    | 1.25   | 45.42  |
| OFRbdw | 19    | 0.99   | 46.41  |
| OFRbdw | 2     | 0.10   | 46.51  |
| OFRbdw | 11    | 0.57   | 47.08  |
| OFRBDW | 13    | 0.68   | 47.76  |
| OFRBDW | 18    | 0.94   | 48.70  |
| OFRBDW | 20    | 1.04   | 49.74  |
| OFRbdw | 7     | 0.36   | 50.10  |
| OFRbdw | 224   | 11.67  | 61.77  |
| OFRbdw | 47    | 2.45   | 64.22  |
| OFRbdw | 20    | 1.04   | 65.26  |
| OFRbdw | 39    | 2.03   | 67.29  |
| OFRBDW | 32    | 1.67   | 68.96  |
| OFRBDW | 48    | 2.50   | 71.46  |
| OFRbdw | 19    | 0.99   | 72.45  |
| OFRbdw | 29    | 1.51   | 73.96  |
| OFRbdw | 206   | 10.73  | 84.69  |
| OFRbdw | 100   | 5.21   | 89.90  |
| OFRbdw | 26    | 1.35   | 91.25  |
| OFRbdw | 47    | 2.45   | 93.70  |
| OFRBDW | 2     | 0.10   | 93.80  |
| OFRBDW | 10    | 0.52   | 94.32  |
| OFRbdw | 2     | 0.10   | 94.43  |
| OFRBDW | 10    | 0.52   | 94.95  |
| OFRbdw | 2     | 0.10   | 95.05  |
| OFRbdw | 1     | 0.05   | 95.10  |
| OFRBDW | 5     | 0.26   | 95.36  |
| OFRBDW | 12    | 0.63   | 95.99  |
| OFRbdw | 2     | 0.10   | 96.09  |
| OFRbdw | 8     | 0.42   | 96.51  |
| OFRbdw | 1     | 0.05   | 96.56  |
| OFRbdw | 1     | 0.05   | 96.61  |
| OFRBDW | 1     | 0.05   | 96.67  |
| OFRBDW | 1     | 0.05   | 96.72  |
| OFRBDW | 1     | 0.05   | 96.77  |
| OFRbdw | 1     | 0.05   | 96.82  |
| OFRbdw | 12    | 0.63   | 97.45  |
| OFRbdw | 2     | 0.10   | 97.55  |
| OFRbdw | 1     | 0.05   | 97.60  |
| OFRbdw | 2     | 0.10   | 97.71  |
| OFRBDW | 2     | 0.10   | 97.81  |
| OFRBDW | 3     | 0.16   | 97.97  |
| OFRbdw | 3     | 0.16   | 98.13  |
| OFRbdw | 1     | 0.05   | 98.18  |
| OFRbdw | 20    | 1.04   | 99.22  |
| OFRbdw | 12    | 0.63   | 99.84  |
| OFRbdw | 2     | 0.10   | 99.95  |
| OFRbdw | 1     | 0.05   | 100.00 |
| -----  |       |        |        |
| Total  | 1,920 | 100.00 |        |

. summ div ov cashflow roa t\_ca cum\_fon act\_dir

| Variable | Obs  | Mean     | Std. Dev. | Min       | Max      |
|----------|------|----------|-----------|-----------|----------|
| -----    |      |          |           |           |          |
| div      | 1920 | .6791667 | .4669185  | 0         | 1        |
| ov       | 1920 | .9369792 | .2430637  | 0         | 1        |
| cashflow | 1920 | 5.80e+08 | 2.08e+09  | -1.77e+10 | 2.05e+10 |
| roa      | 1920 | 3.06851  | 13.62876  | -200.6879 | 55.00165 |
| t_ca     | 1920 | 9.151563 | 4.313949  | 3         | 23       |
| -----    |      |          |           |           |          |
| cum_fon  | 1920 | .7057292 | .455833   | 0         | 1        |
| act_dir  | 1920 | 15.40195 | 22.59272  | 0         | 84.45    |

| Variable | Obs  | Mean     | Std. Dev. | Min | Max |
|----------|------|----------|-----------|-----|-----|
| -----    |      |          |           |     |     |
| Y        | 1920 | .6791667 | .4669185  | 0   | 1   |
| O        | 1920 | .9369792 | .2430637  | 0   | 1   |
| F        | 1920 | .5       | .2889007  | 0   | 1   |
| R        | 1920 | .4998697 | .288976   | 0   | 1   |
| B        | 1920 | .4888119 | .2945185  | 0   | 1   |
| -----    |      |          |           |     |     |
| D        | 1920 | .7057292 | .455833   | 0   | 1   |
| W        | 1920 | .4444123 | .3197211  | 0   | 1   |

# Coincidence Matrix

|   | Y     | O     | F     | R     | B     | D     | W     |
|---|-------|-------|-------|-------|-------|-------|-------|
| Y | 1.000 |       |       |       |       |       |       |
| O | 0.933 | 1.000 |       |       |       |       |       |
| F | 0.792 | 0.939 | 1.000 |       |       |       |       |
| R | 0.750 | 0.944 | 0.723 | 1.000 |       |       |       |
| B | 0.761 | 0.936 | 0.828 | 0.652 | 1.000 |       |       |
| D | 0.658 | 0.937 | 0.683 | 0.674 | 0.673 | 1.000 |       |
| W | 0.675 | 0.935 | 0.568 | 0.671 | 0.544 | 0.781 | 1.000 |

# Sufficiency and Necessity Matrix

|   | Y     | O     | F     | R     | B     | D     | W     |
|---|-------|-------|-------|-------|-------|-------|-------|
| Y | 1.000 | 0.933 | 0.583 | 0.552 | 0.548 | 0.658 | 0.442 |
| O | 0.676 | 1.000 | 0.501 | 0.504 | 0.488 | 0.705 | 0.443 |
| F | 0.792 | 0.939 | 1.000 | 0.722 | 0.810 | 0.683 | 0.505 |
| R | 0.750 | 0.944 | 0.723 | 1.000 | 0.638 | 0.674 | 0.596 |
| B | 0.761 | 0.936 | 0.828 | 0.652 | 1.000 | 0.673 | 0.495 |
| D | 0.633 | 0.937 | 0.484 | 0.478 | 0.466 | 1.000 | 0.492 |
| W | 0.675 | 0.935 | 0.568 | 0.671 | 0.544 | 0.781 | 1.000 |

# Y-CONSISTENCY vs N-CONSISTENCY

| Set    | YCons | NCons | F      | P     | NumBestFit |
|--------|-------|-------|--------|-------|------------|
| ofrbdw | 0.735 | 0.265 | 6.09   | 0.014 | 1          |
| ofrBdw | 0.836 | 0.164 | 21.02  | 0.000 | 1          |
| ofrBdw | 0.811 | 0.189 | 11.56  | 0.001 | 3          |
| ofrBDw | 0.676 | 0.324 | 7.41   | 0.007 | 3          |
| ofrBDw | 0.678 | 0.322 | 7.65   | 0.006 | 2          |
| ofRbdw | 0.862 | 0.138 | 20.18  | 0.000 | 2          |
| ofRbdw | 0.887 | 0.113 | 48.38  | 0.000 | 1          |
| ofRBDw | 0.675 | 0.325 | 6.53   | 0.011 | 12         |
| ofRBDw | 0.944 | 0.056 | 271.17 | 0.000 | 1          |
| ofRBDw | 0.927 | 0.073 | 140.52 | 0.000 | 1          |
| ofRBDw | 0.674 | 0.326 | 6.85   | 0.009 | 1          |
| ofRBDw | 0.692 | 0.308 | 8.81   | 0.003 | 1          |
| ofRbdw | 0.843 | 0.157 | 22.65  | 0.000 | 1          |
| ofRbdw | 0.865 | 0.135 | 29.04  | 0.000 | 0          |
| ofRbdw | 0.714 | 0.286 | 13.07  | 0.000 | 1          |
| ofRbdw | 0.711 | 0.289 | 11.32  | 0.001 | 0          |
| ofRbdw | 0.881 | 0.119 | 33.88  | 0.000 | 8          |
| ofRbdw | 0.913 | 0.087 | 72.50  | 0.000 | 2          |
| ofRBDw | 0.818 | 0.182 | 44.59  | 0.000 | 12         |
| ofRBDw | 0.805 | 0.195 | 40.38  | 0.000 | 5          |
| ofRbdw | 0.930 | 0.070 | 141.28 | 0.000 | 0          |
| ofRbdw | 0.894 | 0.106 | 53.81  | 0.000 | 0          |
| ofRbdw | 0.680 | 0.320 | 7.84   | 0.005 | 1          |
| ofRbdw | 0.713 | 0.287 | 12.05  | 0.001 | 2          |
| ofRBDw | 0.967 | 0.033 | 727.15 | 0.000 | 10         |
| ofRBDw | 0.939 | 0.061 | 193.52 | 0.000 | 2          |
| ofRBDw | 0.753 | 0.247 | 17.90  | 0.000 | 10         |
| ofRBDw | 0.752 | 0.248 | 18.84  | 0.000 | 2          |
| ofRbdw | 0.664 | 0.336 | 34.37  | 0.000 | 47         |
| ofRbdw | 0.737 | 0.263 | 71.23  | 0.000 | 26         |
| ofRbdw | 0.745 | 0.255 | 94.05  | 0.000 | 29         |
| ofRbdw | 0.773 | 0.227 | 99.72  | 0.000 | 19         |
| ofrBDw | 0.560 | 0.440 | 10.31  | 0.001 | 48         |
| ofrBDw | 0.589 | 0.411 | 22.37  | 0.000 | 32         |
| ofRbdw | 0.802 | 0.198 | 192.75 | 0.000 | 39         |
| ofRbdw | 0.816 | 0.184 | 191.37 | 0.000 | 20         |
| ofRbdw | 0.603 | 0.397 | 32.08  | 0.000 | 47         |
| ofRBDw | 0.638 | 0.362 | 54.71  | 0.000 | 224        |
| ofRbdw | 0.845 | 0.155 | 374.12 | 0.000 | 7          |
| ofRbdw | 0.849 | 0.151 | 281.63 | 0.000 | 20         |
| ofRBDw | 0.646 | 0.354 | 68.87  | 0.000 | 18         |
| ofRBDw | 0.676 | 0.324 | 99.61  | 0.000 | 13         |
| OfRbdw | 0.793 | 0.207 | 178.70 | 0.000 | 11         |
| OfRbdw | 0.796 | 0.204 | 144.09 | 0.000 | 2          |
| OfRbdw | 0.637 | 0.363 | 61.94  | 0.000 | 19         |
| OfRbdw | 0.648 | 0.352 | 70.11  | 0.000 | 24         |
| OfRbdw | 0.844 | 0.156 | 323.70 | 0.000 | 59         |
| OfRbdw | 0.858 | 0.142 | 345.58 | 0.000 | 24         |
| OfRBDw | 0.729 | 0.271 | 205.55 | 0.000 | 194        |
| OfRBDw | 0.714 | 0.286 | 170.77 | 0.000 | 47         |
| OfRbdw | 0.842 | 0.158 | 357.20 | 0.000 | 28         |
| OfRbdw | 0.835 | 0.165 | 257.36 | 0.000 | 6          |
| OfRbdw | 0.663 | 0.337 | 98.26  | 0.000 | 31         |
| OfRbdw | 0.683 | 0.317 | 119.39 | 0.000 | 64         |
| OfRBDw | 0.879 | 0.121 | 577.13 | 0.000 | 154        |
| OfRBDw | 0.880 | 0.120 | 484.43 | 0.000 | 39         |
| OfRBDw | 0.737 | 0.263 | 233.26 | 0.000 | 159        |
| OfRBDw | 0.725 | 0.275 | 200.50 | 0.000 | 43         |

| Y-Consistency vs. Set Value |          |           |       |       |            |
|-----------------------------|----------|-----------|-------|-------|------------|
| Set                         | YConsist | Set Value | F     | P     | NumBestFit |
| oFRBdw                      | 0.944    | 0.800     | 28.55 | 0.000 | 1          |
| oFRBdw                      | 0.927    | 0.800     | 12.39 | 0.000 | 1          |
| oFRBdw                      | 0.913    | 0.800     | 5.46  | 0.020 | 2          |
| oFRbdw                      | 0.930    | 0.800     | 12.94 | 0.000 | 0          |
| oFRBdw                      | 0.967    | 0.800     | 92.73 | 0.000 | 10         |
| oFRBdw                      | 0.939    | 0.800     | 19.47 | 0.000 | 2          |
| oFRBdw                      | 0.845    | 0.800     | 6.48  | 0.011 | 7          |
| oFRBdw                      | 0.849    | 0.800     | 5.58  | 0.018 | 20         |
| oFRBdw                      | 0.844    | 0.800     | 5.32  | 0.021 | 59         |
| OFrBdw                      | 0.858    | 0.800     | 9.09  | 0.003 | 24         |
| OFrbdw                      | 0.842    | 0.800     | 5.42  | 0.020 | 28         |
| OFRBdw                      | 0.879    | 0.800     | 25.23 | 0.000 | 154        |
| OFRBdw                      | 0.880    | 0.800     | 21.28 | 0.000 | 39         |

Common Sets

oFRBdw oFRBdw oFRBdw oFRbdw oFRBdw oFRBdw OFRBdw OFRBdw OFrBdw OFrBdw OFRbdw OFRBdw OFRBdw

./../ common reduce../

| Y-CONSISTENCY vs N-CONSISTENCY |       |       |        |       |            |
|--------------------------------|-------|-------|--------|-------|------------|
| Set                            | YCons | NCons | F      | P     | NumBestFit |
| ofrbdw                         | 0.735 | 0.265 | 6.09   | 0.014 | 1          |
| oFRBdw                         | 0.836 | 0.164 | 21.02  | 0.000 | 1          |
| oFRBdw                         | 0.811 | 0.189 | 11.56  | 0.001 | 3          |
| oFRBDw                         | 0.676 | 0.324 | 7.41   | 0.007 | 3          |
| oFRBDW                         | 0.678 | 0.322 | 7.65   | 0.006 | 2          |
| oFRbdw                         | 0.862 | 0.138 | 20.18  | 0.000 | 2          |
| oFRbdw                         | 0.887 | 0.113 | 48.38  | 0.000 | 1          |
| oFRBDW                         | 0.675 | 0.325 | 6.53   | 0.011 | 12         |
| oFRBdw                         | 0.944 | 0.056 | 271.17 | 0.000 | 1          |
| oFRBdw                         | 0.927 | 0.073 | 140.52 | 0.000 | 1          |
| oFRBDW                         | 0.674 | 0.326 | 6.85   | 0.009 | 1          |
| oFRBDW                         | 0.692 | 0.308 | 8.81   | 0.003 | 1          |
| oFRbdw                         | 0.843 | 0.157 | 22.65  | 0.000 | 1          |
| oFRbdw                         | 0.865 | 0.135 | 29.04  | 0.000 | 0          |
| oFRbdw                         | 0.714 | 0.286 | 13.07  | 0.000 | 1          |
| oFRbdW                         | 0.711 | 0.289 | 11.32  | 0.001 | 0          |
| oFRBdw                         | 0.881 | 0.119 | 33.88  | 0.000 | 8          |
| oFRBdw                         | 0.913 | 0.087 | 72.50  | 0.000 | 2          |
| oFRBDw                         | 0.818 | 0.182 | 44.59  | 0.000 | 12         |
| oFRBDW                         | 0.805 | 0.195 | 40.38  | 0.000 | 5          |
| oFRbdw                         | 0.930 | 0.070 | 141.28 | 0.000 | 0          |
| oFRbdw                         | 0.894 | 0.106 | 53.81  | 0.000 | 0          |
| oFRBDw                         | 0.680 | 0.320 | 7.84   | 0.005 | 1          |
| oFRbdw                         | 0.713 | 0.287 | 12.05  | 0.001 | 2          |
| oFRBDw                         | 0.967 | 0.033 | 727.15 | 0.000 | 10         |
| oFRBDw                         | 0.939 | 0.061 | 193.52 | 0.000 | 2          |
| oFRBDW                         | 0.753 | 0.247 | 17.90  | 0.000 | 10         |
| oFRBDW                         | 0.752 | 0.248 | 18.84  | 0.000 | 2          |
| OFrbdw                         | 0.664 | 0.336 | 34.37  | 0.000 | 47         |
| OFrbdw                         | 0.737 | 0.263 | 71.23  | 0.000 | 26         |
| OFrBdw                         | 0.745 | 0.255 | 94.05  | 0.000 | 29         |
| OFrBdw                         | 0.773 | 0.227 | 99.72  | 0.000 | 19         |
| OFrBDw                         | 0.560 | 0.440 | 10.31  | 0.001 | 48         |
| OFrBDW                         | 0.589 | 0.411 | 22.37  | 0.000 | 32         |
| OFRbdw                         | 0.802 | 0.198 | 192.75 | 0.000 | 39         |
| OFRbdw                         | 0.816 | 0.184 | 191.37 | 0.000 | 20         |
| OFRbdw                         | 0.603 | 0.397 | 32.08  | 0.000 | 47         |
| OFRBDw                         | 0.638 | 0.362 | 54.71  | 0.000 | 224        |
| OFRBDw                         | 0.845 | 0.155 | 374.12 | 0.000 | 7          |
| OFRBDw                         | 0.849 | 0.151 | 281.63 | 0.000 | 20         |
| OFRBDW                         | 0.646 | 0.354 | 68.87  | 0.000 | 18         |
| OFRBDW                         | 0.676 | 0.324 | 99.61  | 0.000 | 13         |
| OFrbdw                         | 0.793 | 0.207 | 178.70 | 0.000 | 11         |
| OFrbdw                         | 0.796 | 0.204 | 144.09 | 0.000 | 2          |
| OFrbdw                         | 0.637 | 0.363 | 61.94  | 0.000 | 19         |
| OFrbdW                         | 0.648 | 0.352 | 70.11  | 0.000 | 24         |
| OFrBdw                         | 0.844 | 0.156 | 323.70 | 0.000 | 59         |
| OFrBdw                         | 0.858 | 0.142 | 345.58 | 0.000 | 24         |
| OFrBDW                         | 0.729 | 0.271 | 205.55 | 0.000 | 194        |
| OFrBDW                         | 0.714 | 0.286 | 170.77 | 0.000 | 47         |
| OFRbdw                         | 0.842 | 0.158 | 357.20 | 0.000 | 28         |
| OFRbdw                         | 0.835 | 0.165 | 257.36 | 0.000 | 6          |
| OFRbdW                         | 0.663 | 0.337 | 98.26  | 0.000 | 31         |
| OFRbdW                         | 0.683 | 0.317 | 119.39 | 0.000 | 64         |
| OFRBDw                         | 0.879 | 0.121 | 577.13 | 0.000 | 154        |
| OFRBDw                         | 0.880 | 0.120 | 484.43 | 0.000 | 39         |
| OFRBDW                         | 0.737 | 0.263 | 233.26 | 0.000 | 159        |
| OFRBDW                         | 0.725 | 0.275 | 200.50 | 0.000 | 43         |

| Y-Consistency vs. Set Value |          |           |       |       |            |
|-----------------------------|----------|-----------|-------|-------|------------|
| Set                         | YConsist | Set value | F     | P     | NumBestFit |
| oFRBdw                      | 0.944    | 0.800     | 28.55 | 0.000 | 1          |

|        |       |       |       |       |     |
|--------|-------|-------|-------|-------|-----|
| oFRBdw | 0.927 | 0.800 | 12.39 | 0.000 | 1   |
| oFRBdw | 0.913 | 0.800 | 5.46  | 0.020 | 2   |
| oFRBdw | 0.930 | 0.800 | 12.94 | 0.000 | 0   |
| oFRBdw | 0.967 | 0.800 | 92.73 | 0.000 | 10  |
| oFRBdw | 0.939 | 0.800 | 19.47 | 0.000 | 2   |
| oFRBdw | 0.845 | 0.800 | 6.48  | 0.011 | 7   |
| oFRBdw | 0.849 | 0.800 | 5.58  | 0.018 | 20  |
| oFRBdw | 0.844 | 0.800 | 5.32  | 0.021 | 59  |
| oFRBdw | 0.858 | 0.800 | 9.09  | 0.003 | 24  |
| oFRBdw | 0.842 | 0.800 | 5.42  | 0.020 | 28  |
| oFRBdw | 0.879 | 0.800 | 25.23 | 0.000 | 154 |
| oFRBdw | 0.880 | 0.800 | 21.28 | 0.000 | 39  |

Common Sets

oFRBdw oFRBdw oFRBdw oFRBdw oFRBdw oFRBdw oFRBdw oFRBdw oFRBdw oFRBdw oFRBdw oFRBdw oFRBdw

13 Solutions Entered as True

Minimum Configuration Reduction Set

FBdw FRdw OFBd RBd

Final Reduction Set

Coverage

| Set     | Raw Coverage | Unique Coverage | Solution Consistency |
|---------|--------------|-----------------|----------------------|
| F*B*d*w | 0.075        | 0.001           | 0.884                |
| F*R*d*w | 0.144        | 0.015           | 0.873                |
| O*B*d   | 0.159        | 0.023           | 0.876                |
| R*B*d   | 0.152        | 0.013           | 0.884                |

Total Coverage = 0.196


Solution Consistency = 0.869

end of do-file

.

| Variable     | Obs   | Mean      | Std. Dev. | Min       | Max      |
|--------------|-------|-----------|-----------|-----------|----------|
| -----        |       |           |           |           |          |
| payoutdiv    | 1,908 | 27.56386  | 26.01073  | 0         | 100      |
| oveconfide~y | 1,920 | .9369792  | .2430637  | 0         | 1        |
| act_dir      | 1,800 | 15.41512  | 22.60711  | 0         | 84.45    |
| bloc3        | 1,800 | 69.41539  | 28.72645  | 3.9       | 100      |
| act_ins      | 1,800 | 21.44877  | 25.36016  | 0         | 96.79    |
| -----        |       |           |           |           |          |
| ind_ca       | 1,800 | .3423382  | .238485   | 0         | .9411765 |
| t_ca         | 1,800 | 9.046667  | 4.300037  | 3         | 23       |
| pdt1         | 1,920 | .1548039  | 2.331984  | -15.78722 | 17.365   |
| netmargin    | 1,920 | -.3111578 | 7.17567   | -294.806  | .682     |
| fcfcashflo~a | 1,920 | 11.85082  | 228.8314  | -9.555555 | 7217.748 |
| -----        |       |           |           |           |          |
| taille       | 1,920 | 20.34712  | 2.774517  | 5.542789  | 26.08    |

////////////////////////////////////

 (R)  
 Statistics/Data Analysis 13.0  
 MP - Parallel Edition  
 Copyright 1985-2013 StataCorp LP  
 StataCorp  
 4905 Lakeway Drive  
 College Station, Texas 77845 USA  
 800-STATA-PC http://www.stata.com  
 979-696-4600 stata@stata.com  
 979-696-4601 (fax)

3-user 8-core Stata network perpetual license:

Serial number: 501306208483

Licensed to: IDRE-UCLA

IDRE-UCLA

Notes:

1. (/v# option or -set maxvar-) 5000 maximum variables

. doedit D:\canay2011\canay.do

. do "D:\canay2011\canay.do"

. set more off

. use D:\canay2011\bd.dta

. tsset entreprise anne  
     panel variable: entreprise (strongly balanced)  
     time variable: anne, 2000 to 2015  
     delta: 1 unit

. local qs "0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9"

\*\*\*\*\*  
 . \*\*\* Canay's (2011) Fixed-Effect Quantile Panel Data Approach \*\*\*  
 \*\*\*\*\*  
 . // Step 1

. xtreg payoutdiv act\_dir cashflow mtb taille netmargin pdt1 oveconfidencedummy, fe

|                                   |                    |   |      |
|-----------------------------------|--------------------|---|------|
| Fixed-effects (within) regression | Number of obs      | = | 1838 |
| Group variable: entreprise        | Number of groups   | = | 119  |
| R-sq: within = 0.0403             | Obs per group: min | = | 12   |
| between = 0.1707                  | avg                | = | 15.4 |
| overall = 0.1006                  | max                | = | 16   |

|               |           |   |        |
|---------------|-----------|---|--------|
| corr(u_i, Xb) | F(7,1712) | = | 10.28  |
|               | Prob > F  | = | 0.0000 |

|  | payoutdiv          | Coef.     | Std. Err.                         | t     | P> t  | [95% Conf. Interval] |
|--|--------------------|-----------|-----------------------------------|-------|-------|----------------------|
|  | act_dir            | .1946684  | .058435                           | 3.33  | 0.001 | .0800569 .3092799    |
|  | cashflow           | 2.33e-09  | 4.41e-10                          | 5.28  | 0.000 | 1.46e-09 3.19e-09    |
|  | mtb                | .0748419  | .0514479                          | 1.45  | 0.146 | -.0260654 .1757492   |
|  | taille             | 3.738366  | .7437018                          | 5.03  | 0.000 | 2.279706 5.197026    |
|  | netmargin          | -.0628451 | .0634403                          | -0.99 | 0.322 | -.1872739 .0615836   |
|  | pdt1               | -.1151927 | .2144096                          | -0.54 | 0.591 | -.5357251 .3053396   |
|  | oveconfidencedummy | .534761   | 1.767662                          | 0.30  | 0.762 | -2.932245 4.001767   |
|  | _cons              | -53.34932 | 15.42298                          | -3.46 | 0.001 | -83.5992 -23.09944   |
|  | sigma_u            | 17.465916 |                                   |       |       |                      |
|  | sigma_e            | 18.368941 |                                   |       |       |                      |
|  | rho                | .47481634 | (fraction of variance due to u_i) |       |       |                      |

F test that all u\_i=0: F(118, 1712) = 13.04 Prob > F = 0.0000

. predict res, u  
 (82 missing values generated)

. gen payoutdiv1 = payoutdiv - res  
 (82 missing values generated)

. // Step 2  
 . local replace replace

. \*forvalues tau = 0.05(0.05)0.95 {  
 . foreach tau in `qs' {

```

2. bootstrap, reps(100):qreg payoutdiv1 act_dir cashflow mtb taille netmargin pdt1
 oveconfidencedummy, quantile(`tau')
3. outreg2 using "canay", excel dec(4) ctitle(`tau') `replace'
4. local replace append
5. }
(running qreg on estimation sample)

```

Bootstrap replications (100)

```

-----+----- 1 -----+----- 2 -----+----- 3 -----+----- 4 -----+----- 5
.....
.....
.....

```

50  
100

.1 Quantile regression

Raw sum of deviations 12727.2 (about 7.1066628)  
Min sum of deviations 10873.36

Number of obs = 1838

Pseudo R2 = 0.1457

| payoutdiv1         | Observed<br>Coef. | Bootstrap<br>Std. Err. | z      | P> z  | Normal-based<br>[95% Conf. Interval] |           |
|--------------------|-------------------|------------------------|--------|-------|--------------------------------------|-----------|
| act_dir            | .109349           | .0337197               | 3.24   | 0.001 | .0432595                             | .1754385  |
| cashflow           | 2.14e-09          | 4.39e-10               | 4.87   | 0.000 | 1.28e-09                             | 3.00e-09  |
| mtb                | .1256842          | .0547594               | 2.30   | 0.022 | .0183578                             | .2330107  |
| taille             | 2.866083          | .2387417               | 12.00  | 0.000 | 2.398158                             | 3.334008  |
| netmargin          | -.0698652         | .2408693               | -0.29  | 0.772 | -.5419603                            | .4022299  |
| pdt1               | -.8753947         | .2306039               | -3.80  | 0.000 | -1.32737                             | -.4234194 |
| oveconfidencedummy | 4.677076          | 3.814727               | 1.23   | 0.220 | -2.799652                            | 12.1538   |
| _cons              | -56.81342         | 5.09978                | -11.14 | 0.000 | -66.8088                             | -46.81804 |

canay.xml

dir : seeout

(running qreg on estimation sample)

Bootstrap replications (100)

```

-----+----- 1 -----+----- 2 -----+----- 3 -----+----- 4 -----+----- 5
.....
.....
.....

```

50  
100

.2 Quantile regression

Raw sum of deviations 19157.81 (about 13.076874)  
Min sum of deviations 16298.12

Number of obs = 1838

Pseudo R2 = 0.1493

| payoutdiv1         | Observed<br>Coef. | Bootstrap<br>Std. Err. | z     | P> z  | Normal-based<br>[95% Conf. Interval] |           |
|--------------------|-------------------|------------------------|-------|-------|--------------------------------------|-----------|
| act_dir            | .116257           | .0217337               | 5.35  | 0.000 | .0736598                             | .1588543  |
| cashflow           | 2.35e-09          | 4.03e-10               | 5.83  | 0.000 | 1.56e-09                             | 3.14e-09  |
| mtb                | .096819           | .0661771               | 1.46  | 0.143 | -.0328858                            | .2265238  |
| taille             | 2.932669          | .1384157               | 21.19 | 0.000 | 2.661379                             | 3.203959  |
| netmargin          | -.0443001         | .2028094               | -0.22 | 0.827 | -.4417992                            | .3531991  |
| pdt1               | -.4506806         | .1868542               | -2.41 | 0.016 | -.816908                             | -.0844532 |
| oveconfidencedummy | 2.138907          | 3.604777               | 0.59  | 0.553 | -4.926327                            | 9.20414   |
| _cons              | -48.75922         | 4.929062               | -9.89 | 0.000 | -58.42001                            | -39.09844 |

canay.xml

dir : seeout

(running qreg on estimation sample)

Bootstrap replications (100)

```

-----+----- 1 -----+----- 2 -----+----- 3 -----+----- 4 -----+----- 5
.....
.....
.....

```

50  
100

.3 Quantile regression

Raw sum of deviations 23900.21 (about 16.336664)  
Min sum of deviations 19632.63

Number of obs = 1838

Pseudo R2 = 0.1786

| payoutdiv1         | Observed<br>Coef. | Bootstrap<br>Std. Err. | z     | P> z  | Normal-based<br>[95% Conf. Interval] |           |
|--------------------|-------------------|------------------------|-------|-------|--------------------------------------|-----------|
| act_dir            | .1183317          | .0205084               | 5.77  | 0.000 | .0781359                             | .1585274  |
| cashflow           | 2.46e-09          | 2.65e-10               | 9.30  | 0.000 | 1.94e-09                             | 2.98e-09  |
| mtb                | .0815995          | .0671366               | 1.22  | 0.224 | -.0499858                            | .2131847  |
| taille             | 2.957584          | .1799214               | 16.44 | 0.000 | 2.604944                             | 3.310223  |
| netmargin          | -.0288181         | .198988                | -0.14 | 0.885 | -.4188275                            | .3611913  |
| pdt1               | -.1992527         | .1946887               | -1.02 | 0.306 | -.5808356                            | .1823302  |
| oveconfidencedummy | -1.543922         | 1.817312               | -0.85 | 0.396 | -5.105788                            | 2.017943  |
| _cons              | -41.48108         | 4.353066               | -9.53 | 0.000 | -50.01293                            | -32.94922 |

canay.xml

dir : seeout

(running qreg on estimation sample)



Bootstrap replications (100)

```

-----+----- 1 -----+----- 2 -----+----- 3 -----+----- 4 -----+----- 5
.....
.....
.....
50
100

```

.4 Quantile regression

Raw sum of deviations 27385.91 (about 20.470978)  
Min sum of deviations 21533.25

Number of obs = 1838

Pseudo R2 = 0.2137

| payoutdiv1         | Observed<br>Coef. | Bootstrap<br>Std. Err. | z      | P> z  | Normal-based<br>[95% Conf. Interval] |           |
|--------------------|-------------------|------------------------|--------|-------|--------------------------------------|-----------|
| act_dir            | .1389281          | .0200583               | 6.93   | 0.000 | .0996146                             | .1782415  |
| cashflow           | 2.38e-09          | 2.51e-10               | 9.49   | 0.000 | 1.89e-09                             | 2.87e-09  |
| mtb                | .066161           | .047262                | 1.40   | 0.162 | -.0264708                            | .1587928  |
| taille             | 3.157072          | .1612374               | 19.58  | 0.000 | 2.841052                             | 3.473092  |
| netmargin          | -.018794          | .1589736               | -0.12  | 0.906 | -.3303766                            | .2927886  |
| pdt1               | -.0268931         | .1611892               | -0.17  | 0.867 | -.3428182                            | .289032   |
| oveconfidencedummy | -.4968836         | 1.102957               | -0.45  | 0.652 | -2.658639                            | 1.664872  |
| _cons              | -43.38583         | 3.337112               | -13.00 | 0.000 | -49.92645                            | -36.84521 |

canay.xml

dir : seeout

(running qreg on estimation sample)

Bootstrap replications (100)

```

-----+----- 1 -----+----- 2 -----+----- 3 -----+----- 4 -----+----- 5
.....
.....
.....
50
100

```

Median regression

Raw sum of deviations 29374.03 (about 24.611708)  
Min sum of deviations 22407.71

Number of obs = 1838

Pseudo R2 = 0.2372

| payoutdiv1         | Observed<br>Coef. | Bootstrap<br>Std. Err. | z      | P> z  | Normal-based<br>[95% Conf. Interval] |           |
|--------------------|-------------------|------------------------|--------|-------|--------------------------------------|-----------|
| act_dir            | .1592201          | .0154974               | 10.27  | 0.000 | .1288457                             | .1895944  |
| cashflow           | 2.56e-09          | 3.53e-10               | 7.26   | 0.000 | 1.87e-09                             | 3.25e-09  |
| mtb                | .0598089          | .0352108               | 1.70   | 0.089 | -.0092031                            | .1288208  |
| taille             | 3.61383           | .1167347               | 30.96  | 0.000 | 3.385034                             | 3.842626  |
| netmargin          | -.0152572         | .1728793               | -0.09  | 0.930 | -.3540943                            | .32358    |
| pdt1               | .048173           | .1050609               | 0.46   | 0.647 | -.1577426                            | .2540886  |
| oveconfidencedummy | -.0639256         | .9911648               | -0.06  | 0.949 | -2.006573                            | 1.878722  |
| _cons              | -50.8878          | 2.501343               | -20.34 | 0.000 | -55.79034                            | -45.98526 |

canay.xml

dir : seeout

(running qreg on estimation sample)

Bootstrap replications (100)

```

-----+----- 1 -----+----- 2 -----+----- 3 -----+----- 4 -----+----- 5
.....
.....
.....
50
100

```

.6 Quantile regression

Raw sum of deviations 29834.83 (about 29.128721)  
Min sum of deviations 22345.17

Number of obs = 1838

Pseudo R2 = 0.2510

| payoutdiv1         | Observed<br>Coef. | Bootstrap<br>Std. Err. | z      | P> z  | Normal-based<br>[95% Conf. Interval] |           |
|--------------------|-------------------|------------------------|--------|-------|--------------------------------------|-----------|
| act_dir            | .1888498          | .0133572               | 14.14  | 0.000 | .1626701                             | .2150294  |
| cashflow           | 2.88e-09          | 2.74e-10               | 10.53  | 0.000 | 2.35e-09                             | 3.42e-09  |
| mtb                | .051432           | .0359038               | 1.43   | 0.152 | -.0189382                            | .1218022  |
| taille             | 3.794952          | .0659406               | 57.55  | 0.000 | 3.66571                              | 3.924193  |
| netmargin          | -.0103044         | .2194583               | -0.05  | 0.963 | -.4404348                            | .419826   |
| pdt1               | .1597149          | .1024652               | 1.56   | 0.119 | -.0411132                            | .360543   |
| oveconfidencedummy | -.3434732         | 1.225212               | -0.28  | 0.779 | -2.744844                            | 2.057897  |
| _cons              | -52.60689         | 1.844359               | -28.52 | 0.000 | -56.22176                            | -48.99201 |

canay.xml

dir : seeout

(running qreg on estimation sample)

Bootstrap replications (100)

```

-----+----- 1 -----+----- 2 -----+----- 3 -----+----- 4 -----+----- 5
.....
.....
.....
50
100

```

.7 Quantile regression

Raw sum of deviations 28299.63 (about 35.223541)

Number of obs = 1838

Min sum of deviations 21340.67

Pseudo R2 = 0.2459

| payoutdiv1         | Observed<br>Coef. | Bootstrap<br>Std. Err. | z      | P> z  | Normal-based<br>[95% Conf. Interval] |           |
|--------------------|-------------------|------------------------|--------|-------|--------------------------------------|-----------|
| act_dir            | .2320223          | .0252552               | 9.19   | 0.000 | .1825231                             | .2815215  |
| cashflow           | 2.68e-09          | 2.01e-10               | 13.29  | 0.000 | 2.28e-09                             | 3.07e-09  |
| mtb                | .0439758          | .0397785               | 1.11   | 0.269 | -.0339887                            | .1219403  |
| taille             | 4.106302          | .1300721               | 31.57  | 0.000 | 3.851366                             | 4.361239  |
| netmargin          | -.0040657         | .2350139               | -0.02  | 0.986 | -.4646845                            | .4565531  |
| pdt1               | .1903691          | .1849362               | 1.03   | 0.303 | -.1720993                            | .5528375  |
| oveconfidencedummy | -.4908445         | 1.91141                | -0.26  | 0.797 | -4.237139                            | 3.25545   |
| _cons              | -56.15041         | 3.103358               | -18.09 | 0.000 | -62.23288                            | -50.06794 |

canay.xml

dir : seeout

(running qreg on estimation sample)

Bootstrap replications (100)

----- 1 ----- 2 ----- 3 ----- 4 ----- 5

..... 50  
..... 100

.8 Quantile regression

Raw sum of deviations 24181.06 (about 43.391342)

Min sum of deviations 18679.34

Number of obs = 1838

Pseudo R2 = 0.2275

| payoutdiv1         | Observed<br>Coef. | Bootstrap<br>Std. Err. | z      | P> z  | Normal-based<br>[95% Conf. Interval] |           |
|--------------------|-------------------|------------------------|--------|-------|--------------------------------------|-----------|
| act_dir            | .2806793          | .0366624               | 7.66   | 0.000 | .2088223                             | .3525363  |
| cashflow           | 2.43e-09          | 3.18e-10               | 7.63   | 0.000 | 1.80e-09                             | 3.05e-09  |
| mtb                | .0197873          | .0846169               | 0.23   | 0.815 | -.1460588                            | .1856335  |
| taille             | 4.522764          | .1877877               | 24.08  | 0.000 | 4.154707                             | 4.890821  |
| netmargin          | .0121445          | .3273031               | 0.04   | 0.970 | -.6293578                            | .6536468  |
| pdt1               | .4410219          | .17759                 | 2.48   | 0.013 | .0929519                             | .7890919  |
| oveconfidencedummy | -.8720707         | 3.293507               | -0.26  | 0.791 | -7.327225                            | 5.583084  |
| _cons              | -58.76715         | 5.188994               | -11.33 | 0.000 | -68.9374                             | -48.59691 |

canay.xml

dir : seeout

(running qreg on estimation sample)

Bootstrap replications (100)

----- 1 ----- 2 ----- 3 ----- 4 ----- 5

..... 50  
..... 100

.9 Quantile regression

Raw sum of deviations 16311.94 (about 55.780979)

Min sum of deviations 12900.4

Number of obs = 1838

Pseudo R2 = 0.2091

| payoutdiv1         | Observed<br>Coef. | Bootstrap<br>Std. Err. | z      | P> z  | Normal-based<br>[95% Conf. Interval] |           |
|--------------------|-------------------|------------------------|--------|-------|--------------------------------------|-----------|
| act_dir            | .3748944          | .0539796               | 6.95   | 0.000 | .2690963                             | .4806925  |
| cashflow           | 2.27e-09          | 4.29e-10               | 5.28   | 0.000 | 1.42e-09                             | 3.11e-09  |
| mtb                | .0523518          | .1572731               | 0.33   | 0.739 | -.2558979                            | .3606014  |
| taille             | 5.164131          | .189251                | 27.29  | 0.000 | 4.793206                             | 5.535057  |
| netmargin          | -.3872999         | .3144308               | -1.23  | 0.218 | -1.003573                            | .2289731  |
| pdt1               | .728784           | .3294733               | 2.21   | 0.027 | .0830282                             | 1.37454   |
| oveconfidencedummy | .5075442          | 3.475741               | 0.15   | 0.884 | -6.304783                            | 7.319871  |
| _cons              | -63.04351         | 4.830539               | -13.05 | 0.000 | -72.51119                            | -53.57583 |

canay.xml

dir : seeout

. log close

no log file open

r(606);

end of do-file

r(606);

. do "C:\Users\sana\AppData\Local\Temp\STD05000000.tmp"

. swilk payoutdiv act\_dir cashflow mtb taille netmargin pdt1 oveconfidencedummy

shapiro-wilk w test for normal data

```
. sfrancia payoutdiv act_dir cashflow mtb taille netmargin pdt1 oveconfidencedummy
 Shapiro-Francia w' test for normal data
```

end of do-file

|                               |                    |   |      |
|-------------------------------|--------------------|---|------|
| Random-effects GLS regression | Number of obs      | = | 1908 |
| Group variable: entreprise    | Number of groups   | = | 120  |
| R-sq: within = 0.0060         | Obs per group: min | = | 13   |
| between = 0.1754              | avg                | = | 15.9 |
| overall = 0.0760              | max                | = | 16   |

(Std. Err. adjusted for 120 clusters in entreprise)

```
. xtreg payoutdiv act_dir taille mtb cashflow oveconfidencedummy pdt1 netmargin, fe
```

```
R-sq: within = 0.0403 Obs per group: min = 12
 between = 0.1707 avg = 15.4
 overall = 0.1006 max = 16
```

|                    | payoutdiv | Coef.     | Std. Err.                         | t     | P> t  | [95% Conf. Interval] |
|--------------------|-----------|-----------|-----------------------------------|-------|-------|----------------------|
| oveconfidencedummy | act_dir   | .1946684  | .058435                           | 3.33  | 0.001 | .0800569 .3092799    |
|                    | taille    | 3.738366  | .7437018                          | 5.03  | 0.000 | 2.279706 5.197026    |
|                    | mtb       | .0748419  | .0514479                          | 1.45  | 0.146 | -.0260654 .1757492   |
|                    | cashflow  | 2.33e-09  | 4.41e-10                          | 5.28  | 0.000 | 1.46e-09 3.19e-09    |
|                    | pdt1      | .534761   | 1.767662                          | 0.30  | 0.762 | -2.932245 4.001767   |
|                    | netmargin | -.1151927 | .2144096                          | -0.54 | 0.591 | -.5357251 .3053396   |
|                    | _cons     | -.0628451 | .0634403                          | -0.99 | 0.322 | -.1872739 .0615836   |
|                    |           | -53.34932 | 15.42298                          | -3.46 | 0.001 | -83.5992 -23.09944   |
|                    | sigma_u   | 17.465916 |                                   |       |       |                      |
|                    | sigma_e   | 18.368941 |                                   |       |       |                      |
|                    | rho       | .47481634 | (fraction of variance due to u_i) |       |       |                      |



```

oveconfidencedummy | .534761 1.767662 0.30 0.762 -2.932245 4.001767
pdt1 | -.1151927 .2144096 -0.54 0.591 -.5357251 .3053396
netmargin | -.0628451 .0634403 -0.99 0.322 -.1872739 .0615836
_cons | -53.34932 15.42298 -3.46 0.001 -83.5992 -23.09944

```

```

-----+-----
sigma_u | 17.465916
sigma_e | 18.368941
rho | .47481634 (fraction of variance due to u_i)
-----+-----

```

F test that all u\_i=0: F(118, 1712) = 13.04 Prob > F = 0.0000

. estimate store fe

```

. . hausman fe re
estimation result re not found
r(111);

```

```

////////////////////////////////////

```

```

Fixed-effects (within) regression Number of obs = 1838
Group variable: entreprise Number of groups = 119

R-sq: within = 0.0403 obs per group: min = 12
 between = 0.1707 avg = 15.4
 overall = 0.1006 max = 16

```

```

corr(u_i, Xb) = -0.2481 F(7,118) = 6.82
 Prob > F = 0.0000

```

(Std. Err. adjusted for 119 clusters in entreprise)

```

-----+-----
payoutdiv | Coef. Robust Std. Err. t P>|t| [95% Conf. Interval]
-----+-----
act_dir | .1946684 .0537919 3.62 0.000 .0881457 .3011911
taille | 3.738366 1.094495 3.42 0.001 1.570967 5.905765
mtb | .0748419 .0358315 2.09 0.039 .0038858 .145798
cashflow | 2.33e-09 4.76e-10 4.89 0.000 1.38e-09 3.27e-09
oveconfidencedummy | .534761 1.629391 0.33 0.743 -2.691876 3.761398
pdt1 | -.1151927 .2383599 -0.48 0.630 -.5872102 .3568247
netmargin | -.0628451 .0726437 -0.87 0.389 -.2066995 .0810093
_cons | -53.34932 22.77371 -2.34 0.021 -98.44746 -8.251182
-----+-----
sigma_u | 17.465916
sigma_e | 18.368941
rho | .47481634 (fraction of variance due to u_i)
-----+-----

```

```

. xtreg PAYDIV netmargin cashflow lev firmsize firmage act_dir cum_fon block3 act_ins ind_ca
t_ca INDEX_OVER

```

> C indexsent, fe

```

Fixed-effects (within) regression Number of obs = 1,920
Group variable: id Number of groups = 120

R-sq: within = 0.0535 obs per group: min = 16
 between = 0.1278 avg = 16.0
 overall = 0.0885 max = 16

```

```

corr(u_i, Xb) = -0.1369 F(13,1787) = 7.77
 Prob > F = 0.0000

```

```

-----+-----
PAYDIV | Coef. Std. Err. t P>|t| [95% Conf. Interval]
-----+-----
netmargin | -.0875473 .0562891 -1.56 0.120 -.1979467 .0228522
cashflow | .0812631 .0338329 2.40 0.016 .0149069 .1476194
lev | -.1461812 .0431341 -3.39 0.001 -.2307798 -.0615825
firmsize | .0187353 .0094872 1.97 0.048 .0001281 .0373425
firmage | .085012 .0307014 2.77 0.006 .0247975 .1452264
act_dir | .1840026 .0597741 3.08 0.002 .0667682 .3012371
cum_fon | -.0188066 .0191752 -0.98 0.327 -.0564147 .0188014
block3 | .0249233 .0348372 0.72 0.474 -.0434026 .0932492
act_ins | .0279258 .0381287 0.73 0.464 -.0468558 .1027073
ind_ca | .029121 .0380025 0.77 0.444 -.0454131 .1036551
t_ca | .0016643 .0029391 0.57 0.571 -.0041002 .0074288
INDEX_OVERC | .0415314 .0121719 3.41 0.001 .0176588 .065404
indexsent | -.0967753 .0557709 -1.74 0.083 -.2061584 .0126078
_cons | -.3366578 .1219359 -2.76 0.006 -.5758098 -.0975058
-----+-----
sigma_u | .17323335
sigma_e | .18587841

```

```

rho | .46483156 (fraction of variance due to u_i)

F test that all u_i=0: F(119, 1787) = 10.20 Prob > F = 0.0000

. outreg2 using data2, word replace ctitle (FE) label symbol(***, **, *) alpha(0.01, 0.05,
0.1) keep(PAYDI
> V netmargin cashflow lev firmsize firmage act_dir cum_fon block3 act_ins ind_ca t_ca
INDEX_OVERC indexsent
>)
data2.rtf
dir : seeout

. shellout using `data2.rtf`

.

. xtreg PAYDIV netmargin lev firmsize firmage act_dir cum_fon block3 act_ins ind_ca t_ca
INDEX_OVERC indexse
> nt, fe

```

```

Fixed-effects (within) regression Number of obs = 1,920
Group variable: id Number of groups = 120

R-sq: Obs per group:
 within = 0.0504 min = 16
 between = 0.0971 avg = 16.0
 overall = 0.0704 max = 16

corr(u_i, Xb) = -0.1852 F(12,1788) = 7.91
 Prob > F = 0.0000

```

| PAYDIV      | Coef.     | Std. Err. | t     | P> t  | [95% Conf. Interval] |           |
|-------------|-----------|-----------|-------|-------|----------------------|-----------|
| netmargin   | -.0730718 | .0560402  | -1.30 | 0.192 | -.1829829            | .0368393  |
| lev         | -.1580636 | .0429066  | -3.68 | 0.000 | -.242216             | -.0739112 |
| firmsize    | .0190759  | .0094988  | 2.01  | 0.045 | .000446              | .0377058  |
| firmage     | .0861677  | .0307386  | 2.80  | 0.005 | .0258804             | .146455   |
| act_dir     | .1761975  | .0597652  | 2.95  | 0.003 | .0589805             | .2934146  |
| cum_fon     | -.0177246 | .0191954  | -0.92 | 0.356 | -.0553724            | .0199232  |
| block3      | .0211353  | .0348479  | 0.61  | 0.544 | -.0472115            | .0894821  |
| act_ins     | .0306101  | .0381631  | 0.80  | 0.423 | -.0442389            | .1054592  |
| ind_ca      | .0245616  | .0380057  | 0.65  | 0.518 | -.0499787            | .0991018  |
| t_ca        | .0015356  | .0029426  | 0.52  | 0.602 | -.0042357            | .0073068  |
| INDEX_OVERC | .0430529  | .0121716  | 3.54  | 0.000 | .0191809             | .066925   |
| indexsent   | -.0940192 | .0558334  | -1.68 | 0.092 | -.2035249            | .0154864  |
| _cons       | -.3318    | .1220816  | -2.72 | 0.007 | -.5712376            | -.0923623 |
| sigma_u     | .1779323  |           |       |       |                      |           |
| sigma_e     | .18612614 |           |       |       |                      |           |
| rho         | .47750448 |           |       |       |                      |           |

```

F test that all u_i=0: F(119, 1788) = 10.55 Prob > F = 0.0000

```

```

. set seed 1001

```

```

. sqreg PAYDIV netmargin cashflow lev firmsize firmage act_dir cum_fon block3 act_ins ind_ca
t_ca INDEX_OVER
> C indexsent, q(.1 .2 .3 .4 .5 .6 .7 .8 .9) reps(100) nolog

```

```

Simultaneous quantile regression Number of obs = 1,920
bootstrap(100) SEs .10 Pseudo R2 = 0.0000
 .20 Pseudo R2 = 0.0646
 .30 Pseudo R2 = 0.1646
 .40 Pseudo R2 = 0.1871
 .50 Pseudo R2 = 0.1703
 .60 Pseudo R2 = 0.1535
 .70 Pseudo R2 = 0.1408
 .80 Pseudo R2 = 0.1228
 .90 Pseudo R2 = 0.1076

```

| PAYDIV        | Coef. | Bootstrap Std. Err. | t    | P> t  | [95% Conf. Interval] |          |
|---------------|-------|---------------------|------|-------|----------------------|----------|
| q10 netmargin | 0     | .0055928            | 0.00 | 1.000 | -.0109686            | .0109686 |
| cashflow      | 0     | .0156653            | 0.00 | 1.000 | -.030723             | .030723  |
| lev           | 0     | .0038632            | 0.00 | 1.000 | -.0075766            | .0075766 |
| firmsize      | 0     | .0019912            | 0.00 | 1.000 | -.0039052            | .0039052 |
| firmage       | 0     | .0056394            | 0.00 | 1.000 | -.0110601            | .0110601 |
| act_dir       | 0     | .0134699            | 0.00 | 1.000 | -.0264173            | .0264173 |
| cum_fon       | 0     | .0052836            | 0.00 | 1.000 | -.0103623            | .0103623 |
| block3        | 0     | .0078023            | 0.00 | 1.000 | -.015302             | .015302  |
| act_ins       | 0     | .0062446            | 0.00 | 1.000 | -.012247             | .012247  |
| ind_ca        | 0     | .0050886            | 0.00 | 1.000 | -.0099798            | .0099798 |

|             |           |          |       |       |           |           |
|-------------|-----------|----------|-------|-------|-----------|-----------|
| t_ca        | 0         | .0014901 | 0.00  | 1.000 | -.0029224 | .0029224  |
| INDEX_OVERC | 0         | .0058539 | 0.00  | 1.000 | -.0114808 | .0114808  |
| indexsent   | 0         | .0080085 | 0.00  | 1.000 | -.0157064 | .0157064  |
| _cons       | 0         | .0463859 | 0.00  | 1.000 | -.0909724 | .0909724  |
| -----       |           |          |       |       |           |           |
| q20         |           |          |       |       |           |           |
| netmargin   | .04805    | .022326  | 2.15  | 0.032 | .0042639  | .091836   |
| cashflow    | .0661005  | .0182133 | 3.63  | 0.000 | .0303804  | .1018206  |
| lev         | -.0258661 | .0220889 | -1.17 | 0.242 | -.0691871 | .0174549  |
| firmsize    | .0140501  | .0023889 | 5.88  | 0.000 | .0093649  | .0187353  |
| firmage     | .0378716  | .006159  | 6.15  | 0.000 | .0257925  | .0499506  |
| act_dir     | .0727182  | .0171364 | 4.24  | 0.000 | .0391101  | .1063264  |
| cum_fon     | -.0294236 | .0142475 | -2.07 | 0.039 | -.057366  | -.0014813 |
| block3      | -.0691319 | .0206996 | -3.34 | 0.001 | -.1097281 | -.0285357 |
| act_ins     | -.0427522 | .0193948 | -2.20 | 0.028 | -.0807894 | -.0047149 |
| ind_ca      | -.0121089 | .0157364 | -0.77 | 0.442 | -.0429714 | .0187535  |
| t_ca        | .00855    | .0016044 | 5.33  | 0.000 | .0054034  | .0116966  |
| INDEX_OVERC | .0172137  | .0106321 | 1.62  | 0.106 | -.0036381 | .0380654  |
| indexsent   | .0042812  | .0371778 | 0.12  | 0.908 | -.0686323 | .0771947  |
| _cons       | -.2611745 | .0417459 | -6.26 | 0.000 | -.343047  | -.179302  |
| -----       |           |          |       |       |           |           |
| q30         |           |          |       |       |           |           |
| netmargin   | .0841864  | .0288883 | 2.91  | 0.004 | .0275305  | .1408424  |
| cashflow    | .0750092  | .0218377 | 3.43  | 0.001 | .0321809  | .1178375  |
| lev         | -.009135  | .0261814 | -0.35 | 0.727 | -.0604823 | .0422123  |
| firmsize    | .0189491  | .0040048 | 4.73  | 0.000 | .0110949  | .0268033  |
| firmage     | .0371883  | .0087426 | 4.25  | 0.000 | .0200422  | .0543345  |
| act_dir     | .0964548  | .0249023 | 3.87  | 0.000 | .0476163  | .1452933  |
| cum_fon     | -.0537216 | .0152103 | -3.53 | 0.000 | -.0835521 | -.0238911 |
| block3      | -.0852375 | .0234829 | -3.63 | 0.000 | -.1312923 | -.0391826 |
| act_ins     | -.0336743 | .0276896 | -1.22 | 0.224 | -.0879794 | .0206309  |
| ind_ca      | -.0232821 | .01999   | -1.16 | 0.244 | -.0624867 | .0159224  |
| t_ca        | .0138672  | .0026215 | 5.29  | 0.000 | .0087258  | .0190086  |
| INDEX_OVERC | .0342752  | .0116708 | 2.94  | 0.003 | .0113863  | .0571641  |
| indexsent   | -.0563375 | .0501192 | -1.12 | 0.261 | -.1546317 | .0419566  |
| _cons       | -.315017  | .0472538 | -6.67 | 0.000 | -.4076916 | -.2223424 |
| -----       |           |          |       |       |           |           |
| q40         |           |          |       |       |           |           |
| netmargin   | .1114259  | .0329037 | 3.39  | 0.001 | .0468948  | .1759569  |
| cashflow    | .0905265  | .0239333 | 3.78  | 0.000 | .0435882  | .1374648  |
| lev         | -.021718  | .0289544 | -0.75 | 0.453 | -.0785036 | .0350677  |
| firmsize    | .0212142  | .0045576 | 4.65  | 0.000 | .0122758  | .0301526  |
| firmage     | .0449629  | .0084146 | 5.34  | 0.000 | .02846    | .0614657  |
| act_dir     | .1221263  | .027392  | 4.46  | 0.000 | .0684049  | .1758477  |
| cum_fon     | -.0569894 | .0127308 | -4.48 | 0.000 | -.0819571 | -.0320217 |
| block3      | -.0883217 | .0229844 | -3.84 | 0.000 | -.133399  | -.0432445 |
| act_ins     | -.0003204 | .0320171 | -0.01 | 0.992 | -.0631127 | .0624718  |
| ind_ca      | -.0266995 | .0224461 | -1.19 | 0.234 | -.070721  | .017322   |
| t_ca        | .0134607  | .0022908 | 5.88  | 0.000 | .008968   | .0179534  |
| INDEX_OVERC | .0196422  | .0146302 | 1.34  | 0.180 | -.0090507 | .0483351  |
| indexsent   | -.043495  | .0654752 | -0.66 | 0.507 | -.1719057 | .0849156  |
| _cons       | -.3094078 | .0571508 | -5.41 | 0.000 | -.4214925 | -.1973231 |
| -----       |           |          |       |       |           |           |
| q50         |           |          |       |       |           |           |
| netmargin   | .1258231  | .0436624 | 2.88  | 0.004 | .0401921  | .2114541  |
| cashflow    | .1013231  | .0258259 | 3.92  | 0.000 | .050673   | .1519732  |
| lev         | .0365427  | .0229331 | 1.59  | 0.111 | -.0084339 | .0815193  |
| firmsize    | .0295396  | .0039896 | 7.40  | 0.000 | .0217152  | .037364   |
| firmage     | .0479302  | .0097358 | 4.92  | 0.000 | .0288362  | .0670242  |
| act_dir     | .1400539  | .0355025 | 3.94  | 0.000 | .070426   | .2096818  |
| cum_fon     | -.0583645 | .011872  | -4.92 | 0.000 | -.081648  | -.0350809 |
| block3      | -.0826451 | .025103  | -3.29 | 0.001 | -.1318774 | -.0334129 |
| act_ins     | .0321921  | .0313343 | 1.03  | 0.304 | -.029261  | .0936452  |
| ind_ca      | -.0597603 | .0257586 | -2.32 | 0.020 | -.1102783 | -.0092423 |
| t_ca        | .0107496  | .0020378 | 5.28  | 0.000 | .0067531  | .0147461  |
| INDEX_OVERC | .0353932  | .0151545 | 2.34  | 0.020 | .0056721  | .0651144  |
| indexsent   | -.0555894 | .0650452 | -0.85 | 0.393 | -.1831568 | .0719779  |
| _cons       | -.3815844 | .0476165 | -8.01 | 0.000 | -.4749703 | -.2881985 |
| -----       |           |          |       |       |           |           |
| q60         |           |          |       |       |           |           |
| netmargin   | .1312693  | .0458854 | 2.86  | 0.004 | .0412784  | .2212603  |
| cashflow    | .1235627  | .02929   | 4.22  | 0.000 | .0661189  | .1810066  |
| lev         | .0318129  | .0267036 | 1.19  | 0.234 | -.0205585 | .0841844  |
| firmsize    | .0346553  | .0038319 | 9.04  | 0.000 | .02714    | .0421705  |
| firmage     | .05082    | .0095705 | 5.31  | 0.000 | .0320502  | .0695897  |
| act_dir     | .1953795  | .0468918 | 4.17  | 0.000 | .1034148  | .2873441  |
| cum_fon     | -.0397004 | .0145661 | -2.73 | 0.006 | -.0682676 | -.0111332 |
| block3      | -.0949014 | .0253878 | -3.74 | 0.000 | -.1446922 | -.0451106 |
| act_ins     | .067653   | .0342631 | 1.97  | 0.048 | .0004559  | .1348501  |
| ind_ca      | -.076496  | .0319412 | -2.39 | 0.017 | -.1391394 | -.0138526 |
| t_ca        | .0094207  | .0022039 | 4.27  | 0.000 | .0050983  | .0137431  |
| INDEX_OVERC | .0401141  | .0168104 | 2.39  | 0.017 | .0071454  | .0730827  |
| indexsent   | -.0711578 | .0766328 | -0.93 | 0.353 | -.2214508 | .0791352  |
| _cons       | -.4143667 | .0552004 | -7.51 | 0.000 | -.5226262 | -.3061072 |

|             |           |          |       |       |           |           |
|-------------|-----------|----------|-------|-------|-----------|-----------|
| q70         |           |          |       |       |           |           |
| netmargin   | .1796808  | .0469103 | 3.83  | 0.000 | .0876799  | .2716818  |
| cashflow    | .1717319  | .0296232 | 5.80  | 0.000 | .1136346  | .2298293  |
| lev         | .0268629  | .0371487 | 0.72  | 0.470 | -.0459935 | .0997194  |
| firmsize    | .0362205  | .0051335 | 7.06  | 0.000 | .0261527  | .0462883  |
| firmage     | .0474841  | .0138224 | 3.44  | 0.001 | .0203756  | .0745927  |
| act_dir     | .229644   | .0493051 | 4.66  | 0.000 | .1329463  | .3263416  |
| cum_fon     | -.0246297 | .0167188 | -1.47 | 0.141 | -.0574187 | .0081593  |
| block3      | -.085974  | .0265963 | -3.23 | 0.001 | -.1381348 | -.0338132 |
| act_ins     | .0909175  | .0319018 | 2.85  | 0.004 | .0283515  | .1534835  |
| ind_ca      | -.0627633 | .032354  | -1.94 | 0.053 | -.1262162 | .0006897  |
| t_ca        | .0068718  | .0029844 | 2.30  | 0.021 | .0010188  | .0127247  |
| INDEX_OVERC | .0322753  | .020675  | 1.56  | 0.119 | -.0082727 | .0728233  |
| indexsent   | -.1102918 | .0879178 | -1.25 | 0.210 | -.2827171 | .0621334  |
| _cons       | -.378304  | .0642035 | -5.89 | 0.000 | -.5042206 | -.2523875 |
| -----       |           |          |       |       |           |           |
| q80         |           |          |       |       |           |           |
| netmargin   | .214614   | .0636987 | 3.37  | 0.001 | .0896875  | .3395405  |
| cashflow    | .2069818  | .0426308 | 4.86  | 0.000 | .1233739  | .2905898  |
| lev         | .0853454  | .0430776 | 1.98  | 0.048 | .0008612  | .1698296  |
| firmsize    | .047134   | .0056829 | 8.29  | 0.000 | .0359887  | .0582794  |
| firmage     | .0507934  | .0167283 | 3.04  | 0.002 | .0179858  | .0836011  |
| act_dir     | .2872246  | .061157  | 4.70  | 0.000 | .1672829  | .4071663  |
| cum_fon     | .0020276  | .0216283 | 0.09  | 0.925 | -.04039   | .0444453  |
| block3      | -.0816591 | .0353192 | -2.31 | 0.021 | -.1509274 | -.0123908 |
| act_ins     | .0746532  | .0423606 | 1.76  | 0.078 | -.0084248 | .1577312  |
| ind_ca      | -.0479308 | .0405137 | -1.18 | 0.237 | -.1273866 | .0315251  |
| t_ca        | .0060138  | .0027574 | 2.18  | 0.029 | .0006061  | .0114216  |
| INDEX_OVERC | .0609343  | .0190685 | 3.20  | 0.001 | .023537   | .0983315  |
| indexsent   | -.1276825 | .0908276 | -1.41 | 0.160 | -.3058145 | .0504495  |
| _cons       | -.5112939 | .0712772 | -7.17 | 0.000 | -.6510835 | -.3715043 |
| -----       |           |          |       |       |           |           |
| q90         |           |          |       |       |           |           |
| netmargin   | .1915417  | .1333162 | 1.44  | 0.151 | -.0699192 | .4530026  |
| cashflow    | .3455988  | .0977554 | 3.54  | 0.000 | .1538799  | .5373176  |
| lev         | .0726264  | .0705861 | 1.03  | 0.304 | -.0658077 | .2110605  |
| firmsize    | .0686905  | .008628  | 7.96  | 0.000 | .0517691  | .0856118  |
| firmage     | .0049115  | .0253594 | 0.19  | 0.846 | -.0448236 | .0546466  |
| act_dir     | .469603   | .0968119 | 4.85  | 0.000 | .2797345  | .6594714  |
| cum_fon     | .0230367  | .0340882 | 0.68  | 0.499 | -.0438175 | .0898908  |
| block3      | -.1000428 | .044042  | -2.27 | 0.023 | -.1864183 | -.0136672 |
| act_ins     | -.0084426 | .0598055 | -0.14 | 0.888 | -.1257337 | .1088484  |
| ind_ca      | .0214065  | .071436  | 0.30  | 0.764 | -.1186944 | .1615075  |
| t_ca        | -.0004954 | .0042974 | -0.12 | 0.908 | -.0089235 | .0079326  |
| INDEX_OVERC | .0303635  | .0350952 | 0.87  | 0.387 | -.0384656 | .0991926  |
| indexsent   | -.176101  | .1813026 | -0.97 | 0.332 | -.5316733 | .1794713  |
| _cons       | -.4634322 | .1603949 | -2.89 | 0.004 | -.7780002 | -.1488642 |

```
. outreg2 using "canay", excel dec(4) ctitle('tau') `replace'
canay.xml
dir : seeout
```



## *TABLE OF CONTENTS*

|                                                                                                                  |    |
|------------------------------------------------------------------------------------------------------------------|----|
| <i>Introductory chapter: From the Traditional Paradigm to Irrational Approaches and Payout Controversy</i> ..... | 6  |
| <i>Chapter I: Dividend Policy, Dividend Catering Cross-Sector Analysis: Inefficient Markets</i> .....            | 6  |
| <i>Irrational</i> .....                                                                                          | 6  |
| <i>Chapter II: Dividend Policy, Managerial Bias and CEO Characteristics</i> .....                                | 6  |
| <i>Chapter III: Dividend Policy, Irrational Approaches, and Corporate Governance</i> .....                       | 6  |
| <i>I.Introductory Chapter: From the Traditional Paradigm to Irrational Approaches and Payout Controversy</i> 7   |    |
| Introduction .....                                                                                               | 7  |
| <i>SECTION I. FROM CONVENTIONAL FINANCE TO BEHAVIORAL APPROACHES</i> .....                                       | 8  |
| I.1. Traditional Finance Versus Behavioral Finance .....                                                         | 10 |
| I.2. Behavioral Finance Versus Behavioral Corporate Finance .....                                                | 11 |
| <i>SECTION II. IRRELEVANCE APPROACH</i> .....                                                                    | 12 |
| II.1. Modigliani and Miller (1961) .....                                                                         | 12 |
| <i>SECTION III. RELEVANCE APPROACH</i> .....                                                                     | 12 |
| III.1. Walter’s Approach .....                                                                                   | 12 |
| III.2. Gordon’s Approach .....                                                                                   | 14 |
| Conclusion .....                                                                                                 | 16 |
| <i>Chapter I. Dividend Policy, Dividend Catering Cross-Sector Analysis: Inefficient Markets</i> .....            | 17 |
| Introduction .....                                                                                               | 20 |
| Statement of the Problem.....                                                                                    | 31 |
| <i>SECTION I. WHY DO INVESTORS PREFER DIVIDENDS?</i> .....                                                       | 32 |
| I.1. Bird-in-Hand Theory .....                                                                                   | 32 |
| I.2. Clientele and Tax Effect .....                                                                              | 32 |
| I.3. Signaling Theory .....                                                                                      | 36 |
| I.4. Agency Theory .....                                                                                         | 39 |
| <i>SECTION II. CATERING THEORY AND DIVIDEND POLICY</i> .....                                                     | 42 |
| II.1. Investor Sentiment.....                                                                                    | 47 |
| II.2. Limited Arbitrage .....                                                                                    | 49 |

|                                                                                             |     |
|---------------------------------------------------------------------------------------------|-----|
| <i>SECTION III. DIVIDEND POLICY BASED ON SECTOR-LEVEL DATA AND INVESTOR SENTIMENT</i> ..... | 49  |
| III.1. Dividend Policy and Sector-Level Data .....                                          | 49  |
| III.2. Importance of Sector-Level Data in Investor Sentiment .....                          | 50  |
| <i>SECTION IV. DATA AND SAMPLE</i> .....                                                    | 55  |
| IV.1. Sample Selection.....                                                                 | 56  |
| IV.1.1. Sample categorized by sector .....                                                  | 57  |
| IV.2. Definitions of Variables .....                                                        | 57  |
| IV.2.1. Dependent Variable.....                                                             | 57  |
| IV.2.2. Independent Variables .....                                                         | 58  |
| IV.2.3. Control Variables.....                                                              | 64  |
| IV.3. Descriptive Statistics .....                                                          | 64  |
| <i>SECTION V. ECONOMETRIC MODEL</i> .....                                                   | 75  |
| V.1. Logistic Regression Model .....                                                        | 76  |
| <i>SECTION VI. EMPIRICAL RESULTS AND DISCUSSION</i> .....                                   | 77  |
| Conclusion .....                                                                            | 91  |
| <i>Chapter II. Dividend Policy, Managerial Bias and CEO Characteristics</i> .....           | 94  |
| (Lim Hua Min, 2004, Chair of Phillip Securities) .....                                      | 94  |
| Abstract .....                                                                              | 95  |
| Introduction.....                                                                           | 97  |
| <i>SECTION I. IMPACT OF OVERCONFIDENCE AND OPTIMISM ON FIRMS' DECISIONS</i> .               | 104 |
| I.1. CEO Overconfidence and the Global Outlook.....                                         | 104 |
| I.2. Overconfidence and Corporate Decisions .....                                           | 106 |
| I.3. Overconfidence and Dividend Policy.....                                                | 114 |
| <i>SECTION II. MEASURES OF MANAGERIAL OVERCONFIDENCE IN THE FRENCH CONTEXT</i> .....        | 121 |
| II.1. Overview of Overconfidence Proxies .....                                              | 121 |
| II.2. Investment Proxies.....                                                               | 125 |
| <i>SECTION III. CHARACTERISTICS OF CEO POWER</i> .....                                      | 126 |
| III.1. CEO-Chair Duality .....                                                              | 126 |
| III.2. CEO Stock Ownership .....                                                            | 127 |
| <i>SECTION IV. BOARD SIZE AND FIRM CHARACTERISTICS</i> .....                                | 127 |
| IV.1. Profitability .....                                                                   | 127 |
| IV.2. Cash Flow.....                                                                        | 128 |

|                                                                                     |     |
|-------------------------------------------------------------------------------------|-----|
| IV.3. Leverage .....                                                                | 128 |
| IV.4. Board Size .....                                                              | 128 |
| <i>SECTION V. METHODOLOGY AND FINDINGS</i> .....                                    | 130 |
| V.1. Methodology .....                                                              | 130 |
| V.2. Theoretical Framework .....                                                    | 131 |
| V.3. Definitions of Variables .....                                                 | 132 |
| V.3.1. Dependent Variable .....                                                     | 133 |
| V.3.2. Independent Variables .....                                                  | 133 |
| V.4. Descriptive Statistics .....                                                   | 135 |
| V.5. Empirical Results .....                                                        | 141 |
| V.6. Findings and Discussion .....                                                  | 148 |
| Conclusion .....                                                                    | 153 |
| Chapter III. Dividend Policy, Irrational Approaches, and Corporate Governance ..... | 154 |
| Abstract .....                                                                      | 155 |
| Contribution .....                                                                  | 155 |
| Introduction .....                                                                  | 158 |
| <i>SECTION I. IRRATIONAL APPROACHES</i> .....                                       | 160 |
| I.1. Irrationality .....                                                            | 160 |
| I.2. Cognitive Bias .....                                                           | 161 |
| I.2.1. Prospect Theory, Loss Aversion, and Reference Points .....                   | 162 |
| I.2.2. Herd Behavior .....                                                          | 162 |
| <i>SECTION II. MARKET SENTIMENT</i> .....                                           | 163 |
| <i>SECTION III. MANAGER IRRATIONALITY</i> .....                                     | 166 |
| <i>SECTION IV. CORPORATE GOVERNANCE AND DIVIDEND POLICY</i> .....                   | 167 |
| IV.1. Institutional Ownership and Corporate Dividend Policy .....                   | 168 |
| IV.2. Board Independence and Corporate Dividend Policy .....                        | 169 |
| IV.3. Blockholders and Corporate Dividend Policy .....                              | 170 |
| <i>SECTION V. DATA DESCRIPTION AND VARIABLES</i> .....                              | 170 |
| V.1. Data and Sample .....                                                          | 170 |
| V.2. Definitions of the Variables .....                                             | 172 |
| V.2.1. Dependent Variable .....                                                     | 173 |
| V.2.1. Independent Variables .....                                                  | 173 |
| <i>SECTION VI. METHODOLOGY AND FINDINGS</i> .....                                   | 176 |

|                                  |     |
|----------------------------------|-----|
| VI.1. Methodology .....          | 176 |
| VI.2. Findings .....             | 179 |
| VI.2.1. Summary Statistics ..... | 179 |
| VI.2.2. Empirical Results .....  | 182 |
| Conclusion .....                 | 189 |
| <i>GENERAL CONCLUSION</i> .....  | 190 |
| <i>REFERENCES</i> .....          | 197 |
| <i>APPENDICES</i> .....          | 230 |

**Titre : Politique des dividendes, approches de l'irrationalité et finance d'entreprise comportementale : Théorie et Evidence**

**Mots clés :** Catering - Sentiment de l'investisseur - Politiques de dividendes - Biais comportementaux - Finance d'entreprise comportementale - Analyse sectorielle

**Résumé :** Depuis 2015, la France est considérée comme l'un des pays les plus généreux en termes de distribution de dividendes dans l'Union européenne (UE). Il est à ce niveau une question de recherche s'employant à délimiter les contours réels des déterminants de la décision et du montant du dividende distribué. L'objectif de cette thèse consiste à apporter quelques éléments de réponses aux questions se rapportant à l'importance du sentiment sectoriel dans la décision de versement de dividende objet du premier chapitre (la théorie du Catering). Les résultats montrent que le sentiment d'investisseur n'a pas un impact significatif sur la décision de distribution de dividendes pour le cas de la France (Ferris et al. (2009)). Contrairement à Anouar et Aubert (2017), les résultats permettent de mettre en évidence un impact positif et significatif du sentiment de l'investisseur sur la probabilité du paiement du dividendes pour le cas du secteur industriel. Un tel résultat montre que les entreprises faisant partie d'un secteur industriel sont en mesure de répondre aux besoins des investisseurs en se basant sur la demande de ces derniers en matière de distribution de dividendes. L'analyse de régression confirme que le sentiment sectoriel est un indicateur

approprié pour tester la théorie du Catering (Baker and Wurgler 2004a). Le second chapitre analyse l'impact de l'excès de confiance des dirigeants sur la politique de distribution de dividendes. En utilisant un échantillon d'entreprises françaises, nous démontrons que l'excès de confiance des dirigeants joue un rôle déterminant dans l'explication de la politique de dividende des entreprises françaises. L'excès de confiance des dirigeants exerce un effet positif sur le paiement des dividendes des entreprises. Le troisième chapitre s'interroge sur les implications de la gouvernance en termes de responsabilisation et rationalisation des décisions et ses effets sur la modération des impulsions de l'irrationalité des agents. Nos principaux résultats concernant cette analyse (régression quantile) montrent que les coefficients de l'indice de surconfiance des gestionnaires sont positifs et significatifs, respectivement, aux quantiles de 30 %, 50 %, 60 % et 80 % de distribution de dividendes. L'excès de confiance des dirigeants français se traduit donc par une augmentation de la distribution de dividendes. Toutefois, l'indice du sentiment est insignifiant pour différents quantiles de distribution de dividendes.

**Title : Dividend Policy, Approaches to Irrationality and Behavioral Corporate Finance: Theory and Evidence**

**Keywords :** Catering - Investor sentiment - Dividend policy - Managerial Bias - Behavioral Corporate Finance - Sector analysis -

**Abstract :** Since 2015, France is considered one of the most generous countries in terms of dividend distribution in the European Union (EU). At this level, it is a matter of research to delineate the real contours of the determinants of the decision and the amount of the dividend distributed. The aim of this thesis is to provide some answers to the questions relating to the importance of industry sentiment in the dividend payout decision discussed in the first chapter (the Catering theory). The results show that investor sentiment does not have a significant impact on the dividend payout decision in the case of France (Ferris et al. (2009)). In contrast to Anouar and Aubert (2017), the results highlight a positive and significant impact of investor sentiment on the probability of dividend payment for the case of the industrial sector. Such a result shows that companies belonging to an industrial sector are able to meet investors' needs based on their demand for dividend distribution. The regression

analysis confirms that sector sentiment is an appropriate indicator for testing the Catering theory (Baker and Wurgler 2004a). The second chapter analyses the impact of management overconfidence on dividend policy. Using a sample of French firms, we show that excess management confidence plays a key role in explaining the dividend policy of French firms. The third chapter examines the implications of governance in terms of accountability and rationalisation of decisions and its effects on moderating the impulses of agents' irrationality. Our main results for this analysis (quantile regression) show that the coefficients of the managerial overconfidence index are positive and significant, respectively, at the 30%, 50%, 60% and 80% dividend payout quantiles. The overconfidence of French managers is therefore reflected in an increase in dividend payouts. However, the sentiment index is insignificant for different quantiles of dividend distribution.