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Nour Khairallah

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# THESE DE DOCTORAT DE

L'UNIVERSITE D'ANGERS

ECOLE DOCTORALE N° 597  
*Sciences Economiques et sciences De Gestion*  
Spécialité: *Sciences de Gestion – Finance*

Par

**Nour KHAIRALLAH**

**A multi-stakeholder's perspective of managerial risk-taking in French listed SMEs: three empirical essays**

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**Part 1:**  
**General Introduction**

This thesis focuses on the study of managerial risk-taking behavior in small and medium-sized enterprises (SMEs) from the perspective of three major firm stakeholders.

In order to address this subject, the general introduction of the thesis is composed of four sections. The first section describes the context of our research and is divided into three subsections: the first subsection highlights the importance of small businesses within the French economy, where our study is based; the second subsection reviews the different angles of SMEs' risk-taking behavior; the third subsection lays out the general research questions of the thesis. Then, the second section of the general introduction presents the perspectives of the three empirical essays and presents the specific research questions of each. The third section of the introduction lays out the structure of the thesis. Finally, the fourth section of the introduction details the sample used in the three empirical essays.

## 1. Research context

### 1.1. Importance of SMEs in the French economy

Small and medium-sized enterprises are recognized as “engines of growth” in the French economy. Before presenting their contributions to the country's economic and financial stability, it is essential to define these structures.

According to the definition adopted by the European commission on 6 May 2003 held in Brussels,<sup>1</sup> a firm is classified as a small and medium-sized enterprise if it meets specific criteria. Article 2 in the annex of recommendation no. 2003/361/EC determined the thresholds for these criteria as follows (European Commission, 2003):

- The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

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<sup>1</sup> Starting 1 January 2005, the recommendation proposed in 2003 has replaced recommendation 96/280/EC of 3 April 1996 regarding the SME's definition. For more details, see: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003H0361&from=FR>

- Within the SME category, a small enterprise is defined as an enterprise which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million.
- Within the SME category, a microenterprise is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million.

Figure 1. SMEs definition

Enterprise category	Headcount: annual work unit (AWU)	Annual turnover	or	Annual balance sheet total
Medium-sized	< 250	≤ EUR 50 million	or	≤ EUR 43 million
Small	< 50	≤ EUR 10 million	or	≤ EUR 10 million
Micro	< 10	≤ EUR 2 million	or	≤ EUR 2 million

Source: reprinted from “User guide to the SME Definition”, by European Commission, 2017, p.11.

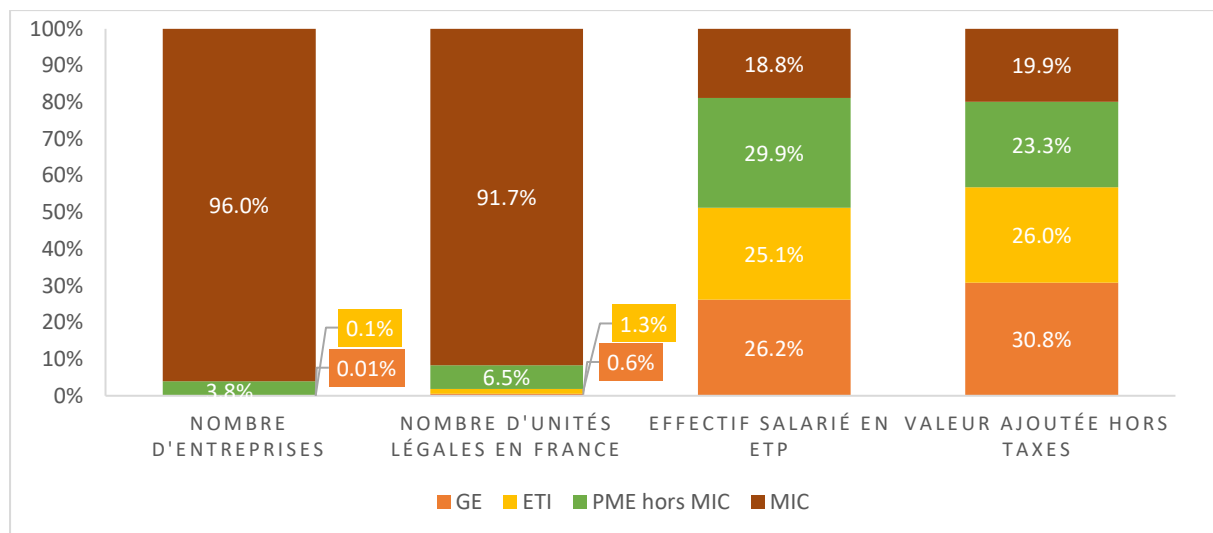
The importance of SMEs in the French economy is demonstrated through several channels. First, these small structures account for almost the totality of companies in France. More precisely, the number of these firms reached around 3.8 million<sup>2</sup> in 2017,<sup>3</sup> which represents 99.8% of the total of French companies (cf. figure 2). Among these firms, microenterprises have maintained a remarkable presence, reaching 91.7% compared to 6.5% for small firms. Overall, the proportion of SMEs is significantly greater than that of large enterprises, which establishes SMEs as the leading companies in France.

<sup>2</sup> Firms belongs to the sector of non-financial and non-agricultural market services.

<sup>3</sup> Most recent year with available data on SMEs published by the INSEE (Institut National de la Statistique et des Études Économiques).

Second, small and medium-sized enterprises greatly contribute to the value added of the enterprises of the country. In fact, they have generated EUR 502 billion of value added in 2017, which represents 43% of the total value added (cf. figure 2).

Figure 2. Main characteristics of companies by category in 2017



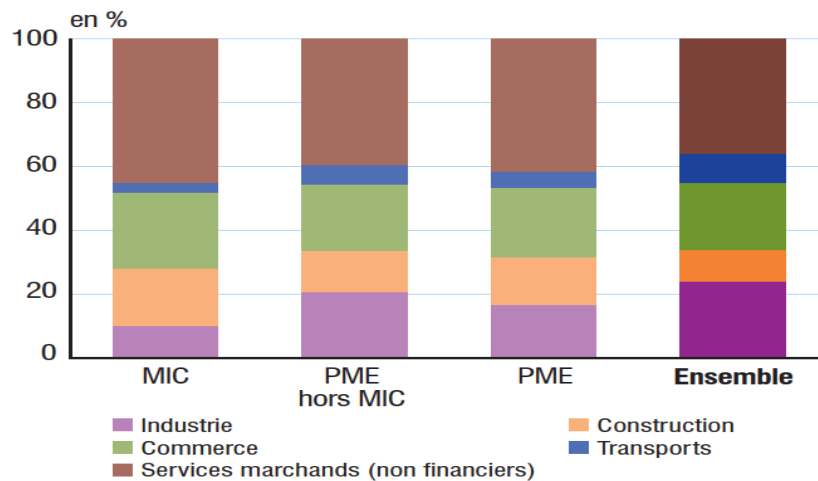
Field: France, entreprises in the non-agricultural and non-financial market services.

Source: statistics from “Les entreprises en France”, by INSEE, Edition 2019, p.107.

Furthermore, SMEs constitute an important source of job creation and represent a key to employment growth in France. Among the 13 million full-time jobs ensured by the non-financial and non-agricultural market services sector, 6.3 million jobs were provided by SMEs in 2017. This corresponds to 48.7% (nearly half) of companies’ workforce in France (cf. figure 2).

As shown in figure 3, 42% of SMEs’ workforce operate in the non-financial market services sector, exceeding the proportion of all companies’ workforce in this sector (36%). Meanwhile, the rest of their workforce during 2017 was composed as follows: 17% in the industry sector, 15% in the construction sector, 22% in the whole sale and trade sector, and 5% in the transportation and storage sector.

Figure 3. SMEs' workforce by sector in 2017



Field: France, enterprises in the non-agricultural and non-financial market services.

Source: reprinted from “Les entreprises en France”, by INSEE, Edition 2019, p.111.

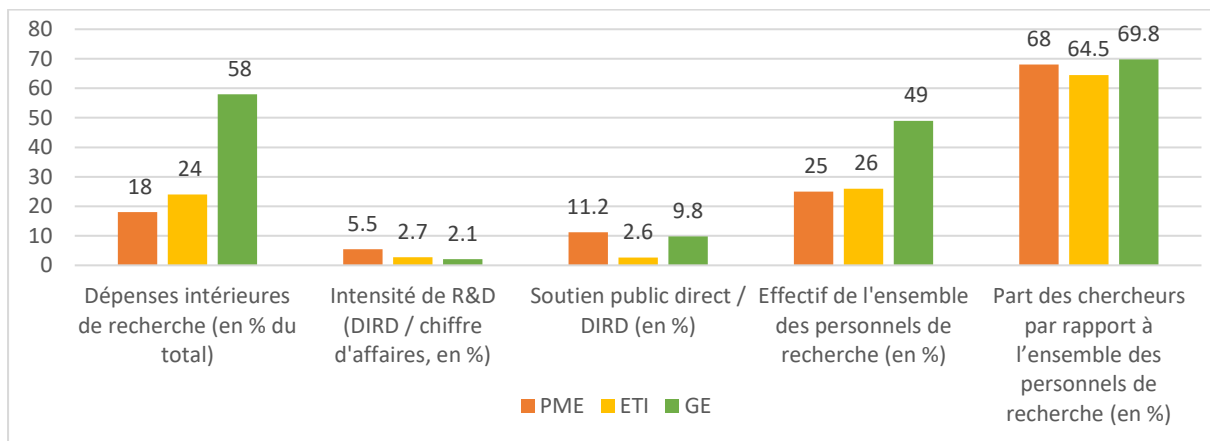
On another note, French SMEs have been recognized for their sense of innovation. Because of their small structures, these firms are generally able to adapt more quickly and effectively to changes in market demand than their larger counterparts (Pillu and Zlotowski, 2014). This enables them to meet the challenges of the evolving world.

In fact, they have been largely invested in research and development (R&D) activities. Out of the EUR 33.03 billion devoted by French companies to domestic expenditure on R&D activities in 2017,<sup>4</sup> 18% was provided by SMEs as compared to 58% by large firms (cf. figure 4). Although this percentage may seem limited with respect to their significant proportion in the country, it is noteworthy that their share of R&D expenditure represents 5.5% of their turnover,<sup>5</sup> outperforming large firms that devoted only 2.1% of their turnover to these activities.

<sup>4</sup> Most recent year with available data.

<sup>5</sup> Microenterprises dedicate 12.2% of their turnover to R&D activities and SMEs (excluding microenterprises) dedicate 4.9% of their turnover to these activities.

Figure 4. Statistics on firms engaging in R&D activities in 2017 (in %)



Source : statistics from “La R&D dans les PME, les ETI et les grandes entreprises”, by ‘Ministère de l’enseignement supérieur, de la recherche et de l’innovation’.<sup>6</sup>

Another key feature that underlines the importance of French SMEs for the economy of the country is related to their involvement in foreign trade. As shown in table 1, out of the 197,091 exporting firms in France, 193,034 belong to the category of SMEs (of which 43,700 are small firms and 149,334 are microenterprises). Exporting SMEs (excluding microenterprises) represent 31.5% of the total small firms in France and generate 12.3% of the country’s total export turnover. Meanwhile, exporting microenterprises account for 7% of the total of French microenterprises and generate 2.6% of the country’s total export turnover.

<sup>6</sup> Retrieved from: [https://publication.enseignementsup-recherche.gouv.fr/eessr/FR/T093/la\\_r\\_d\\_dans\\_les\\_pme\\_les\\_eti\\_et\\_les\\_grandes\\_entreprises/#ILL\\_EESR12\\_R\\_4\\_2\\_03](https://publication.enseignementsup-recherche.gouv.fr/eessr/FR/T093/la_r_d_dans_les_pme_les_eti_et_les_grandes_entreprises/#ILL_EESR12_R_4_2_03)

Table 1. Exporting firms by size in 2017

Catégorie d'entreprise	Nombre d'entreprises	Part des entreprises exportatrices (en %)	Chiffre d'affaires à l'export (en milliards d'euros)	Taux d'exportation moyen (en %) (1)
GE + ETI	4,057	71.9	611	28.3
PME, hors microentreprises	43,700	31.5	88	21.5
Microentreprises	149,334	7.0	19	24.1

(1) : taux d'exportation des entreprises exportatrices.

Field: France, exporting enterprises, excluding micro-entrepreneurs and micro-enterprises in the fiscal meaning.

Source: reprinted from “Entreprises exportatrices selon la taille de l’entreprise”, by INSEE, 2017.<sup>7</sup>

## 1.2. One of SMEs’ specificities: risk-taking behavior

As mentioned above, this section presents one of SMEs’ specificities, which is the risk-taking behavior of their managers. Since this thesis focuses on studying this characteristic from the perspective of the firms’ shareholders, it is first essential to cover *the various angles of managerial risk-taking behavior in small businesses*. This requires an overview of (1) the uniqueness of SMEs, (2) the managers’ role in their small businesses, (3) the reasons inducing their risk-taking behavior, and (4) its consequences on their firms, in which this thesis is interested.

### ➤ Uniqueness of SMEs

Over the past years, researchers have shown a rising interest in the study of small businesses. Indeed, their importance in the country’s economy (see section 1) provides a strong incentive to target this type of businesses in our study.

In fact, Pettit and Singer (1985) and Ang (1991) were among the first authors to recognize the uniqueness of SMEs and to suggest the need for an adaptation of financial theories that were once designed for large firms. For instance, Pettit and Singer (1985) stated:

<sup>7</sup> Retrieved from: <https://www.insee.fr/fr/statistiques/2120836>

Our objective in this article is to provide a foundation for the development of research in the area of small business finance. The approach will emphasize that predicted differences between small and large firms should be developed from the same body of financial theory. Yet this theory must be general enough to allow for the possibility of small firms acting differently or being affected differently from the types of firms that are ordinarily considered in corporation finance literature. (p.47)

In accordance with these statements, Ang (1991) suggested that:

These unique characteristics of small businesses could generate a different set of financial problems, or cause small businesses to look at the same set of financial problems in a different manner. As a consequence, different financial decisions, types of financial arrangements, institutions, and practices may evolve. (p.1)

Thus, it is important to acknowledge that an SME is not a “miniature” of a large enterprise (OSEO, 2005), and should therefore be treated individually and differently. This difference is also referred to in the literature as a “transforming effect” of SMEs in which “the rules are not the same as in larger structures; some data or events are magnified or amplified, others are reduced or minimized, and others are distorted, changing in nature or intensity.”<sup>8</sup> (OSEO, 2005, p.39) (English Translation). Nonetheless, declaring the specificity of smaller firms does not entail a rejection of all the knowledge derived from the studies on larger firms (de Oliveira et al., 2015).

As a matter of fact, while the above statements were mainly targeted to small businesses that are privately held,<sup>9</sup> this thesis employs only publicly held SMEs.<sup>10</sup> This particular characteristic, which is weakly present among small businesses compared to large ones, makes our study even more interesting.

In addition to the fact that publicly held SMEs have not received much attention from researchers despite their growing presence in public equity markets, their nature is very particular and distinctive for the following reason: While it is true that publicly held SMEs have certain similarities to small private SMEs in terms of their composition and operation, yet

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<sup>8</sup> Original passage in French: “les règles ne sont pas les mêmes que dans des structures plus grandes ; certaines données ou certains événements sont grossis ou amplifiés, d’autres réduits ou minimisés, d’autres encore déformés, changeant de nature ou d’intensité” (OSEO, 2005, p.39)

<sup>9</sup> One of the SMEs’ characteristics cited in Ang (1991) is “no publicly traded securities.” (p.2)

<sup>10</sup> See section four of the introduction “Sample overview”, for more details on the selection and characteristics of the sample.

their resemblance to large listed firms cannot be denied. In fact, a small business listed on the stock market is an enterprise that is striving to grow and reach an optimal size; to be exposed to new investors; to provide greater transparency for its stakeholders; to increase its equity capital; and, subsequently, to improve its access to debt financing and additional equity financing.

Therefore, since this thesis employs the body of financial theory designed for large firms on listed SMEs, we do not expect different reactions only from large firms but also from small privately held firms. Specifically, the reactions of our publicly traded SMEs to a financial concept may be amplified or attenuated with respect to the responses of their large and/or private counterparts. Although this thesis is devoted to explaining each reaction in the three following essays, it is important to bear in mind this specific characteristic of small publicly held companies throughout our study.

#### ➤ Small business managers

A small business is generally managed by a sole individual, who is also the owner of the company (known in the literature as the owner-manager or manager) (Filion, 2007). In their paper, Carland *et al.* (1984) defined the owner-manager of a small business<sup>11</sup> as

...an individual who establishes and manages a business for the principal purpose of furthering personal goals. The business must be the primary source of income and will consume the majority of one's time and resources. The owner perceives the business as an extension of his or her personality, intricately bound with family needs and desires. (p.358)

Managers of SMEs are characterized by an attitude of multi-functionality. In fact, they perform all of their firms' tasks, including the supervision and the management of their entity (Filion, 2007). In their book, Filion (2007, pp.6–7) distinguished these duties by specifying that “the supervision of a company refers to its conduct, to the act of leading, directing,

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<sup>11</sup> The authors distinguished between small business owner-managers and entrepreneurs. They defined an entrepreneur as “an individual who establishes and manages a business for the principal purposes of profit and growth. The entrepreneur is characterized principally by innovative behavior and will employ strategic management practices in the business” (p. 358). Since the concept of entrepreneurs is vague and can be found in both small and large firms (Mazzarol and Reboud, 2017), this thesis adopts the concept of “small business owner-managers,” which is more appropriate for SMEs.

commanding, governing, guiding, providing strategic directions, and making decisions of strategic scope” (English translation),<sup>12</sup> and that

the management of a company refers mainly to the fact of administering activities. It is associated with operations and generally applies to functions and activities related to marketing, finance, accounting, human resources, ICT, production, and, finally, to all the tasks of the enterprise.<sup>13</sup> [English translation]

Managers’ responsibilities significantly differ between small and large firms because of the diversity of their operating systems. More precisely, while small firms rely on an interactive proximity that favors a direct contact between managers and employees, the interactions in larger firms tend to be distant and more hierarchical (Chabaud, 2013). This divergence has been emphasized by Fuller-Love (2006), who stated that

in large firms, decisions are made by the chief executive and carried out by others, and the role of the chief executive is to monitor whether they are carried out effectively. In a small company, the owner manager is in direct contact with the employees and usually has a greater awareness of what is going on, and often does not see the need for procedures to monitor performance. (p.177)

As SME managers strive to achieve the objectives of their company, they provide all the available tools to ensure the prosperity of their firm and its evolution over time. Thus, managers not only dedicate their financial capital to the firm, but also devote considerable time and effort to the accomplishment of their company’s goals. Their involvement in the company takes several forms: physical, intellectual, and financial. Even though these various investments are vital to the firm, they make managers impatient to generate profits. This incites them to engage in high-risk activities (Ang, 1991).

In fact, previous studies were able to underline this specific trait that is common for SMEs’ managers by stating that their “aptitude for taking risks” is very important and represents one of the main features that characterizes them (OSEO, 2005, p.41). While running an extensive analysis on the characteristics and roles of managers in French SMEs, Duchéneaut (1996) also

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<sup>12</sup> Original passage in French : “la direction d’une entreprise réfère à sa conduite, au fait de mener, diriger, de commander, de gouverner, de guider, de fournir les orientations stratégiques et de prendre les décisions à portée stratégique” (Filion, 2007, p. 6).

<sup>13</sup> Original passage in French : “la gestion d’une entreprise réfère surtout au fait d’y administrer des activités. Elle concerne les opérations et s’applique en général aux fonctions et aux activités relatives au marketing, à la finance, à la comptabilité, aux ressources humaines, aux TIC, à la production, et, enfin à toutes les tâches de l’entreprise” (Filion, 2007, p. 7).

revealed this characteristic among three others, as follows: “Since a ‘real employer’ is defined by three essential criteria (majority of capital, personal risk-taking, 'direct management' of the firm), we believe that these three characteristics are very well able to define the population of SME managers”<sup>14</sup>. (p.130) (English translation)

Interestingly, the author also specified that “most SME managers consider taking risks for the company to mean taking risks for themselves (or for their families and friends) ...”<sup>15</sup> (p.131) (English translation)

While these studies were aimed at SMEs in general (except for the study [Ang, 1991] that was targeted to privately held SMEs), one can state that managerial risk-taking behavior is present in any category of firms, more particularly in the context of publicly held SMEs.

In addition, it is essential to note that the risk-taking behavior of managers will be empirically estimated via the risk-taking behavior of their companies.<sup>16</sup> In the light of previous studies, we believe that this estimation is the most reliable and accurate measure for reflecting the managerial risk-taking behavior quantitatively. From this perspective, the risk-taking of an SME is defined as “the willingness of an organization to decide and act without a definite knowledge of possible income and possibly speculate in personal risk, financial and business” (Games and Rendi, 2019, p.4).

#### ➤ Reasons for managerial risk-taking behavior

Several concerns have been raised regarding the risk-taking behavior of managers in the context of small businesses. Their propensity for risk has been the subject of various studies and has been addressed with different approaches (Hoskisson *et al.*, 2017). Researchers have attempted to explain the rationale for this behavior and have suggested several causes for it.

For instance, Filion (2007) stated that since SMEs’ managers operate on a relatively short time horizon with fewer available resources compared to larger firms, they are more likely to adopt

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<sup>14</sup> Original passage in French: “le « patronat réel » étant défini par trois critères essentiels (majorité du capital, prise de risques personnels, « gestion directe » de l’entreprise), on peut considérer que ces trois caractéristiques définissent assez bien la population des dirigeants de PME” (Duchéneau, 1996, p.130).

In addition, the SMEs considered in his study have between 10 and 499 employees.

<sup>15</sup> Original passage in French: “pour la majorité des dirigeants de PME, prendre des risques pour l’entreprise, c’est en prendre pour soi (ou pour sa famille et ses amis)...” (Duchéneau, 1996, p.131)

<sup>16</sup> In the remainder of this thesis, the risk-taking behavior of managers is referred to as either managerial risk-taking behavior or SMEs’ risk-taking behavior.

a flexible strategic vision. As a result, their decision-making process is often driven by their intuition rather than by an extended study of the different projects. This process is characterized as the “intuition-decision-action”<sup>17</sup> (English translation) scheme (Filion, 2007, p.28). In line with these statements, Duchéneaut (1996) claimed that “more than two-thirds (70%) of SME managers attribute a ‘significant’ or ‘very significant’ role to intuition in their decision-making process”<sup>18</sup> (p.235) (English translation). This particular operational process, inspired by intuition, emphasizes the fact that managers engage in risk-taking behavior (Mazzarol and Reboud, 2017).

Other studies have associated managers’ tendency toward risk with their perception and evaluation of financial situations (Sullivan, 1997). For instance, Simon, Houghton, and Savelli (2003) conducted a study of 61 managers of high-technology small companies<sup>19</sup> in Georgia (United States) to examine whether the managers’ level of satisfaction with their firms’ financial performance has an influence on their risk-taking behavior. The authors found that when managers are less satisfied with the performance of their company, they tend to launch new risky products (i.e., products that require more resources<sup>20</sup> and that are introduced in less familiar markets<sup>21</sup>).

Other researchers have associated managers’ risk-taking behavior with their personal traits. For instance, while conducting a survey on 673 SME managers/owners (of which 517 were men and 156 were women), Watson and Newby (2005) concluded that (male) managers are more inclined to take risks than (female) managers in small businesses. Furthermore, through a series of interviews with 40 managers/owners of SMEs in the UK, Gilmore, Carson, and O’Donnell (2004) found that age has an influence on the risk-taking behavior of managers. More specifically, they discovered that managers are more likely to take risks in the beginning of their careers than later.

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<sup>17</sup> Original passage in French : “intuition-décision-action” (Filion, 2007, p.28).

<sup>18</sup> Original passage in French: “plus des deux tiers (70%) des dirigeants de PME donnent une part « importante » ou « très importante » à l’intuition dans une prise de décision.” (Duchéneaut, 1996, p.235).

<sup>19</sup> The SMEs considered in their sample have fewer than 100 employees.

<sup>20</sup> The authors did not distinguish the types of resources (financial, human time, space, etc.) since they considered all these resources to have generally the same impact on a new product proposed by an SME.

<sup>21</sup> The authors defined unfamiliarity of a market as “the extent to which the product requirements deviate from the firm’s existing markets” (p.425)

### ➤ Consequences of managerial risk-taking behavior

The consequences of managerial risk-taking behavior in the company have received little attention in the literature (Hoskisson et al., 2017). Among these studies, some consequences were detected.

For instance, Laforet and Tann (2006) showed that SMEs' attitudes toward risks enable them to adapt to new changes, especially to new working methods. Blumentritt (2004) found that small businesses that engage in higher degrees of risk and competitive aggressiveness are the most innovative firms, especially in the slowest-growth industries.

Later, extensive literature has focused on the positive influence of managerial risk-taking on firm performance (Pratono, 2018) and innovation outcomes in small and medium-sized enterprises (Games, 2019; Games and Rendi, 2019). Among others, Mathews et al. (2018) found that managerial risk-taking has an impact on firm innovation through the resources allocated to technology. More specifically, the authors indicated that when managers are risk-takers, they promote an increase in the allocation of resources to technology, which in turn has a positive impact on the firm's performance. On the other hand, García-Granero, Llopis, Fernández-Mesa, & Alegre (2015) showed that the impact of managerial risk-taking on innovation is rather indirect since it is mediated by the risk-taking climate of the firm.

### 1.3. General research questions

This thesis examines the consequences of managerial risk-taking behavior from a perspective that remains empirically uncharted in the context of listed SMEs. More precisely, the majority (if not all) of the above-mentioned studies have treated the consequences of managers' risk-taking behavior in SMEs distinctively. That is, their risk-taking behavior has been investigated from the managers and their companies' point of view. Nevertheless, this thesis is more interested in examining managerial risk-taking behavior from other stakeholders' perspective.

The intuition behind this objective stems from the assumption that managers depend on several internal and external actors to ensure effective performance of their firms; therefore, one wonders whether their risk-taking behavior is tolerated or not by these actors. In general, the perception of a risky situation differs significantly from one person to another. However, the range of different perceptions is magnified in a company because the risk-taking behavior of

an actor can impact the well-being of another actor in an extreme way. Clearly, when the risk-taking actor is the manager of the firm, who is in charge of the firm's decision-making process, this can lead to several undesirable consequences borne by other stakeholders of the firm. This implies serious problems between these two parties.

Therefore, this thesis addresses the problems between managers and other stakeholders in small businesses that arise directly or indirectly from the risk-taking behavior of managers. Among many stakeholders of the firm, this thesis considers three actors: shareholders, banks, and employees. These external and internal actors constitute essential stakeholders for the prosperity of small businesses.

Hence, we attempt to fill the gap in the literature related to the firm's consequences of managerial risk-taking in listed SMEs. The general research question of the thesis is the following:

**Does the manager's risk-taking behavior influence the SMEs' relationships with other stakeholders of the firm (i.e., shareholders, banks, and employees)?**

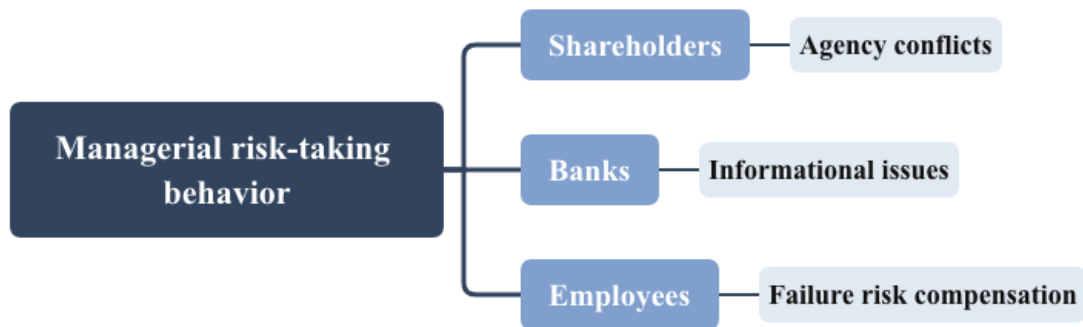
In addition, given that the period of our sample includes the year of the financial crisis of 2008,<sup>22</sup> this thesis is interested in discovering the impact of this crisis on these three relationships.

In order to discuss this general research question, the thesis is composed of three empirical essays. Each of these essays aims to investigate the relationship between managerial risk-taking behavior and (1) shareholders, (2) banks, and (3) employees, respectively. As shown in figure 5, the relationships between these actors are manifested through three problems, respectively: (1) agency conflicts, (2) informational issues, and (3) failure risk compensation.

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<sup>22</sup> For more details about the sample, see section 4: sample overview.

Figure 5. Consequences of the manager's risk-taking behavior in SMEs



Source: the author.

## 2. Perspectives of empirical essays

This section presents the perspectives of the three empirical essays of which this thesis is composed. As sketched above, each essay examines the direct or indirect consequences of managerial risk-taking activities from a stakeholder's point of view, namely shareholders, banks, and employees. Thus, this section introduces the basis for the analysis of each essay, as follows: the first subsection discusses the agency conflicts with shareholders; the second subsection describes the information asymmetry problems with creditors; and the third subsection outlines the failure risk compensation with employees.

### 2.1. Agency conflicts

The first problem addressed in this thesis is the principal-agent problem under the agency theory. This issue has been widely debated in theoretical and empirical investigations from the perspective of large corporations. Nonetheless, little is known regarding the existence of the agency theory in the area of small businesses.

In his work, Ang (1991) highlighted the importance of this problem in SMEs by stating that “the incorporation of the unique characteristics of small businesses expands the topic of agency

in several ways” (p.4). Then, the author proposed the following reasons behind the significant agency problems in small businesses:

The absence of publicly traded shares, the risk taking tendency of entrepreneurs, the lack of management depth, the problem of succession, and the limited personal wealth of owners could imply a shortened expected duration for the firm and thus a shortened transaction horizon with the stakeholders as well, which in turn creates opportunities for agency problems. (p.4)

Although the SMEs considered in this thesis are publicly held, this does not make the agency problem among our SMEs any less important. Rather, it is interesting to note that the “risk-taking tendency” of managers is one of the major reasons behind the significant agency problems in small listed firms. Since this thesis focuses on this particular characteristic of small businesses, the first subsection is devoted to investigating the agency theory in the setting of listed SMEs.

The following work on agency theory builds on previous studies that have provided a literature survey on the various aspects of this theory (Eisenhardt, 1989; Shapiro, 2005; Panda and Leepsa, 2017). This subsection is segregated into five segments to define the agency relationship, identify the types of agency problems, identify solutions for conflicts, present the theory in the context of SMEs, and propose the first research question.

### 2.1.1. The agency theory

In their seminal work, Jensen & Meckling (1976) defined the agency relationship as “a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent” (p.308). The agency relationship is generally found in several situations involving an interaction between individuals in the society. Yet, it is mostly present in private corporations (or firms) where an individual’s decision-making may harm the welfare of another person. More precisely, since firms are “legal fictions which serve as a nexus for a set of contracting relationships among individuals” (Jensen and Meckling, 1976, pp.310–311), the roles assigned to contracted agents may well reflect the agency relationship (Fama, 1980; Fama and Jensen, 1983; Shapiro, 2005).

The core of the agency relationship lies in the self-maximizing behavior of the principal and the agent. The fact that these parties have incentives to maximize their own utility implies a divergence of their respective interests. In general, the conflict of interest is associated with a framework in which agents, seeking to maximize their own utility, engage in actions that are not in the best interest of principals (i.e., actions that constrain the principals from maximizing their utility and/or harm their welfare). Consequently, principals tend to control this unfavorable situation by adopting certain mechanisms, such as monitoring activities (i.e., the acts of observing and evaluating the agents' behavior). In other situations, agents are likely to undertake contractual obligations that limit their activities and ensure an alignment with the principals' interests. Of course, these actions entail costs borne by the principals and/or the agents, the so-called "agency costs." Jensen & Meckling (1976) have measured the agency costs as "the sum of (1) the monitoring expenditures by the principal, (2) the bonding expenditures by the agent, (3) the residual loss" (p.308). The authors have also identified the latter type of costs as "the dollar equivalent of the reduction in welfare experienced by the principal due to this divergence" (p.308). In brief, the agency problem is a general issue present in most organizations between two or more contractual individuals, which induces specific costs incurred by the concerned parties.

### 2.1.2. Types of agency problems

Although the agency problem takes several forms between individuals, the previous literature has discovered specific types that are prevalent in private organizations. Out of many agency problems, the most recurrent ones concern the following relationships: (1) owner(s) and manager(s), (2) majority and minority shareholders, and (3) owner(s) and debtholder(s) (Panda and Leepsa, 2017).

In their recent survey, Panda and Leepsa (2017) have detailed each of these types on the grounds of previous studies, as follows:

- The first type of agency problem is presented by the conflict of interest between the principal (owner) and the agent (manager), the so-called principal-agent problem (Jensen and Meckling, 1976; Fama, 1980; Fama and Jensen, 1983). As discussed above, this type is the most commonly identified agency problem in firms. In fact, under the "separation of ownership and control" strategy adopted by most of the large firms and

some of the small firms, owners delegate certain decisions to managers while hoping that the latter will act in their best interest. However, since managers are more interested in their self-maximization value, this leads to the conflict of interest problem.

- The second type of agency problem is more recognized in large firms that have traded their securities publicly than in small listed firms. The agency problem between the majority and minority shareholders, the so-called principal–principal problem, is related to the power held by the majority shareholders that has an impact on the interests of the rest of shareholders. Since the majority shareholders own a larger part of the firm’s shares than do minority shareholders, they possess more powerful voting rights than their counterparty. This enables them to make decisions that are not in line with the expectations of minority shareholders, which implies a conflict of interest between these two parties.
- The third type of agency problem is between owners and debtholders. The so-called principal–creditor problem occurs when shareholders (or owners) engage in risky projects that deviate from the interests of the creditors for the following reasons. First, if the risky project reaches a successful end, the shareholders will benefit from high profits, while the creditor will only receive the reimbursement of the debt and its interests. Second, if the risky project fails, both shareholders and the creditor will suffer from losses. This results in an agency conflict between the owners and the creditors.

### 2.1.3. Solutions for agency conflicts

Because of the rising presence of agency conflicts in companies, researchers have focused on finding remedies to these issues. The proposed solutions are mainly based on the monitoring of agents through several channels (Panda and Leepsa, 2017), both internal and external to the company.

Jensen and Meckling (1976) defined monitoring as actions that include “auditing, formal control systems, budget restrictions, and the establishment of incentive compensation systems which serve to more closely identify the manager’s interests with those of the outside equity holders, etc.” (p.323). The authors suggested that outside shareholders should monitor the managers’ behavior. By doing so, they will be capable of limiting the managers’ opportunistic activities that deviate from the shareholders’ interest. On the other hand, Fama (1980) criticized the monitoring mechanism implemented by shareholders (or risk bearers) for the following

reason: Since shareholders are diversified, they have invested their wealth in several firms. This reduces their interest in disciplining the manager's behavior of a specific firm, which makes them less involved in the monitoring mechanism.

Consequently, Fama (1980) suggested another type of monitoring based on the pressures applied by the outside managerial labor market on the firm. This form of control helps to decide the managers' compensation according to their performance. One example of this outside pressure comes from new managers' judgment of whether the system of managerial compensation in a specific firm is responsive or not. Another example is the internal monitoring applied from high-level to low-level managers, and vice-versa. This form of monitoring is effective because insider managers are aware that the outside labor managerial market utilizes their firm's performance to judge their outside compensations. This results in a mutual interest of high- and low-level managers in performing well, which incites them to exert some monitoring activities between them. Another pressure comes from the board of directors, which is "the ultimate internal monitor of the set of contracts called a firm, whose most important role is to scrutinize the highest decision makers with the firm" (p.294). Thus, the board of directors is preferably composed of two parties. The first one is top-level managers motivated by their continuous competition for the highest place in the firm, which incites them to be "the most informed and responsive critics of the firm's performance" (p.293). The second one is outside directors because of their unbiased opinion, which is modeled by their capacity to overstep the possibility of the top-level managers' expropriation of shareholders' wealth and to make judgments from beyond the competition between them.<sup>23</sup>

Fama and Jensen (1983) have addressed the agency problem with respect to the complexity of the organization. According to the authors, "noncomplex means that specific information relevant to decisions is concentrated in one or a few agents. (Specific information is detailed information that is costly to transfer among agents)" (p.305). They have stated that the agency problems in non-complex corporations can be resolved through the concentration of management and control decisions in the same agents, rather than its separation.<sup>24</sup> In fact, this

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<sup>23</sup> The author highlighted the essential need to implement monitoring mechanisms at a low cost. Hence, internal mechanisms are more capable of monitoring managers with lower costs than outside mechanisms (an example of outside mechanisms is takeovers).

<sup>24</sup> According to the authors, the decision process is composed of four steps: "initiation (generation of proposals for resource utilization and structuring of contracts); ratification (choice of the decision initiatives to be implemented; implementation (execution of ratified decisions); and monitoring (measurement of the performance of decision agents and implementation of rewards)" (p. 304). The management decision includes the initiation and the implementation steps, while the control decision includes the ratification and the monitoring steps.

solution is more effective in non-complex organizations than in complex ones because the benefits obtained from the combination of roles exceed its costs.

For Jensen (1986), the best monitoring tool is the issuance of debt. According to the author, the agency conflict between managers and shareholders is aggravated by the presence of free cash flow in firms. The reasoning behind this statement is that managers are naturally tempted by the growth of their firm since it is positively correlated with their reputation, power, and compensation. Thus, they are inclined to invest the free cash flow in more projects rather than distributing it to shareholders, even if these projects are not beneficial for the shareholders' welfare (i.e., projects with negative net present values). Obviously, this deviates from the interest of shareholders, who prefer to receive the free cash flow in form of dividends or to benefit from share repurchase programs. Therefore, the author proposes a new disciplining tool for managerial behavior, which is debt. By issuing debt, managers engage in reimbursing the principal and interest payments instead of wasting the free cash flow on unprofitable investments. They also give the authorization for debtholders to take the firm into bankruptcy if they do not respect their engagement. Therefore, debt reduces the agency costs between managers and shareholders by controlling the managers' behavior.

#### 2.1.4. Agency theory and SMEs

Agency relationships, costs, and remedies are often treated in large corporations. Indeed, large firms are characterized by complex relationships between their parties. This may be due to several reasons, such as their hierarchical system, which complicates interactions between individuals, the significant number of stakeholders, the involvement of external parties, the economic competition, etc.

Although it may be tempting to believe that these problems only exist and have an impact on large corporations, this statement is hardly acceptable. Specifically, while the theoretical models outlined above have dealt with these issues in large firms, they have ignored the possibility that smaller firms could also experience these troubles. However, because of the unique nature that characterizes small firms (Ang, 1991), significant agency problems arise. In particular, the fact that managers of small businesses engage in risky activities exacerbates the agency conflicts with other stakeholders in the firm. Thus, this thesis is interested in the agency conflicts that emerge among three actors—managers, outside shareholders, and creditors—

among several others. The first type of agency conflict is between managers and shareholders, while the second type is between managers and creditors. In the first essay of the thesis, we will address the first type of agency relationship. More precisely, we will focus on the reason behind the conflict of interest between managers and shareholders and on its possible remedy.

On the grounds of Jensen & Meckling's study (1976), Ang, Cole, & Lin (2007) have related the agency costs between managers and shareholders in small businesses to the manager's ownership in the firm. The authors have distinguished three types of ownership structure as follows. The first ownership category consists of firms in which 100% of the equity is held by the manager. In this framework, the manager owns the company and is entirely responsible for the decision-making process. Even though owner-managers tend to maximize their own utility, this will clearly not lead to an agency conflict because of the absence of the "separation of ownership and control" concept. The second ownership category emerges when owner-managers choose to *publicly offer* a proportion of their firms' equity. By doing so, the owner-managers' proportion of equity (once 100%) will be reduced. This will have an impact on their decision-making process. For example, "the manager who owns less than 100 percent of the firm has the incentive to consume perks rather than to maximize the value of the firm to all shareholders" (Ang et al., 2007, p.84). Thus, the "separation of ownership and control" in this framework implies a divergence of interests between the manager and the outside shareholders of the company, and therefore agency issues arise. The third ownership category includes firms "whose managers are paid employees with no equity in the firm" (Ang et al., 2007, p.83). This type of ownership is characterized by an important agency problem between outside managers and owners due to the lack of monitoring activities in small firms,<sup>25</sup> which induces high residual agency costs.

Small businesses generally fall into the first category of ownership. In fact, since owners of SMEs establish their own companies and contribute to their development, they usually remain the sole manager-owners of their firms. This can be reflected in their desire to preserve their businesses as privately held structures. Even though this is the situation of a significant proportion of small enterprises, there are publicly held SMEs that have been long ignored in the literature. The publicly traded SMEs considered in this thesis belong to the second category of firm ownership (i.e., the manager holds less than 100% of the firm's shares). As with large listed corporations, the separation of ownership and control in publicly traded SMEs creates a

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<sup>25</sup> The authors explained this by the absence of monitoring technologies provided for owners of small businesses.

conflict of interest between managers and outside shareholders (Abor and Biekpe, 2006). This issue is worsened by managerial risk-taking activities. In fact, although managers of small businesses are known for their risk-taking behavior, none of the previous studies has examined the reaction of shareholders regarding this attitude. Thus, the first essay of this thesis intends to fill this gap in the literature.

#### 2.1.5. Research question I

Risk preferences are one of the major causes of the significant agency conflicts between managers and shareholders in small businesses. These two parties have different perceptions of risk that generally do not coincide. Managers, tempted by a rapid gain strategy, are likely to invest the cash flow available in their firm in many risky projects. Nevertheless, because of the lack of resources and time in small businesses, the investments made by managers are usually led by their intuition and direct actions rather than by a profound study and examination of all the potential consequences. Clearly, this behavior is not in line with the expectations of shareholders. More precisely, even if investors were more diversified than managers, they would favor receiving the free cash flow in form of dividends or benefiting from share repurchase programs instead of investing it in value-destroying projects. The divergence of risk preferences leads to an agency conflict between these two parties. As a remedy to this problem, shareholders tend to monitor the behavior of managers through several channels (as sketched above). Monitoring activities by shareholders aim to attenuate the managerial risk-taking behavior. Although several channels of monitoring have been discussed previously, this thesis is interested in the examination of the monitoring role of debt. By issuing debt, managers are obliged to respect the interest and principal payments or else they will face severe consequences from creditors such as the liquidation of their firm (Harris and Raviv, 1990). Hence, debt serves as a disciplining tool used by outside shareholders to reduce the risk-taking behavior of managers. Thus, the first essay examines the impact of debt on the risk-taking behavior of managers in small businesses. We set our first research question as follows:

**Is debt a disciplining mechanism for managers' risk-taking behavior in French SMEs?**

## 2.2. Informational issues

The second essay of this thesis treats another vital problem that is pervasive in the corporate world, which is the information asymmetry problem in small risky businesses.

The existence of significant asymmetrical information between SMEs and creditors toughens the creditor's assessment of small businesses' riskiness. In fact, when creditors try to collect information on an SME, they face several information issues due to

(1) the relatively high fixed cost of gathering information for a small transaction, (2) the smaller number of repeated transactions, (3) the smaller incentives for a third party, such as outside analysts and rating agencies, to collect information for sale since the market of this type of information is also smaller, and (4) the small businesses may have greater difficulties in making their claims or signals credible. One reason is that they have fewer instruments to signal and the other is their lack of significant bonding or ex-post settling up costs that could be offered. (Ang, 1991, pp.5–6).

Although SMEs considered in this thesis are publicly traded, they still suffer from information asymmetry problems with their lenders. This unbalanced framework—in which one party is more informed than the other one in the same contract—can seriously harm the SMEs' access to debt and worsen the lending terms imposed on them. Thus, the second part of the thesis highlights the information asymmetry problem in small businesses and proposes a potential remedy that enables creditors to better assess the riskiness of small borrowers.

The remainder of this subsection is composed of five segments. The first segment lays out the theory of asymmetrical information outlined by three Nobel laureates. Then, the second segment reports the role of information asymmetry in bank financing. The third segment shows that French SMEs are bank dependent, thereby indicating that information asymmetry problems with lenders are very serious. The fourth segment reviews the different lending technologies. Finally, the fifth segment suggests a tool for mitigating information asymmetry problems and reveals our second specific research question.

### 2.2.1. The theory of asymmetrical information

The theory of asymmetrical information arose in the 1970s. Akerlof (1970), Spence (1973), and Stiglitz (1975) developed this theory in the economic world. Many years later, the Royal

Swedish Academy of Sciences awarded, on 10 October 2001, the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel to the three laureates for “their analyses of markets with asymmetric information” (NobelPrize, 2020).

In his article “The Market for ‘lemons’” Akerlof (1970) was the first author to introduce the concept of asymmetrical information by combining the notions of uncertainty and quality in markets. More particularly, the author considered the market of used automobiles, in which he categorized cars into two types according to their quality: good and bad cars (or lemons). The owner of a car generally has a clear idea about its quality—whether it is a good car or a lemon—while buyers on the secondary market (or market of used cars) are not able to identify the car’s type. In this particular situation,

an asymmetry in available information has developed: for the sellers now have more knowledge about the quality of a car than the buyers. But good cars and bad cars must still sell at the same price—since it is impossible for a buyer to tell the difference between a good car and a bad car. (Akerlof, 1970, p.489)

Clearly, sellers of lemons are satisfied with the average market price, which is higher than their expectations, while sellers of good cars are not. The author highlighted this problem by stating, “The owner of a good machine must be locked in. Not only is it true that he cannot receive the true value of his car, but he cannot even obtain the expected value of a new car” (Akerlof, 1970, p.489). In this situation, low quality products drive high quality products out of the market. In other words, since sellers will not receive more than the average price on the market even if they sell good-quality products, they have incentives to only sell low-quality products. This could create a serious problem in which buyers are offered solely low-quality products; this is the phenomenon of *adverse selection*. To sum up, the existence of asymmetrical information in a market—one party possesses more information about the product than the other party of the same transaction—creates an imbalance in the market. This could lead in worse cases to the collapse of the market itself.

Later, Spence (1973) examined the information asymmetry between the employer and the candidates on the labor market and proposed a remedy to be implemented by the informed party (i.e., the potential employee). The author compared the hiring of an employee to the purchase of a lottery because of the uncertainty that characterizes this decision. In fact, since the real detection of employees’ skills takes a significant time to be realized, the employers (at the time of hiring) do not have valuable information regarding the applicant’s productive

capabilities. Rather, they base their decisions about hiring and determinations of wage on their conditional probabilistic beliefs (gained from their past experience on the market) of the applicants' observable characteristics. The author segregated these characteristics into two parts as follows: "I shall refer to observable, unalterable attributes as indices, reserving the term signals for those observable characteristics attached to the individual that are subject to manipulation by him" (p.357). Unlike indices that cannot be changed, signals can be adjusted by incurring costs in money and time—the so-called signaling costs. Thus, the potential employees, wanting to inform the employers about their quality, choose signals that enable them to maximize their wage considering the signaling costs. It is important to note that signaling helps the employer (or the uninformed party) to distinguish one applicant from another. Therefore, one vital assumption to set is that an applicant with low productive capabilities (low quality) incurs high signaling costs, which induce him to forgo the use of signals. As a result, signaling mitigates information asymmetry problems, which enables employers to distinguish applicants with high productive capabilities from those with low productive capabilities. Thus, a signaling equilibrium is defined as "a set of employer beliefs that generate offered wage schedules, applicant signaling decisions, hiring, and ultimately new market data over time that are consistent with the initial beliefs" (p.360).

Joseph Stiglitz has largely contributed to the theory of asymmetrical information through several co-authored and single-authored studies. Among other papers, his co-authored article with Rothschild in 1976 has received much attention from researchers and practitioners. In their paper, the authors have studied the asymmetrical information between buyers and sellers of contracts on the insurance market (i.e., individuals and insurance companies). Thus, they stated that individuals purchase insurance contracts only when their utility conditional on the probability of accident, the premium paid, and the return received in case of an accident is higher with the purchase of insurance than without it (since they have the possibility of not buying insurance). Meanwhile, insurance companies are interested by the expected profits and thus propose contracts that maximize their gains. Nevertheless, the fact that insurance companies do not possess information regarding the probability of accident for the buyers creates asymmetries of information between these two parties. Thus, the ideal remedy for this problem is to force individuals to buy insurance contracts that are mostly suitable for them with respect to their probability of accident. This mechanism is called self-selection (or screening). The authors defined the equilibrium in a competitive insurance market as

a set of contracts such that, when customers choose contracts to maximize expected utility, (i) no contract in the equilibrium set makes negative expected profits; and (ii) there is no contract outside the equilibrium set that, if offered, will make a nonnegative profit. (p.633)

In fact, when individuals have the same probability of accident (i.e., symmetric information), the participants acquire the same insurance contract (i.e., “pooling equilibria”). Nevertheless, when individuals have different probabilities of accident (i.e., high-risk and low-risk individuals), the authors show that “pooling equilibria” are not possible, and rather “separating equilibria” are more adequate to the situation. The solution would be that each type of customer would purchase the insurance contract that suits his or her probability of accident and that the insurance company would want him or her to choose. By doing so, information asymmetries between buyers and sellers in the insurance market are mitigated.

### 2.2.2. Information asymmetries and bank financing

The above theories have examined information asymmetry problems in specific markets such as the insurance and labor markets. Nevertheless, they have also asserted that imperfect information conquers other markets, such as the private credit market, in which this thesis is interested. In the private debt market, the lending process requires a gathering of valuable information on the potential borrower. Generally, lenders are only willing to accept a loan application if they are certain of the borrower’s capacity to meet the interest and the principal payments. This is only possible when the borrowers reveal all the information regarding their financial situation, which enables the lender to assess their riskiness and future profitability. This framework of perfect information is less likely to happen in an imperfect world. Thus, due to the imperfect information in the credit market—represented by an informed borrower and an uninformed lender—many problems arise, such as the adverse selection and the moral hazard problems. The adverse selection problem is the result of a market with borrowers having different probabilities of debt repayment. Since lenders cannot distinguish borrowers capable of repaying the debt from those having high credit risk, they propose average lending conditions to both lenders without regard to their quality. As high-quality borrowers consider that these conditions are not favorable for them, lenders tend to be trapped with solely low-quality borrowers. Clearly, this is not in their interest. On the other hand, the moral hazard problem occurs when borrowers change their behavior after acquiring the debt they needed.

This is represented by borrowers engaging in higher-risk projects than they were supposed to, which is not in the interest of lenders, as the probability of loan repayment decreases.

A substantial body of financial and accounting literature examines the influence of asymmetrical information on the firm's access to financing. They have found that significant information asymmetries between lenders and small businesses result in higher transaction costs and important risk premiums, which could disrupt their desire to grow and reach their optimal size (Beck and Demirguc-Kunt, 2006). Others show that banks are more likely to ration credit to firms rather than harden their contract terms (i.e., increase the interest rate or the requirement of collateral) (Stiglitz and Weiss, 1981). Clearly, these strict situations worsen the small businesses' access to financing. Interestingly, Beck & Demirguc-Kunt (2006) reported that, according to the World Business Environment Survey,<sup>26</sup> “the probability that a small firm lists financing as a major obstacle (as opposed to moderate, minor, or no obstacle) is 39% compared to 36% for medium-size firms and 32% for large firms” (p.2936).

### 2.2.3. Bank dependency

Despite the severe conditions that SMEs could face due to the information asymmetry problems with lenders, they remain highly bank dependent. In fact, small businesses prefer to use bank financing in order to cover their financing needs rather than other sources of finance.

As table 2 shows, out of the EUR 1,001 billion of loans allocated to French firms (including “*sociétés civiles immobilières*”), EUR 420.5 billion were granted to French SMEs in 2018. This accounts for 42% of the total business loans. Interestingly, the amount of loans granted to French SMEs represents 88% of the available loans for these firms, against 51% for large firms and 78% for intermediate-sized firms. This indicates that French SMEs use the majority of available funds at their disposal.

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<sup>26</sup> This survey includes data on 10,000 firms (of which 80% are small and medium sized firms) in 80 countries in 1999 and 2000.

Table 2. Outstanding credit granted to resident businesses in 2018.

	Nombre d'entreprises	encours en milliards d'euros, évolution en %			
		Crédits mobilisés		Crédits mobilisés et mobilisables	
		Encours	Évolution déc. 2018/ déc. 2017	Encours	Évolution déc. 2018/ déc. 2017
PME	1 105 494	420,5	6,2	478,9	6,7
Entreprises de taille intermédiaire (ETI)	6 223	274,7	3,9	351,7	3,5
Grandes entreprises (GE)	276	135,6	2,9	268,0	1,4
<b>Ensemble hors divers SCI</b>	<b>1 111 993</b>	<b>830,8</b>	<b>4,9</b>	<b>1 098,6</b>	<b>4,3</b>
Divers SCI	582 288	170,5	8,6	182,9	8,6
<b>Ensemble</b>	<b>1 694 281</b>	<b>1 001,3</b>	<b>5,5</b>	<b>1 281,5</b>	<b>4,9</b>

Field: France, including sole proprietorships. Companies that have contracted out a loan of more than 25,000 euros with a French credit institution.

Source: reprinted from “Les entreprises de France”, by INSEE, Edition 2019, p.147.

In addition, the annual growth rate of loans granted to SMEs has been consistently positive over the past seven years.<sup>27</sup> As shown in figure 6, the outstanding amount of SME loans increased by approximately 5% from 2017 to 2018, and by approximately 1% from 2018 to 2019.

Figure 6. SMEs' loans drawn by annual growth rate (in %)

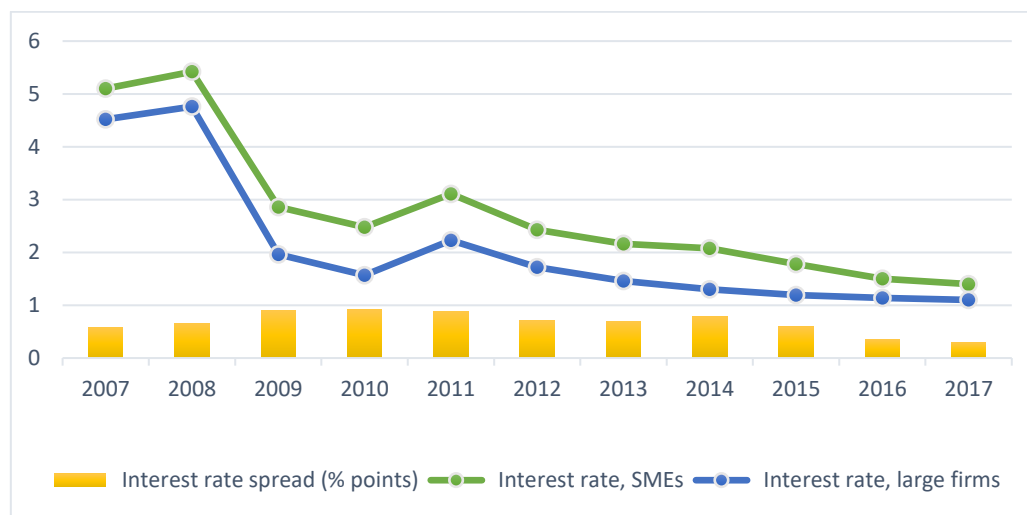


Source: statistics from Banque de France.

<sup>27</sup> The year 2013 is the first year with available data on [www.webstat.banque-france.fr](http://www.webstat.banque-france.fr).

However, we notice that credit conditions for SMEs' lending have not been as advantageous as for larger companies. Indeed, the interest rate differential between SME and large business financing was positive from 2007 to 2017. As shown in figure 7, this spread peaked between 2009 and 2011 (with an average of +0.9%) and narrowed to a minimum in 2017 (with a value of +0.3%). Although the interest rate differential has shrunk recently, SMEs continue to pay their debts more expensively than large companies do.

Figure 7. Interest rates on loans by firm size in France (in %)



Source: statistics from dataset: Financing SMEs and Entrepreneurs: An OECD Scoreboard, by OECD.

The differential of debt cost between SMEs and large firms reflects the risk premium supported by the small structures. We believe that this divergence in the lending conditions between small and large companies is a result of several problems, of which we focus on the significant information asymmetries that exist between small businesses and creditors.

#### 2.2.4. Lending technologies

To mitigate information asymmetry problems between SMEs and lenders, several lending technologies have been implemented for small businesses. In their article, Berger & Udell (2006) defined a lending technology as “a unique combination of primary information source,

screening and underwriting policies/procedures, loan contract structure, and monitoring strategies/mechanisms” (p.2946).

For a long time now, the technique of relationship lending has been the most recognized technique for addressing information asymmetry problems between SMEs and lenders and facilitating SMEs’ access to lending (Beck and Demirguc-Kunt, 2006). With this technique, lenders gather “soft information” regarding the borrower’s financial situation through constant contacts with the borrower, the borrower’s clients, suppliers, etc. (Berger, Klapper, & Udell, 2001). This technique benefits SMEs with loan advantages through the alleviation of informational problems. More precisely, a longer banking relationship with lenders is reflected in lower loan prices (or interest rates) and pledging of collateral (Berger & Udell, 1995). Previous literature has reserved the use of relationship lending to small local banks because of the interactive proximity that it requires, assuming that large banks are not interested in lending to small opaque businesses (Beck and Demirguc-Kunt, 2006).

Nevertheless, the emergence of other lending technologies based on “hard information” have now enabled larger financial institutions to participate in lending to small businesses (Beck, Demirgüç-Kunt and Maksimovic, 2008). In their article, Berger and Udell (2006) have listed and specified alternative sources of financing mostly suitable for financial institutions’ lending to SMEs, as follows: financial statement lending (based on the strength of a borrower’s financial statements); credit scoring (based on a score obtained from hard information on the SME’s owner and the firm); asset-based lending (based on the use of the firm’s account receivables and inventory as collateral); factoring (based on the purchase of the account receivables by a lender); fixed-assets lending (based on the pledging of fixed assets as collateral); and leasing (based on the purchase of a fixed asset by a lender followed by its rental to the borrower). The last five lending technologies require a gathering of hard information regarding the value of the asset in question.

In addition, Berger & Udell (2006) specified an important indicator of distinction between lending technologies used for SMEs, which is the type of potential borrower. According to the authors, when the borrower is an informationally transparent structure, then the most suitable lending technology used by banks is financial statement lending. On the other hand, the other lending technologies are more appropriate for lending to opaque privately held small businesses.

Since the SMEs considered in this thesis are publicly held, they are informationally transparent. Therefore, following Berger and Udell (2006), the most appropriate lending technology for the firms in our sample is the “financial statement lending” technology. Under this technique, lenders analyze the financial statements of borrowers in order to forecast their capacity of repayment and assess their riskiness.

#### 2.2.5. Research question II

On the basis of the theories outlined above, we believe that the divergence in the lending access and terms between small and large companies result from the significant information asymmetries that exist between small businesses and lenders (among other issues). The information asymmetry problems are worsened when the borrower is a risk-taking structure. More precisely, due to the risk-taking behavior of SMEs, banks do not have clear visibility on the firms’ future profitability and riskiness. As a result, they tend to harden the SMEs’ access to financing. Thus, the second essay of this thesis examines a remedy for the asymmetrical information through financial statement lending. Since banks use the financial statements of the potential borrower under this lending technique, the quality of information of the financial reporting is vital.

As García-Teruel, Martínez-Solano, and Sánchez-Ballesta (2014) stated:

the higher the quality of this information, i.e., the more accurate the precision of earnings to capture future cash flows, the lower the information risk of the firm, because the lender can better estimate the future cash flows of the firm with which the loans will be repaid. (p.187)

Thus, the second essay of this thesis investigates whether the financial reporting quality (FRQ) achieved by SMEs mitigates the informational asymmetries with lenders. Therefore, we examine the impact of FRQ on the firms’ access to bank financing. Hence, we propose the second research question, as follows:

**Does the alleviation of information asymmetry problems through FRQ enhance French SMEs’ access to debt financing?**

## 2.3. Failure risk compensation

The third essay of this thesis discusses another issue faced by small businesses, which is failure risk compensation.

The risk of failure is more prevalent among small businesses due to the unique features of these small entities. As Ang (1991) pointed out, “the probability of failure could increase with the risk taking entrepreneur, incomplete management team, limited alternative sources of financing, lack of alternative measures of value due to the absence of traded securities, agency conflicts and succession problems” (p .6). Among these reasons (and many others), this thesis considers that the probability of failure increases with the risk-taking behavior of managers. This situation raises several issues regarding the firm’s relationship with its stakeholders, notably its employees.

In fact, the increase in the probability of failure due to the risk-taking behavior of managers is not in line with the interests of the firms’ employees for the following reason: the fact that the employees are the least diversified and the most vulnerable stakeholders of the firm suggests that a higher probability of failure significantly threatens the existence of their jobs and causes them many other disadvantages. Thus, the third essay of the thesis focuses on the consequences of managerial risk-taking behavior from the employees’ perspective given the increased probability of failure and suggests a failure risk compensation for employees.

The remainder of this subsection is divided into five segments. The first segment expounds the causes of small business failure, among which we are interested in managerial risk-taking behavior. The second segment builds on the previous literature to provide a definition of the concept of “small business failure.” The third segment discusses the different legal failures of firms in France and the employees’ rights. The fourth segment presents statistics on small business failure and threatened jobs for employees in France. Finally, the fifth segment proposes our third specific research question.

### 2.3.1. One of the causes of small business failure: managerial risk-taking behavior

Since small businesses have been affected by high rates of failure, both the academic and industrial worlds have been concerned with detecting and understanding the origins of this

unique phenomenon (Ropega, 2011). Researchers have searched for possible internal and external causes that trigger a high probability of failure among these small structures.

On the one hand, Peterson, Kozmetsky and Ridgway (1983) found that major external causes or uncontrollable factors of small business failure are related to “high interest rates, federal regulations, taxes, the recession, and the economy in general collectively” (p.17).

On the other hand, several authors were able to detect specific internal causes that are more likely to explain the high probability of failure among small businesses (Mazzarol and Reboud, 2017). For instance, Carter and Van Auken (2006) found that bankrupt SMEs are older, are more likely to belong to the retail industry, are characterized by less owner-manager sophistication, face a lack of access to capital (debt), and face more difficulties regarding the business climate. Other researchers highlighted certain managerial characteristics that influence an SME’s probability of failure. For instance, Cultrera (2016) stated that a lack of management skills, of an anticipatory planning, of coordination between positions in a company, and of strategies, and a dependence on customers and suppliers are among several other managerial characteristics leading to a higher probability of bankruptcy. Meanwhile, Mazzarol and Reboud (2017) stated that since managers tend to rely on “chance” and “intuition” in their decision-making process rather than on planning and strategic thinking, they are more likely to face a high-risk situation that increases their firms’ probability of bankruptcy.

Thus, in line with the latter findings, this thesis acknowledges that small business failure emerges from many external and internal causes, yet it focuses on one of the major internal causes, which is managers’ risk-taking behavior. The fact that small business managers are prone to taking risks can significantly influence the probability of their businesses’ failure. More precisely, when managers engage in high-risk activities, they face two extreme consequences. On the one hand, the outcome of their project may be consistent with their wish to succeed, leaving them with good returns. On the other hand, if the project does not achieve the managers’ expected target, this may turn into an undesirable situation, leaving them with serious damages. Thus, the manager’s risk-taking behavior increases the firm’s probability of failure.

### 2.3.2. Definition of small business failure

Before proceeding with the analysis, it is important to provide a clear and accurate definition of small business failure. Although this concept has been widely referred to in the previous literature, nevertheless, there is no consensus regarding a single definition or interpretation of business failure (Berryman, 1983). In fact, Haswell and Holmes (1989) explained the mixed results of firm failures in previous studies as follows: “each failure rate estimate differs with respect to the definition of ‘failure’ employed, the source and extent of the data used, the geographical location and form of business operations represented” (p.69). This section is dedicated to reviewing the definitions provided by the literature and highlighting the definition employed in this thesis.

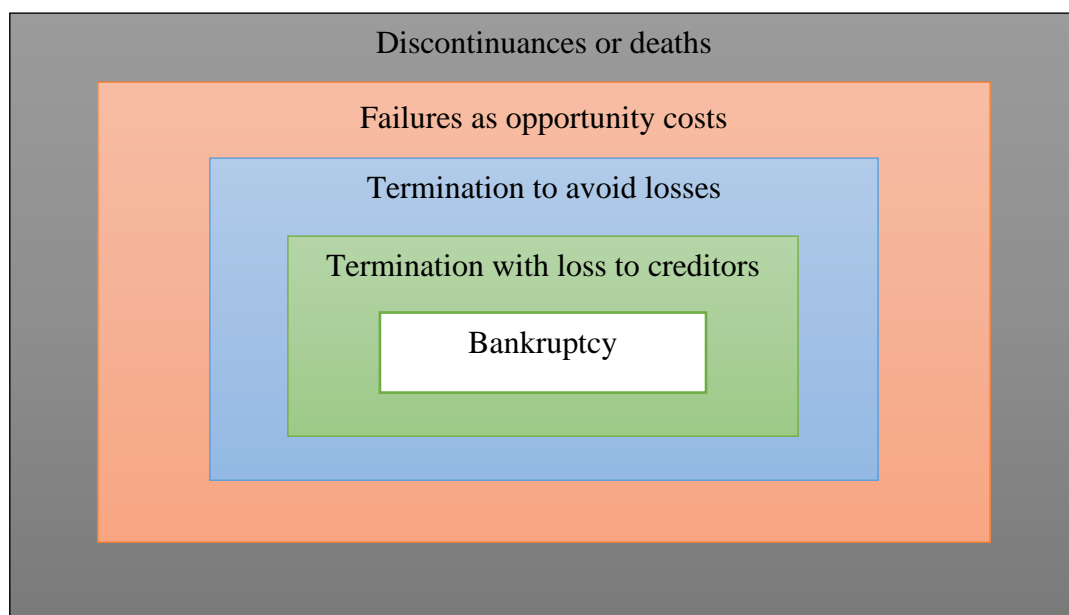
In their article, Watson and Everett (1993) laid out the four most cited definitions of small business failure in the literature. The first definition of firm failure refers to the *discontinuance* of a firm, also known as death or termination, for any reason. Clearly, discontinuance represents the broadest aspect of firm failure, as it encompasses internal and external reasons such as retirement or illness, or even the sale of the business (Cochran, 1981). In this framework, discontinuance can include a manager-owner of a small business simply wishing to cease trading although his or her firm does not suffer from any financial problem (Mazzarol and Reboud, 2017).

The second definition of small business failure was provided by Dun and Bradstreet in 1979. As cited in Watson and Everett (1993), they have defined failure as “businesses that go into bankruptcy or cease operations with resulting losses to creditors” (p.15). This type of failure is one of the narrowest definitions, as it only includes bankruptcies and voluntary withdrawals but not many other aspects of firm failure (Watson and Everett, 1993). For instance, under this definition, even if a firm does not generate sufficient resources to its investors and owners, it is not considered as failing since it is not bankrupt (Everett and Watson, 1998).

The third definition of small business failure was provided by Ulmer and Nielsen (1974). As cited in Cochran (1981), it includes “firms that were disposed of (sold or liquidated) with losses or to avoid losses” (p.11). Under this definition, losses “include the owner’s capital and therefore a business could be regarded as having failed even though there may have been no loss to creditors” (Watson and Everett, 1993, p.38).

In his article, Cochran (1981) established a detailed comparison of the above failure definitions, ranging from the narrowest definition of small business failure (i.e., formal bankruptcy) to the broadest one (i.e., discontinuances or death) (see figure 8). On the grounds of these comparisons, the author concluded that the most fitting and simplest definition of failure would be the “inability to ‘make a go of it,’ whether losses entail one’s own capital or someone else’s, or indeed, any capital” (p.52). Under this definition, failure includes all the companies that are not capable of meeting the expected return (Watson and Everett, 1993).

Figure 8. Definition of business failure.



Source: reprinted from “Small business mortality rates: a review of literature”, by Cochran, 1981, p.53.

On another hand, the concept of failure has been treated from different angles: economic, financial, and legal (Casta and Zerbib, 1979; Gresse, 1994; Morris, 1997). These three perspectives are complementary in the sense that a firm facing financial or economic difficulties should resolve these issues and restore its situation; if not, these issues tend to aggravate the situation of the firm and are most likely to lead it into a legal form of failure (Cultrera, 2016). Failure is defined economically as a firm not being able to cover its expenses with its income (i.e., deterioration of the firm’s added value), while it is defined financially as a firm not capable of meeting its engagements (Kherrazi and Ahsina, 2016). Nevertheless, there

is a major inconvenience regarding the adoption of these two broad definitions as indicated in Kherrazi and Ahsina (2016, p.54): “the major disadvantage of these two definitions lies in their broad nature, which does not make it possible to establish boundaries between failing and operating companies”<sup>28</sup> (English translation). Thus, for the sake of simplicity and clarity, in this thesis we will consider legal bankruptcy proceedings to represent the best proxy for small business failure.

According to the Institut National de la Statistique et des Études Économiques (INSEE),

a business is in a situation of failure or filing for bankruptcy from the moment when a judicial settlement procedure is opened against it. This procedure occurs when a legal unit has suspended payments, that is, when it is no longer capable of covering its current liabilities with its available assets. (INSEE, 2019)

### 2.3.3. Legal failure and employees’ rights

The French constitution specifies a formal procedure for companies in financial difficulties. Similarly, it determines the rights of their employees in these cases.

First, book VI of the *Code de Commerce*, entitled “Des difficultés des entreprises” of the “loi n° 2005-845 du 26 juillet 2005 de sauvegarde des entreprises” (J.O., 26 Juillet 2005) specifies three types of collective insolvency proceedings (“*procédure collective*”), as follows:

- ❖ Safeguard proceedings (“*sauvegarde*”):<sup>29</sup> This procedure aims to reorganize the company—at an early stage of the financial difficulties—in order to maintain the firm’s activity, its employment, and the discharge of its liabilities (Article L620-1 of the Commercial Code).
- ❖ Judicial settlement proceedings (“*redressement judiciaire*”): This procedure aims to enable the company to continue operating, to maintain its employment, and to discharge its liabilities (Article L631-1 of the Commercial Code).

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<sup>28</sup> Original passage in French: “l’inconvénient majeur de ces deux acceptions réside dans leur caractère large qui ne permet d’établir des frontières entre les entreprises en défaillance et celles en activité” (Kherrazi and Ahsina, 2016, p.54).

<sup>29</sup> Early-stage proceeding that concern companies experiencing financial difficulties without a suspension of payments.

- ❖ Liquidation proceedings (“*liquidation judiciaire*”): This procedure aims to terminate the company’s activity and organize a global or partial sale of the debtor’s rights and properties (Article L640-1 of the Commercial Code).

Second, the preservation of employment is one of the major considerations in all three procedures. For instance, the draft plan (“*projet de plan*”) required for the safeguard and judicial settlement proceedings<sup>30</sup> does not only determine the prospects for the debtor’s recovery, but also focuses on the prospects for employment and economic dismissals of the concerned employees. This is stated in the Article L626-2 of the Commercial Code as follows:

This project sets out and justifies the level and prospects of employment and the social conditions considered for the pursuit of activity. When the draft provides for economic dismissals, it recalls the measures already taken and defines the actions to be undertaken in order to facilitate the redeployment and compensation of employees whose jobs are threatened.<sup>31</sup> [English translation]

Interestingly, safeguard, judicial settlement, and liquidation procedures grant employees priority and precedence over all other claims. For example, Article L143-10 of the Labor Code stipulates that compensation due to employees during the last sixty days of the opening of proceedings must be paid to employees regardless of the existence of any other preferential claim.

Furthermore, employees benefit from the wage guarantee insurance (“*assurance de garantie des salaires*”) that ensures the payment of their claims. This insurance, financed by the employer’s contributions, covers the employees’ claims at the beginning and during the safeguard, judicial settlement, and liquidation proceedings. It ensures the payment of the employees’ remunerations, commissions, bonuses, and indemnities under several conditions.<sup>32</sup>

Although these vital contributions aim to preserve the well-being of employees in the event of legal bankruptcy (i.e., three proceedings), this issue remains extremely important for

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<sup>30</sup> As Article L626-2 of the Commercial code states: “Le projet de plan détermine les perspectives de redressement en fonction des possibilités et des modalités d’activités, de l’état du marché et des moyens de financement disponibles.” English translation: “The draft plan determines the prospects for recovery based on the opportunities and terms of activities, the situation of the market, and the available means of financing.”

<sup>31</sup> Original passage in French: “Ce projet expose et justifie le niveau et les perspectives d’emploi ainsi que les conditions sociales envisagées pour la poursuite d’activité. Lorsque le projet prévoit des licenciements pour motif économique, il rappelle les mesures déjà intervenues et définit les actions à entreprendre en vue de faciliter le reclassement et l’indemnisation des salariés dont l’emploi est menacé” (Article L626-2 of the Commercial Code).

<sup>32</sup> For more details: <https://www.service-public.fr/particuliers/vosdroits/F18075>.

employees as it affects them in the short and long run. In fact, Di Tella, Macculloch, and Oswald (2001) found that unemployment is very costly for individuals, and has a significant impact on their welfare.<sup>33</sup> Other studies showed that the event of bankruptcy induces the loss of employees' non-pecuniary worker advantages (Verwijmeren and Derwall, 2010), as well as short- and long-term income losses (Jacobson, LaLonde, and Sullivan, 1993; Graham et al., 2019).

#### 2.3.4. Statistics on SME failure and threatened jobs

Over the last five years, the number of company failures in France has fallen. As shown in table 3, French companies reported 63,422 business failures in 2015, compared to 54,627 business failures in 2018. Meanwhile, figure 9 shows that the number of business creations increased between 2015 and 2018.

Table 3. Number of firm failure by type of proceeding

<b>Nombre de défaillances d'entreprises par type de procédure par année et par trimestre</b> (Les données 2018 et 2019 sont arrêtées au 10 janvier de l'année suivante)									
	2015	2016	2017	2018	2019	Evolution 2019/2018	2018 T4	2019 T4	Evolution T4 2019/2018
<b>Sauvegardes</b>	1543	1301	1190	1054	971	-7,9%	290	281	-3,1%
<b>Redressements Judiciaires ou Liquidations judiciaires directes</b>	61 879	57 297	54 158	53 573	51 031	-4,7%	14 525	13 233	-8,9%
dont RJ	18 494	17 768	16 532	16 359	15 875	-3,0%	4 531	4 232	-6,6%
dont LJ	43 385	39 529	37 626	37 214	35 156	-5,5%	9 994	9 001	-9,9%
<b>Total France</b>	<b>63 422</b>	<b>58 598</b>	<b>55 348</b>	<b>54 627</b>	<b>52 002</b>	<b>-4,8%</b>	<b>14 815</b>	<b>13 514</b>	<b>-8,8%</b>
<b>Dont PME &gt; 50 salariés</b>	406	344	295	305	347	13,8%	89	98	10,1%
<b>Ensemble Emplois menacés</b>	235 000	197 200	167 200	171 000	173 800	1,6%	48 600	44 000	-9,5%

Source: reprinted from “Défaillances d'entreprises en France T4 et bilan 2019”, by Altares, 2020, p.2.

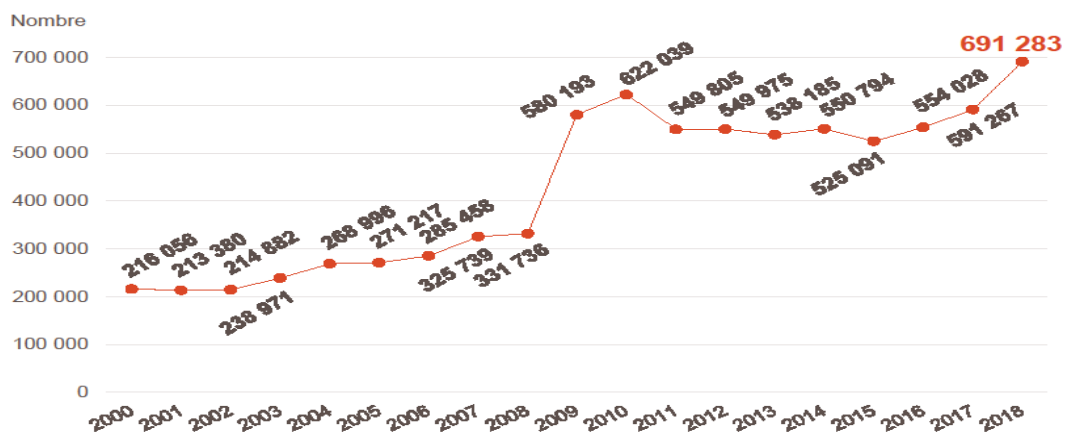
<sup>33</sup> The authors concluded that “people would trade off a 1-percentage-point increase in the unemployment rate for a 1.7-percentage-point increase in the inflation rate. Hence, according to these findings, the famous ‘misery index’  $W(IT + U)$  underweights the unhappiness caused by joblessness” (Di Tella, Macculloch, and Oswald, 2001, p. 341).

More recently, French companies declared 52,002 firm failures in 2019 (cf. table 3). Of these, 1.9% filed a safeguard proceeding, 30.5% filed a judicial settlement proceeding, and 67.6% filed a liquidation proceeding.

Despite the important reduction of 4.8% in the growth rate of firm failure from 2018 to 2019, the growth rate of threatened jobs has increased by 1.6% (Altares, 2020). In the report provided by Altares (2020), the increase in the number of threatened jobs is explained by the increase of firm failure among SMEs. In fact, small businesses with more than 50 employees have reported 347 failures in 2019 compared to 305 in 2018, which implies an increase of 13.8%. Their report also indicated that “the difficulties are particularly pronounced for companies with 50 to 99 employees, whose insolvencies have increased by 20% in 2019 and by 33% in the last quarter alone”<sup>34</sup> (Altares, 2020, p.2) (English translation). Moreover, 39,000 business bankruptcies are attributed to small businesses with fewer than three employees, representing 75% of the total firm bankruptcies in France.

As a result, the 173,800 threatened jobs reported in 2019 are mainly due to the bankruptcy of small businesses. Therefore, small business failures place a heavy burden on their employees.

Figure 9. Evolution of firm creation



Field: France, non-agricultural market services.

Source: reprinted from “ La création d’entreprises en France en 2018”, by Bpifrance, 2019, p.1.

<sup>34</sup> Original passage in French: “Les difficultés sont plus particulièrement prononcées sur les sociétés de 50 à 99 salariés dont les défaillances ont crû de 20 % en 2019 et de 33 % sur le seul dernier trimestre” (Altares, 2020, p.2).

### 2.3.5. Research question III

The risk of failure that prevails in small businesses is due to several external and internal reasons. This thesis stipulates that the risk-taking behavior of managers in small businesses is one of the major internal causes of small business failure. In fact, when managers engage in risk-taking activities, they increase their firms' probability of bankruptcy.

This situation is not in line with the interests of the firms' employees. Because employees are some of the most undiversified and vulnerable stakeholders of the firm, the event of bankruptcy directly exposes them to the risk of losing their jobs and many other advantages. Clearly, this harms the well-being of employees in the short and long run. Thus, previous studies suggested that firms exposed to a high probability of bankruptcy should compensate their employees for the expected losses they will incur in the event of bankruptcy (Titman, 1984; Berk, Stanton, and Zechner, 2010). In line with these studies, the third essay of this thesis examines whether managers engaging in risk-taking activities do compensate their employees for the higher probability of bankruptcy.

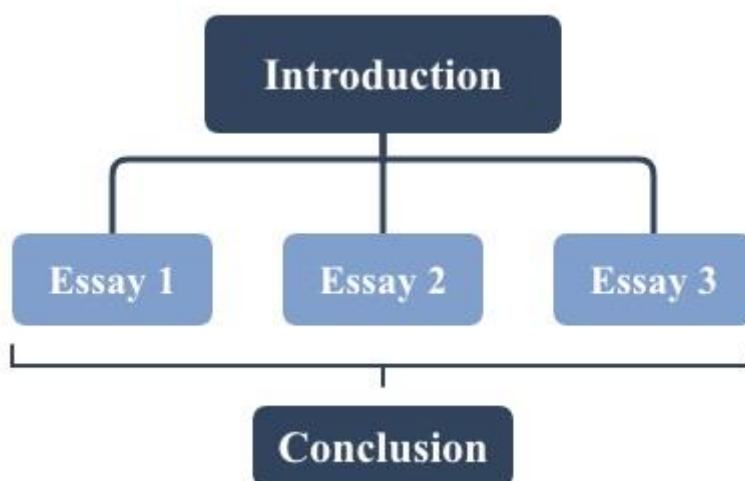
Hence, we propose our third specific research question:

**What is the impact of managerial risk-taking behavior on employees' wages?**

### 3. Structure of the thesis

The remainder of the thesis is organized as follows. Each of the three issues regarding the risk-taking behavior of managers outlined above will be discussed separately in one essay, yielding three distinct essays. Each of these essays is composed of five parts: introduction, theoretical framework, description of the sample and the methodology, empirical results, and conclusion. The first essay of the thesis is entitled “Leverage financing and the risk-taking behavior of small business managers: What happened after the crisis,” in which we examine the impact of leverage on the risk-taking behavior of managers. The second essay of the thesis is entitled “The impact of financial reporting quality on firms’ access to leverage financing: The case of French listed SMEs,” in which we investigate the impact of the financial statements’ quality on the small businesses’ level of debt. The third essay of the thesis is entitled “The risk-taking behavior of managers and employees’ pay in French small businesses,” in which we explore the impact of managerial risk-taking behavior on the level of employees’ wages in small businesses. Finally, the last section of the thesis is reserved for the conclusion of the overall study. This allows us to synthesize the research findings, to highlight their importance to the academic and industrial worlds, and to provide leads for future research on this subject.

Figure 10. Structure of the thesis



Source: the author.

## 4. Sample overview

In the three essays, we have chosen to run the analysis on a unique sample. In fact, the choice of employing the same sample for the three essays is motivated by several reasons. First of all, since the three essays discuss (directly or indirectly) the same topic regarding the risk-taking behavior of managers in SMEs, a single sample ensures the maximum of consistency between the different essays. In addition, the employment of the same sample eliminates any effect induced by the modification of the sample that could influence the overall interpretation of our findings. Third, it is important to note that the sample period gives us the opportunity to highlight the impact of the financial crisis of 2008 in the findings of the thesis. This choice is justified by technical and feasibility reasons. More precisely, since the study takes place in the context of a three-year thesis project, it faces time and quality constraints, which limit the possibility of enlarging the sample diversification.

It is necessary to establish an overview of our sample before proceeding with the essays.

To address all the problems in the different essays, this thesis required a reliable construction of the unique sample and an accurate gathering of financial information. We have referred to the Amadeus database to achieve our major objectives. This database, published by Bureau van Dijk, comprises economic and financial information on around 21 million companies in Europe. This enabled us to construct our sample and to collect all the information regarding the balance sheets, profit and loss accounts, standard ratios, and other valuable financial information of each firm in the sample.

Since our thesis discusses the managerial risk-taking behavior in the context of small businesses, the sample employed consists exclusively of non-financial French small and medium-sized enterprises. In order to construct the sample, we first followed the definition of the European Commission of 6 May 2003. As sketched above, the category of SMEs includes all companies that have fewer than 250 employees and an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total lower than EUR 43 million. Next, we excluded all financial institutions represented by banks, securities, and insurance companies as well as holdings (64–66, 69, 70, and 99 NACE Rev. 2 codes) because of their different business nature.

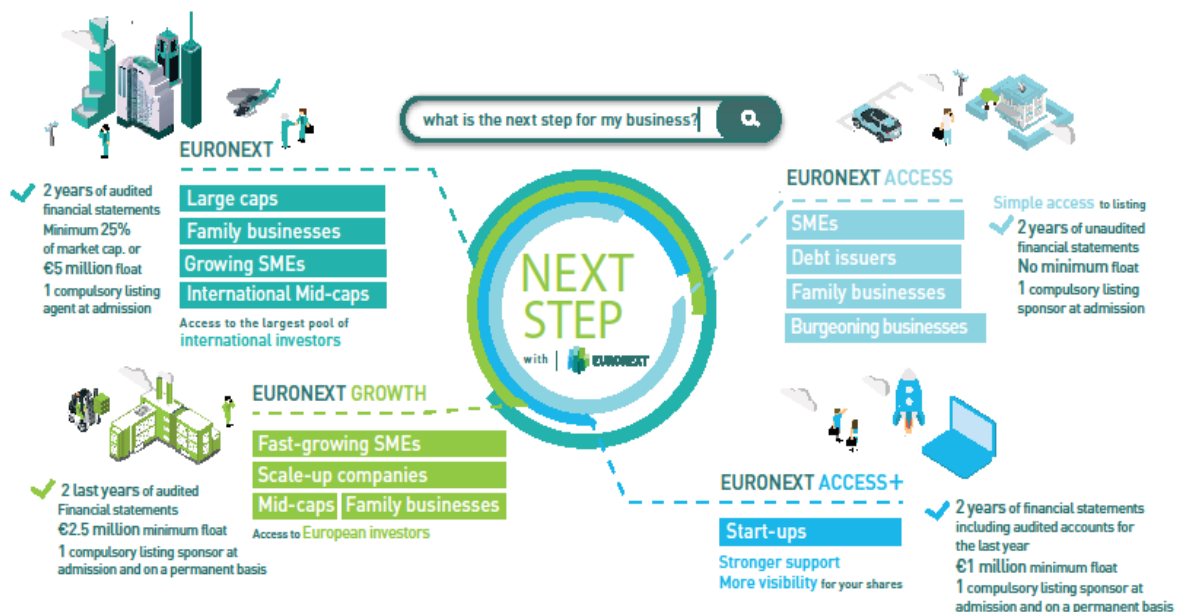
In order to ensure the availability of financial data for all the firms in the sample and to guarantee a high level of information accuracy, we have chosen to consider exclusively

publicly held enterprises listed on the Euronext Paris stock exchange. This choice of stock exchange was motivated by several reasons.

First, Euronext is characterized as the leading pan-European stock market with the largest market capitalization in Europe. As of December 2019, the market capitalization of Euronext reached USD 4,701 billion against USD 4,182 billion for the London stock exchange. (WFE, 2020).

Second, this stock market has shown a growing interest in SMEs. Indeed, it has addressed the obstacles faced by listed SMEs by responding to their needs. In addition to its regulated markets,<sup>35</sup> Euronext has implemented junior stock markets specially tailored to SMEs.<sup>36</sup> As shown in figure 11, SMEs listed on Euronext Growth and Euronext Access markets benefit from more flexible initial and ongoing requirements than those listed on the main regulated markets.

Figure 11. Euronext markets



Source: reprinted from “Registration document”, by Euronext, 2017, p.24.

<sup>35</sup> The regulated markets are divided into three compartments: compartment A includes companies with a market capitalization higher than EUR 1 billion; compartment B includes companies with a market capitalization between EUR 150 million and EUR 1 billion; compartment C includes companies with a market capitalization lower than EUR 150 million.

<sup>36</sup> It is important to note that some SMEs are listed on Euronext main markets. This thesis does not differentiate between SMEs according to their listing choice.

Third, Euronext Growth has been officially registered as an EU “SME Growth Market” under the MiFID II on 29 October 2019. This designation enables SMEs listed on this market to benefit from the following:

- The use of lighter prospectuses at both initial and subsequent admissions (the EU Growth prospectus and the simplified prospectus under the simplified disclosure regime for secondary issuance), which will reduce workloads and facilitate issuers’ capacity to raise funds on capital markets;
- exemptions from specific obligations under the Market Abuse Regime: issuers listed on an *SME Growth Market* benefit from a lighter insider list disclosure regime. (Euronext, 2019, p.1)

Under all the above initiatives and measures, small businesses’ access to stock markets has been enhanced. Thus, it is interesting to focus on the Euronext stock exchange when conducting our research on listed SMEs in France.

The duration of the sample covers the period 2008–2016,<sup>37</sup> which represents eight consecutive years. Obviously, this eight-year period includes the financial crisis year (i.e., 2008), which allows us to separate the year of the financial crisis in each of our subsequent studies. This gives us the opportunity to examine in depth the impact of the crisis through a comparison between the year of the crisis and the following years. Thus, in each study, our sample is divided into two subsamples: the year of the financial crisis (i.e., 2008) and the post-crisis years (i.e., from 2009 to 2016).

Lastly, the sample considered in this thesis is composed of 1,403 firm-observations<sup>38</sup> of French SMEs listed on the Euronext Paris stock exchange over the period 2008 to 2016. It is important to note that in essays 2 and 3, this sample experiences a decrease in the number of firm-observations.<sup>39</sup> This is due to the unavailability of some quantitative values of dependent and independent variables on which the respective empirical models are based.

In this section, we will provide the description of the sample according to several characteristics. First, table 4 shows the composition of our sample according to the firm size.

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<sup>37</sup> The length of the sample is constrained by the availability of information on the Amadeus database (the last available year is t-9).

<sup>38</sup> Each observation represents a company in a specific year. For example, if firm X exists over two years, it will be counted as two independent observations (observation 1= firm X in year Y1 and observation 2= firm X in year Y2).

<sup>39</sup> The sample construction is explained in each of the three essays.

As reported, 6.4% of firm-observations belong to the category of microenterprises, which have fewer than 10 employees and an annual turnover not exceeding EUR 2 million. Meanwhile, small-sized firms make up 29% of the firm-observations in the sample. These firms employ fewer than 50 employees and have an annual turnover not exceeding EUR 10 million. Not surprisingly, the majority of our listed SMEs are composed of medium-sized firms, 65% of the sample.

Table 4. Composition of the sample by firm size

Firm size	Firm-observations	Percentage (%)
Microenterprises	90	6.41
Small-sized firms	405	28.87
Medium-sized firms	908	64.72
Total	1403	100

Source: the author.

The composition of the sample according to the years of study in table 5 shows that the number of firm-observations vary across the overall period. This is due to:

- 1) the death of a firm, which implies its exit from the sample;
- 2) the listing of a new SME, which implies its addition to the sample;
- 3) the increase in the number of employees (greater than 250 workers) or the increase in the turnover (greater than EUR 50 million) or the balance sheet of a firm (greater than EUR 43 million) of an old SME, which implies its exit from the sample because it does not belong to the category of an SME anymore.

Table 5. Composition of the sample by year

Year	Firm-observations	Percentage (%)
2008	136	9.69
2009	147	10.48
2010	138	9.84
2011	146	10.41
2012	150	10.69
2013	169	12.05
2014	185	13.19
2015	164	11.69
2016	168	11.97
Total	1403	100

Source: the author.

As for age, our observations demonstrate an interesting maturity that allow us to better adapt theoretical and empirical concepts. According to table 6, most of the firm-observations in our sample have been operating between 10 and 20 years. The average (median) of the sample according to age is 20 (16) years old. This means that if the firm has been operating for 16 years in 2016, it was created in 2000.

Table 6. Composition of the sample by age

Years of exercise	Firm-observations	Percentage (%)
<10	302	21.53
[10;20[	553	39.42
[20;30[	317	22.59
30 +	231	16.46
Total	1403	100

Source: the author.

Overall, the sample considered in this thesis is composed of 1,403 observations of French SMEs listed on the Euronext Paris stock exchange over the period 2008 to 2016, the majority of which belong to medium-sized enterprises and have been operating for more than ten years.

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**Part 2:**  
**Empirical Applications**



Essay 1:  
Leverage Financing and the Risk-Taking  
Behavior of Small Business Managers: What  
Happened After the Crisis?

With Ramzi Ben Kraiem and Catherine Deffains-Crapsky (Forthcoming), *Risk Management and Modeling*, Risk, Systems and Decisions series, Springer.

# 1. Introduction

Throughout the years, SMEs have received significant attention from economists. These firms are considered as a source of dynamism for the economy as they promote competitiveness, stimulate innovation, and generate employment opportunities. According to the OECD's report in 2018, they account for almost the totality of the firms, ensure 60% of the jobs and generate 50% to 60% of the added value on average<sup>40</sup>. SMEs are engaged in more growth opportunities when compared to larger firms (Kirschenmann, 2016), yet they lack sufficient resources to self-finance their projects. In addition, they suffer from heavy transaction costs and a restrained entrance to financial markets. Thus, the vast majority of these firms rely on bank financing (Berger, Klapper, & Udell, 2001).

On the other hand, managers of SMEs are prone to engage in high levels of risk as they are captivated by expanding their firms. The risk-taking behavior of managers derives from the 'empire building' strategy (Jensen, 1986). In fact, it has been shown that managers seek excessive growth and investment to boost their power in the firm, enhance their reputation on the market and raise their compensation (Hope & Thomas, 2008; Jensen, 1986).

Despite the importance of the corporate leverage and the risk-taking behavior of managers for the survival and the growth of SMEs, there is surprisingly little empirical proof on the relationship between these two components.

An existing body of literature provided theoretical evidence on the extent to which corporate leverage has an influence on the risk-taking behavior of managers. This paper is motivated by three of these theories: the Free Cash Flow Theory by (Jensen, 1986), the debt and optimal capital structure by (Myers, 1977), the capital structure theory by (Maksimovic & Titman, 1991). Jensen (1986) and Myers (1977) presented theoretical models that emphasize the conflict of interests between managers and shareholders and the role of debt when it comes to influencing the manager's risk-taking behavior. They show that leverage plays a disciplining role preventing the manager from increasing his risk-taking behavior. Meanwhile, Maksimovic & Titman (1991) provided evidence that corporate leverage enhances the managerial risk-taking behavior. Nevertheless, the empirical evidence on this relationship remains scarce. Previous studies provided mixed results. Some authors claimed that leverage attenuates the

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<sup>40</sup> Information retrieved from: OECD (2018), Financing SMEs and Entrepreneurs 2018: An OECD Scoreboard, OECD publishing, Paris. [http://dx.doi.org/10.1787/fin\\_sme\\_ent-2018-en](http://dx.doi.org/10.1787/fin_sme_ent-2018-en)

risk-taking behavior of managers (Adams et al., 2005; Faccio et al., 2016; Nguyen, 2012) , whilst others stated that leverage amplifies it (Boubakri et al., 2013; Faccio et al., 2011; Vo, 2016). Nonetheless, Cheng (2008) and Nguyen, (2011) reported that there is no significant influence of leverage on managerial risk-taking. Yet, to the best of our knowledge, there is no empirical study entirely dedicated to the examination of this relationship. Thus, this paper tries to fill this gap in the literature by empirically investigating the impact of firm leverage on the risk-taking behavior of managers in SMEs during and after the financial crisis of 2008.

To address this problem, we consider a sample composed of 1403 French small and medium-sized firm observations listed on the Euronext Paris stock exchange over the period 2008 to 2016. This paper highlights the impact of the financial crisis of 2008 on the risk-taking behavior of corporate managers. Thus, the regressions will be run over the entire period and over the two sub-periods (i.e. during 2008 and from 2009 to 2016). Following Adams et al., (2005), we measure the manager's risk-taking behavior using the absolute deviation from the firm's expected earnings. The regressions also include other control variables such as the size, sales growth, tangibility, liquidity and interest coverage ratio. In addition, we examine the robustness of our results using the instrumental variable approach that controls for endogeneity.

The results indicate that over the whole period corporate leverage significantly serves as an enhancement tool for the risk-taking behavior of managers in SMEs. This role is more important after than during the crisis. The intuition is that, credit rationing generated by the financial crisis of 2008 reduced the monitoring activities of banks which has increased the risk-taking behavior of corporate managers. In other words, the financial crisis of 2008 has had many repercussions on the banking sector which mostly affected the small vulnerable businesses. In order to enhance the financial stability, several governments discussed and imposed norms on banks such as the Basel II and III reforms. They were demonstrated in a higher level of restrictions and credit rationing, especially applied on the lending to small risky firms. As banks amplified the credit rationing on SMEs' financing during the crisis, they reduced their monitoring activities after it. Following Williamson (1987) and in contrast to Diamond (1984), this paper considers that bank monitoring takes place after rather than before the allocation of funds. Thus, by increasing the restrictions set on small businesses' bank financing and reducing credit availability at the expense of higher monitoring activities, managers tend to engage in higher risk activities.

The contribution of this paper is threefold. To the best of our knowledge, this article represents a first empirical attempt that directly links the leverage with the manager's risk-taking behavior. Second, this relationship takes place in a small and medium-sized enterprises framework which has been long ignored since most of the research has been conducted on larger firms. Third, this paper investigates the impact of the global crisis of 2008 on the relationship between managerial risk-taking and leverage in France.

The remainder of this paper is organized as follows: Section II develops the theoretical framework and the hypotheses. Section III presents the sample and the empirical methods adopted in this paper. Section IV describes the empirical findings and the robustness test. Finally, section V concludes the article.

## 2. Literature review

This chapter reviews the previous literature that discussed the relationship between long-term debt and the managerial behavior. The first section presents a survey on the bank financing of SMEs during and after the financial crisis of 2008. Then, the second section explains the capital structure theories and presents theoretical and empirical evidence regarding the relationship between leverage and managerial risk-taking behavior.

### 2.1. SMEs bank financing

In a normal economy, SMEs struggle to survive, grow and expand as they encounter many obstacles when it comes to financing their projects. Due to their small structure, SMEs lack sufficient resources to self-finance their projects which induces them to become bank dependent. However, banks find difficulty to assess the risk of these firms (Danielson & Scott, 2007) for several reasons; the presence of a high level of informational asymmetry in their opaque structure, the low level of collateral they are capable of offering and the lack of financial history (Beck & Demirguc-Kunt, 2006; Beck et al., 2008; Beck et al., 2011; Danielson & Scott, 2007) which make them suffer from heavier transaction costs and greater risk premiums in comparison to larger firms (Beck et al., 2006). Thus, previous literature showed that small banks tend to develop a long-term relationship lending based on soft information with their

small scaled customers (Berger, Goldberg, & White, 2001; Berger & Udell, 1996; Boot, 2000; Elyasiani & Goldberg, 2004). Whilst others stated that banks prefer to impose stringent covenants, larger collaterals, and a stricter monitoring (Blazy & Weill, 2013; Chava & Roberts, 2008; Chen & Wei, 1993; Cole et al., 2004; Diamond, 1984; Rajan & Winton, 1995). More recently, other lending alternatives based on a transactional relationship that uses hard information– the assets-based lending and the leasing technique – have seen the light, which allowed large banks to start providing funds to SMEs (Beck & Demirguc-Kunt, 2006).

During the financial crisis of 2008, the SMEs' financial situation got more fragile due to various reasons. Among these, we highlight their inability to reduce their size already small, they are less diversified when compared to larger firms, their financial structure becomes more vulnerable, and they have less financing alternatives as they depend mostly on bank financing (OCDE, 2009). Furthermore, it has been shown that during the financial crisis, corporate insolvencies in Europe marked on average an increase of 10.9% from 2007 to 2008. More particularly, in France, the insolvencies exceeded the European average by reaching 49,100 corporate insolvencies in 2008<sup>41</sup> and an increase of 15.4% from 2007 to 2008 (Insolvencies in Europe 2008-2009 report, credit reform). Consequently, in order to assist SMEs survival during and most importantly after the crisis and to boost their access to bank financing, governments injected funds to ensure the recapitalization of banks and improved their previous programs by implementing new tools such as the execution of a “credit mediator” and the application of the revised versions of the Basel Accords. The “credit mediators” are characterized by an intermediation role between banks and firms facing difficulties or a rejection of bank financing. They aim to assist these firms by re-submitting their demand of bank financing and by asking the banks to re-examine them which facilitates the SMEs' access to loans.

Furthermore, during the crisis, the European committee detected the necessity to apply the reform of Basel II. The Basel Accords' objective relies on enhancing the stability of the banking system through the recognition of several types of risk (Aubier, 2007). Basel II was first originated and signed in 2004 by the Basel committee on Banking Supervisions (BCBS), and was later effective in January 2008. It aims on extending the Basel I principles<sup>42</sup> by including a more elaborated risk framework and on reforming the banking system. The banks' capital

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<sup>41</sup> Corporate insolvencies in European countries reached 150,240 in total which places France as the highest country with 49,100 corporate insolvencies (32.68% of the total corporate insolvencies)

<sup>42</sup> Basel I reform also known as the Basel Capital Accord was signed by the Basel committee and published in July 1988. Its objective was to enhance the stability of the international banking system by imposing a ratio of capital to risk-weighted assets equal to a minimum of 8% on banks of the member countries.

requirements were, henceforth, measured through the assessment of three types of risk: credit risk, operational risk and market risk. They were provided with several risk measurement approaches. When using for example, an internal rating-based (IRB) approach to assess the credit risk of an SME financing, banks would be charged with less capital requirement than with the employment of the regulatory ratio (Dietsch, 2016). Therefore, it was expected that these new capital recommendations will not imply an increase of the restrictions set on SMEs, rather they will facilitate their access to bank financing as long as the risk encountered by these firms is controlled (Golitin, 2007). Nevertheless, after the financial crisis of 2008, banks were still forced to impose severer constraints on SMEs financing and to reduce their access to short-term funds as banks themselves suffered from illiquidity problems, restricted access to funds, and higher exposure to risks (OCDE, 2009). In response to the deficiencies in the financial system that were exposed by the financial crisis of 2008, reinforcing Basel II three pillars was assumed to be compulsory. Hence, the BCBS agreed in 2010 to update the second version of the Basel Accords. The new Basel Accord, known as Basel III, was published in 2013 and introduced two new requirements. Under the first condition, banks are supposed to maintain a leverage ratio, measured by dividing tier 1 capital over the bank's average total consolidated assets, in excess of 3%. Following the second condition, banks are expected to maintain two liquidity ratios that ensure their survival in case of the occurrence of another banking crisis. The "liquidity cover ratio" (LCR) requires from banks to hold a sufficient amount of high-quality liquid assets in order to meet their engagements over 30 days during a period of severe stress. The "Net stable funding ratio" (NSFR) encourages banks to finance their activities with long-term stable funds by holding a sufficient amount of long-term assets that covers their engagements for a period of 1 year of stress.

These two reforms have certainly reinforced the banking system by imposing stricter conditions on banks in order to prevent the event of the financial crisis from occurring again. Nevertheless, they have clearly urged banks to reduce the availability of funds and to impose a more stringent credit rationing especially on SMEs due to their high level of opacity and informational asymmetries.

The phenomenon of credit rationing has been present for several years and has been the subject of previous literature, yet became more intense since the crisis (Lee et al., 2015).

In fact, prior authors showed that this issue is not only triggered by components of the microeconomic level, yet is also associated to the macroeconomic approach in which this paper

is concerned. Jaffee & Russell (1976) and Stiglitz & Weiss (1981) were the first authors to address this problem. The former authors stated that “credit rationing occurs when lenders quote an interest rate on loans and then proceed to supply a smaller loan size than that demanded by the borrowers.” (p.651). While the latter authors defined credit rationing as

circumstances in which either (a) among loan applicants who appear to be identical some receive a loan and others do not, and the rejected applicants would not receive a loan even if they offered to pay a higher interest rate; or (b) there are identifiable groups of individuals in the population who, with a given supply of credit, are unable to obtain loans at any interest rate, even though with a larger supply of credit, they would. (p.394-395)

In this paper, we do not differentiate between the credit rationing types, rather we are interested by the reasons behind the occurrence of this problem.

The credit rationing deriving from the macroeconomic level is associated to a “credit crunch” situation mostly present during and after a crisis. Characterized by a shrinkage in the availability of loans in addition to a tightening of loan access conditions (Nguyen & Qian, 2014), credit crunch following a financial crisis affects a large number of firms especially small ones since they are the most likely to be risky and vulnerable. Many empirical studies confirmed that this cyclical problem marked its presence across SMEs in several countries after the financial crisis of 2008. Lee et al., (2015) showed that the access to bank financing for UK firms became harder after the crisis than during it. Koráb & Poměnková, (2017) revealed the existence of a credit crunch between the fourth quarter of 2008 and the fourth quarter of 2012 in Greece. As a result, Greek SMEs suffered from a restrained access to bank financing. In addition, Iyer et al. (2014) detected a reduced credit availability among Portuguese SMEs during the crisis of 2008. In addition, given the fact that France was among the largest European countries that endured from a bank financing gap above the euro area average (Wehinger, 2014), French SMEs suffered from the restrained access to bank financing and a reduced credit availability during and after the financial crisis of 2008. It has been shown that, since 2009, banks enlarged their assessment of the risk determined by firms, especially for SMEs (Wehinger, 2014).

## 2.2. Related theories and hypothesis development

Capital structure has always been a subject of interest in most of the studies. It has been defined as the mixture of long-term sources that the firm uses as funds. These sources are composed of debt instruments as well as preferred and common stocks. The objective is to choose the combination of these sources that maximizes the firm's market value and reduces its cost of capital. This problem has been discussed for a longtime, yet remains unresolved. The first authors to initiate these discussions were Modigliani & Miller in 1958.

In their paper, the authors considered the existence of a perfect capital market in which agency costs, asymmetric information, transaction costs and bankruptcy costs do not apply. Under these strict assumptions, they found that the market value of any firm is not affected by the choice of its capital structure, its level of leverage especially. Rather, they argued that the value of the firm is estimated by the expected earnings scaled by the average cost of capital of the class<sup>43</sup> to which it belongs. In addition, they found that the average cost of capital of the business is also independent from its capital structure. Their proposition was referred to as the capital structure irrelevance theorem.

Meanwhile, since the existence of informational asymmetries, transaction costs, bankruptcy costs and taxes in the real world make the assumption of a perfect capital market seems quiet unrealistic, several authors challenged Modigliani and Miller's (1958) suggestions and claimed that their theorem is only valid under perfect capital market assumptions.

In fact, Modigliani & Miller (1963) started themselves to alter their initial propositions. They corrected their original statement "(...) the market values of firms in each class must be proportional in equilibrium to their expected returns net of taxes (that is, to the sum of the interest paid and expected net stockholder income)" (p.272) by arguing that the actual return after tax of two firms in the same risk-class can be different if the level of leverage is not the same in these firms. They assumed that, the choice of capital structure does not only depend on the expected returns but also on the tax rate and the amount of leverage. In addition, they proved that the benefits of tax on debt financing are greater than what was formerly shown in

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<sup>43</sup> Modigliani and Miller (1958) divided the firms in their study into classes according to their returns such that "(...) the return on the shares issued by any firm in any given class is proportional to the return on the shares issued by any other firm in the same class" (p.266)

their first work. Thus, the use of debt expands the value of the firm of a volume equal to the marginal tax rate times the debt market value.

Ever since, many theories concerning the firm's capital structure were established. Of these, we develop (i) the debt and optimal capital structure theory of Myers (1977), (ii) the cash flow theory of Jensen (1986), and (iii) the capital structure choice theory by Maksimovic and Titman (1991).

In his paper, Myers (1977) found that even with the existence of a perfect capital market with symmetric information between the agents, firms will find it rational to limit the amounts of their borrowings. He showed that, the leverage of the firm influences the investment decision-making of its management. In fact, when a firm is debt financed, the manager will be preoccupied by meeting all the interest and principal payments that he will forego positive investment opportunities. As a result of debt overhang, less positive net present value projects will be taken into consideration which leads to the under-investment phenomena.

Consistent with the findings of Myers (1977), Jensen (1986) showed that leverage reduces the over-investment problem. In fact, managers are usually captivated by an empire building strategy. Therefore, they have incentives to expand the size of their firms by investing in projects. The author showed that the manager of a firm with a surplus of cash flow and low investment opportunities is more likely to engage in negative net present value projects. He defined the free cash flow as the excess of cash required to invest in positive net present value projects. Thus, investing in value destroying projects is not in the interest of the shareholders of the firm who prefer to receive the excess of cash flow in form of dividends. Consequently, they will use debt as a tool to reduce the risk-taking issue. By doing so, managers will be monitored by creditors. As a result, they will be forced to lower their over-investment strategy in order to meet all of the interest and principal payments and to avoid going bankrupt. Therefore, leverage has an attenuating role on managerial risk-taking.

In contrast, Maksimovic and Titman (1991) documented in their paper the incentives that a highly leveraged firm should have in order to maintain its reputation and to continue offering high-quality products. Furthermore, they reported that, generally, individuals are reluctant to do business with a highly leveraged firm due to the costs they will incur if it goes bankrupt. The employees, customers and stakeholders are usually cautious when dealing with a leveraged firm because they are more likely to suffer from the costs in the event of a financial distress than other agents. Consequently, a manager agreeing to engage in a highly leveraged firm, has

to tolerate the severe bankruptcy costs resulting from the firm's probability of default. His willingness to engage in such situation makes him risk-taking. Thus, leverage is positively associated to the risk-taking behavior of managers. In a recent study, Faccio et al. (2016) employed leverage as a proxy for corporate risk-taking. They suggested that "given a (negative) shock to firm's underlying business conditions, the higher the leverage, the greater the (negative) impact of the shock on the firm's net profitability (including a higher probability of default)" (p.196). Hence, leverage positively influences the corporate risk-taking.

Nevertheless, there is little empirical evidence on how firm leverage influences the managerial risk-taking.

More precisely, prior empirical studies provided mixed results regarding this relationship. Adams et al. (2005) employed three measures for corporate performance and found that leverage is positively correlated to the standard deviation of stock returns, while it is negatively correlated to the standard deviation of Tobin's Q and not significantly correlated to the standard deviation of ROA over the period 1992 to 1999. Nguyen (2012) reported a strong positive association between leverage and the volatility of ROA and stock returns, and a negative association with the volatility of the market to book value of assets. On another hand, Cheng (2008) documented that there is no significant impact of leverage on the volatility of earnings measured by ROA, Tobin's Q and monthly stock returns in US firms over the period 1996 to 2004. In consistence with these findings, Nguyen (2011) defined managerial risk-taking as the absolute deviation from the firm's expected earnings (i.e. expected ROA and Tobin's Q). The author found that there is no significant impact of leverage on corporate risk-taking among Japanese firms over the period 1998 to 2007. Meanwhile, when employing other measures for corporate risk-taking, Nguyen (2011) reported a strong positive relationship between leverage and the standard deviation of ROA and stock return, and a negative association with the standard deviation of the market to book ratio.

Nonetheless, Faccio et al. (2016) stated a strong negative relationship between leverage and corporate risk-taking measured by the volatility of ROA and the likelihood of survival of firms across 18 countries during the period 1999 to 2009. In consistence with these findings, Firth et al. (2008) reported a significant negative association between leverage and firm's investments in China. In contrast, several recent papers claimed that a leveraged firm is associated with higher earnings volatility and more risk-taking activities (Faccio et al. 2011; Boubakri et al. 2013; Vo, 2016). More precisely, after employing the volatility of ROA as a measure for

corporate risk-taking, Faccio et al. (2011) found a positive impact of leverage on the volatility of earnings over the period 1999 to 2007. Their findings hold when they use the standard deviation of ROE and the difference between the maximum and minimum ROA as alternative measures for firm risk-taking. Boubakri et al. (2013) considered the volatility of ROA as a measure for corporate risk-taking and reported a strong positive relationship with firm leverage. Further, Vo (2016) measured corporate risk-taking as the ratio of volatility of earnings (ROA and ROE) over firm earnings in Vietnamese firms over the period 2007 to 2014. The author documented leverage as a tool that stimulates earnings volatility.

### 3. Sample and Methodology

This chapter describes the sample and methodology employed in this article. The first section presents the sample selection procedure. The second section reports the measurements of the risk-taking behavior, leverage and other control variables.

#### 3.1. Sample

In this article, the financial information is gathered from Amadeus. This database provided by the Bureau Van Dijk Electronic Publishing office, contains information on privately and publicly held firms. It covers around 21 million firms across Europe.

The sample includes all non-financial SMEs listed on the Euronext Paris stock exchange over the period 2008 to 2016. Financial institutions represented by banks, securities and insurance companies as well as holdings (64-66, 69, 70 and 99 NACE Rev. 2 codes<sup>44</sup>) are excluded from the sample due to their different business nature and risk-taking metrics. The chosen period of study allows us to compare the results obtained during and after the financial crisis of 2008 and to highlight the impact of the crisis on the risk-taking behavior of corporate managers. The sample is, thus, divided into two sub-periods during 2008 and from 2009 to 2016. Hence, the regressions will be run over the whole sample and the two sub-periods.

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<sup>44</sup> NACE codes serve as an industry classification code for European firms. (Source: Eurostat).

First, we begin by identifying publicly held firms that have less than 250 employees, a turnover lower than €50 million or a balance sheet not exceeding €43 million<sup>45</sup> over the period 2008 to 2016. This step yields an initial sample composed of 1,578 SMEs. Next, we eliminate 175 firm-observations from the sample due to the missing data of dependent and independent variables. This procedure generates a final sample composed of 1,403 firm-observations over an 8-year period.

Table 7 summarizes the sample selection process and reports the time distribution of firm observations over the entire period. Panel B indicates that the number of SMEs has been rising over the past eight years in France, especially after the financial crisis of 2008.

## 3.2. Methodology

### 3.2.1. Model

To investigate the impact of leverage on the risk-taking behavior of corporate managers in SMEs, we employ the following model:

$$Risk_{i,t} = \alpha_0 + \alpha_1 Lev_{i,t} + \alpha_2 Y_{i,t}^a + \alpha_3 X_i + \varepsilon_{i,t} \quad (1)$$

Where (i)  $Risk_{i,t}$  is defined as the risk-taking behavior of the manager represented by the corporate risk-taking of firm  $i$  at time  $t$ ; (ii)  $Lev_{i,t}$  is represented by the level of leverage of firm  $i$  at time  $t$ ; (iii)  $Y_{i,t}^a$  is a vector of firm characteristics that is associated to the managerial risk-taking, it includes:  $S_{i,t}$  (Firm Size) is measured by the logarithm of total assets of firm  $i$  at time  $t$ ;  $Gh_{i,t}$  (Sales Growth) is computed by the difference between the net sales of two consecutive years divided by net sales of the earlier year of firm  $i$ ;  $Pr_{j,t}$  (Profitability) is defined as the Tobin's Q ratio of firm  $i$  at time  $t$ ;  $Ch_{i,t}$  (Cash holdings) is determined as the ratio of cash and cash equivalents over the total assets of firm  $i$  at time  $t$ ;  $Tg_{j,t}$  (Tangibility) is estimated by the fixed assets divided by the total assets of firm  $i$  at time  $t$  and  $Lq_{i,t}$  (Liquidity) is measured by the current ratio equal to current assets divided by current liabilities.  $Ic_{i,t}$  (Interest coverage ratio) is equal to the ratio of paid interest scaled by EBITDA. (iv)  $X_i$  is determined as the set of dummy variables that controls for year and firm effects. (v)  $\varepsilon_{i,t}$  is defined as the error term.

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<sup>45</sup> European Commission definition of SMEs

### 3.2.2. Measuring risk-taking behaviour

Following Adams, Almeida, & Ferreira (2005) and Nguyen (2012), managerial risk-taking is estimated by the absolute deviation from the firm's expected earnings. In this paper, we consider two proxies for the firm's earnings: the return on assets ratio (ROA) and the return on equity ratio (ROE). ROA is defined as the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) divided by total assets. This ratio reflects the profitability of the firm's decisions. ROE is measured by the ratio of net income over shareholder's equity. This ratio explains whether the company's operations are efficient. Both ratios are considered as the dependent variables in Eqs (2) and (3), respectively. In addition, both equations employ leverage and other control variables that have an impact on the firm's expected performance.

The firm's expected ROA and ROE are estimated as follows:

$$ROA_{i,t} = \gamma_0 + \gamma_1 Leverage_{i,t} + \gamma_2 Control\ variables_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$ROE_{i,t} = \gamma_0 + \gamma_1 Leverage_{i,t} + \gamma_2 Control\ variables_{i,t} + \varepsilon_{i,t} \quad (3)$$

The residuals are statistically defined as the deviation between the results of the model and the actual results. In our model, they are referred to as the deviation between the firm's earnings and the expected ones. Thus, the absolute value of the residuals obtained from Eqs (2) and (3) can be employed as proxies for managerial risk-taking.  $|\varepsilon_{i,t}|$  are, thus, regressed on leverage and other control variables in equation (4), as follows:

$$|\varepsilon_{i,t}| = \rho_0 + \rho_1 Leverage_{i,t} + \rho_2 Control\ variables_{i,t} + \varepsilon_{i,t} \quad (4)$$

A positive (negative)  $\rho_1$  indicates that leverage can be considered as an enhancement (disciplining) tool for managerial risk-taking behavior.

### 3.2.3. Leverage

Leverage is our second main variable. To estimate it, we use two proxies. The first one is measured by the ratio of total financial debt<sup>46</sup> to total assets. The second one is computed using the ratio of total long-term debt divided by total assets. The firm's relative level of debt indicates the managerial acceptance for riskiness since the higher is the amount of debt the

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<sup>46</sup> Financial debt is measured by long-term debt plus short-term loans of each firm in the sample

higher is the risk of bankruptcy. This implies that  $\alpha_1$  in Eq. (1) above is expected to be positive and statistically significant.

#### 3.2.4. Control variables

Previous studies stated that, several firm-control variables (besides leverage) are associated to managerial risk-taking. Among them, our model includes: (1) *Firm Size* is defined as the natural logarithm of total assets. In general, smaller firms are more likely to be risky when compared to larger firms known for their greater risk management skills (Choy, Lin, & Officer, 2014; John, Litov, & Yeung, 2008; Langenmayr & Lester, 2015; Vo, 2016). Hence, this paper predicts a negative relationship between the firm's size and managerial risk-taking. (2) *Sales Growth* is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. This variable captures the firm's investment opportunities. The higher is the value of the sales growth, the more likely is the firm to engage in risky projects (Core & Guay, 1999; Langenmayr & Lester, 2015; Rajgopal & Shevlin, 2002). In this case, we suppose a positive relationship between sales growth and corporate risk-taking. (3) *Firm Profitability* is estimated by the Tobin's Q ratio (Firth et al., 2008). Actually, this ratio is defined by the market capitalization of the firm scaled by the book value of its total assets. Thus, the higher is the profitability the more risk-taking is the firm. In fact, this paper assumes a positive relationship between the firm's profitability and the managerial risk-taking. (4) *Cash holdings* is defined by the firm's cash and cash equivalents scaled by its total assets. The higher is the level of cash available in the firm, the more likely is the manager engaged in higher risk levels. Therefore, we predict a positive relationship between cash holdings and managerial risk-taking. (5) *Tangibility* is defined as the firm's fixed assets scaled by its total assets (Faccio et al., 2016). In fact, fixed assets include all the long-term tangibles that a company acquires (i.e. machinery, buildings, trucks, etc.). Mostly, the higher are these acquisitions the more risk-averse is the firm. Consequently, we expect a negative relationship between the tangibility and the variability of the firm's performance. (6) *Liquidity* is represented as the firm's current assets divided by its current liabilities. This ratio points at the firm's ability to repay its short-term debt with its current assets. In general, the higher is the liquidity ratio the more risk-averse is the firm. Thus, this paper predicts a negative relationship between the liquidity and the corporate risk. (7) *Interest coverage ratio* is equal to the ratio of paid interest over EBITDA. This ratio assesses the company's ability to pay the interest expenses of its loans. A high

interest coverage ratio indicates that the interest expenses exceed the firm's earnings, which implies that the corporate manager has a risk-taking behavior. Thus, we expect a positive association between the interest coverage ratio and the managerial risk-taking.

### 3.2.5. Growth opportunities

Jensen (1986) specified that managers of firms with free cash flow and low growth opportunities tend to invest in negative net present value projects. In addition, Lang et al. (1996) mentioned in their paper that "*managers of firms with valuable growth opportunities should choose lower leverage because these firms might not be able to take advantage of their investment opportunities if they have to raise outside funds*" (p.4). Following (Aivazian, Ge, & Qiu, 2005; Benkraiem, Bouattour, Miloudi, & Vigneron, 2017; Firth, Lin, & Wong, 2008; Lang, Ofek, & Stulz, 1996), we underline the necessity to distinguish firms with high growth opportunities from those with low growth opportunities. The differentiation is run according to the firm's sales growth. For instance, a (high) low growth firm is associated to a sales growth (higher) lower or equal to 0.

Eq. (5) examines the differences in the impact of leverage on managerial risk-taking for high versus low growth firms, as follows:

$$Risk_{i,t} = \alpha_0 + \alpha_1 Lev_{i,t} + \alpha_2 (Lev \times Gh')_{i,t} + \alpha_3 Y_{i,t}^a + \alpha_4 X_i + \varepsilon_{i,t} \quad (5)$$

Where (i) Risk<sub>i,t</sub> is defined as the risk-taking behavior of the manager represented by the corporate risk-taking of firm i at time t; (ii) Lev<sub>i,t</sub> is represented by the level of leverage of firm i at time t; (iii) Gh' is a dummy variable equal to 1 if sales growth is higher than 0 and equal to 0 otherwise; (iv) Lev x Gh' is the interaction term between leverage and growth dummy variable of firm i at time t; (v) Y<sup>a</sup><sub>i,t</sub> is described as a vector of firm characteristics that is associated to the managerial risk-taking, it includes: S<sub>i,t</sub> (Firm Size) is measured by the logarithm of total assets of firm i at time t; Gh<sub>i,t</sub> (Sales Growth) is computed by the difference between the net sales of two consecutive years divided by net sales of the earlier year of firm i; Pr<sub>j,t</sub> (Profitability) is defined as the Tobin's Q ratio of firm i at time t; Ch<sub>i,t</sub> (Cash holdings) is determined as the ratio of cash and cash equivalents over the total assets of firm i at time t; Tg<sub>j,t</sub> (Tangibility) is estimated by the fixed assets divided by the total assets of firm i at time t and Lq<sub>i,t</sub> (Liquidity) is measured by the current ratio equal to current assets divided by current liabilities. Ic<sub>i,t</sub> (Interest coverage ratio) is equal to the ratio of paid interest scaled by EBITDA.

(vi)  $X_i$  is determined as the set of dummy variables that controls for year and firm effects. (vii)  $\varepsilon_{i,t}$  is defined as the error term.

## 4. Summary statistics and results

This chapter presents the empirical findings obtained from the regressions. The first section displays the descriptive statistics of the sample and the two sub-periods. The second section reports the results of the Ordinary Least Square and Fixed Effects panel regression estimation that controls for all the unobserved year and firm effects. The third section describes the sensitivity analysis results.

### 4.1. Summary statistics

Table 8 reports the summary statistics of the dependent and independent variables for the entire sample and the two sub-periods (i.e. during 2008 and from 2009 to 2016).

The absolute deviation of the firm's performance ranges from 8.5% to 25.5% on average, which indicates that managers of French listed SMEs tend to have a risk-taking behavior from 2008 to 2016. More precisely, their risk-taking behavior is more likely to increase after than during the financial crisis.

At the same time, corporate leverage proxies report lower averages after than during the crisis. This implies that the access to bank financing for small businesses became more restrictive after the crisis. However, we must precise that the small business credit application increased after the financial crisis (OCDE report, 2013). For instance, French SMEs remain as highly bank dependent since they report an average of 11% and 10.2% of total long-term debt to total assets during and after the crisis, respectively. Firm size is slightly lower after than during the crisis with averages equal to 9.65 and 9.71, respectively. On the contrary, sales growth increased after the crisis as it marked 18.9% and 89.6% during and after the crisis, respectively. Profitability measured by Tobin's Q displays averages of 0.93 and 1.64 during and after the crisis, respectively. The performance of French SMEs is better after than during the crisis. In addition, these firms maintained approximatively the same level of cash holdings over the entire period as they reported an average of 24.2% and 24.5% during and after the crisis,

respectively. Further, tangibility remained on average at the same level during the entire period. On the other hand, liquidity decreased after the crisis as it reported an average of 3.4 and 3 during and after the crisis, respectively. Small firms were not able to maintain their liquidity stable during the whole period. Simultaneously, the interest coverage ratio highly increased after the financial crisis.

Table 9 reports the Pearson's correlation matrix that measures the association between the different independent variables employed in our model. Most of the coefficients generated from the matrix are statistically significant and report low correlations. For instance, these correlations are not strong enough to report serious multicollinearity problems among our independent variables. Yet, as expected, the two proxies of corporate leverage report the highest correlation. On the other hand, the results show that larger firms among SMEs tend to more leveraged. Tobin's Q and cash holdings are negatively associated to corporate leverage. The higher are the profitability and cash holdings in the firm, the lower is the level of leverage that the firm needs. In addition, liquidity is negatively related to the leverage ratios. While, it is positively correlated to firm size, Tobin's Q and cash holdings. Further, sales growth is positively associated to the profitability of the firm.

## 4.2. Empirical results

Tables 10, 11 and 12 present the findings of our model. As stretched above, each regression is run over the entire period and the two sub-periods (i.e. 2008 and from 2009 to 2016). The impact of leverage on the absolute deviation of the firm's performance is measured according to two proxies (ROA and ROE). To provide complete results, we employ ordinary least square (OLS) regression and fixed-effect (FE) panel regression estimation that controls for all the unobserved year and firm effects.

According to the first table, results show that the entire leverage coefficients are positive and statistically significant at the 1% level (except for one coefficient statistically significant at the 5% level). This indicates that, leverage has a positive impact on the risk-taking behavior of managers across French listed SMEs over the period 2008 to 2016. These results strongly hold for the two leverage proxies and the two firm's performance proxies in OLS and FE regressions. Leverage coefficients vary from 0.076 to 1.410. This implies that, an increase of 0.1 in the ratios of leverage leads to an increase of 0.076 to 1.410 in managerial risk-taking.

These findings are in contrast with those of Jensen (1986) and Myers (1977) who highlighted the disciplining role of leverage that attenuates the risk-taking behavior of corporate managers. Consequently, our results report leverage as an enhancement tool that increases managerial risk-taking.

Furthermore, leverage variable displays stronger results after than during the crisis. For instance, when using ROA as a proxy for firm's performance, leverage reports positive and statistically significant coefficients after the global crisis, while insignificant coefficients during it. These results are comparable to those obtained when using ROE as a proxy for firm's performance. Nonetheless, leverage coefficients are more significant during the crisis when using ROE rather than ROA. Thus, leverage has a higher impact on managerial risk-taking after than during the crisis. Benkraiem et al. (2017) stated that, creditors were highly involved in managers' monitoring before the crisis. Nevertheless, as the crisis started, they favored an increase of the restrictions set on SMEs' bank financing and a reduction of credit availability at the expense of the former monitoring. This has motivated corporate managers to enhance their risk-taking behavior as they were not strongly monitored.

As expected, firm size variable reports negative and statistically significant coefficients over the entire period for both firm performance proxies. These results are consistent with the coefficients during the crisis for ROE and after the crisis for ROA. Accordingly, a manager is more likely to have a risk-taking behavior in smaller firms. Simultaneously, cash holdings and profitability are positively linked to managerial risk-taking. This implies that, managers of firms with high profitability and cash tend to become more risk-taking. Profitability and managerial risk-taking are more positively correlated after than during the crisis for both firm's performance proxies. However, cash holdings variable report higher coefficients during than after the crisis, when using ROA as a proxy for firm's performance. Yet, these coefficients are less significant when using ROE. On the other hand, liquidity and tangibility are negatively correlated to the risk-taking behavior of managers. This indicates that managers tend to be less risk-taking when their firm has more fixed assets and is able to cover its current liabilities by its current assets. These negative correlations between these two variables (i.e. tangibility and liquidity) and managerial risk-taking are higher during than after the global crisis.

Tables 13, 14 and 15 provide the results of our second model that underlines the interaction between leverage and growth dummy variable. Leverage has a strong and robust positive impact on managerial risk-taking over the period 2008 to 2016. The findings hold for all the

leverage and corporate risk-taking proxies. The leverage coefficients range from 0.108 to 2.043 for OLS estimations and from 0.097 to 1.982 for FE estimations. The ratio of total financial debt to total assets reports the highest coefficients for OLS and FE regressions when using ROE as a proxy for firm's performance, while the ratio of long-term debt to total assets has the highest coefficients for OLS and FE regressions when using ROA as a proxy for firm's performance. The interaction of the two leverage proxies with the growth dummy variable displays negative coefficients for all the regressions of the model. Note that the growth dummy variable is equal to 1 if sales growth is positive and is equal to 0 otherwise. The coefficients of this interaction vary -0.054 to -1.09 for OLS estimations and from -0.029 to -1.022 for FE estimations over the entire period. Simultaneously, this relationship holds and remains statistically significant after the crisis for both proxies of firm's performance. Yet, the interaction between leverage and growth dummy variable displays insignificant coefficients during the crisis when using ROA as a proxy for firm's performance, but negative and significant coefficients when using ROE as a proxy for firm's performance.

This implies that, leverage has a negative impact on the risk-taking behavior of corporate managers for firms with high growth opportunities, especially after the global crisis. SMEs with high growth opportunities suffer from a higher level of monitoring when compared to those with low growth opportunities. For instance, the shareholders of a firm with high growth perspectives are more likely to expropriate its profits. This implies that, creditors will increase their monitoring activities on the borrowers in order to preserve their loans repayments (Jensen, 1986). Consequently, managers of these firms reduce their risk-taking behavior as they are being exposed to an increased level of monitoring by creditors.

As for the other explanatory variables, the second model provides comparable evidence to the first model. For instance, the results show that firm size, liquidity and tangibility are negatively associated to managerial risk-taking. On the other hand, profitability and cash holdings display positive and statistically significant coefficients.

### 4.3. Sensitivity analysis

The above regressions control for the unobserved characteristics related to firm and time effects. The variables employed in these regressions are considered as exogenous. Due to the fact that the conditions set on bank financing have led creditors to ration the number and size

of loans attributed to borrowers, one can assume that borrowers have anticipated the banks' behavior and have auto-censored themselves from accessing to bank financing. This arises the endogeneity problem between leverage and managerial risk-taking. To address this issue, we employ the two-stages least square instrumental variable approach.

Cash reserves are considered as the instrumental variable. It is defined as the natural logarithm of cash flow. The reasoning is motivated by Jensen (1986) who stated that leverage and cash flow are positively correlated. Thus, in the first stage we regress leverage on cash reserves. Table 16 shows that the two leverage proxies report strongly positive coefficients.

In the second stage, we employ the predicted values in our model and rerun the regressions. Table 17 displays the findings obtained over the entire period. As expected, the leverage proxies (financial debt ratio and long-term debt ratio) display positive and statistically significant coefficients at the 1% level when using ROA and ROE as measures for firm performance. Furthermore, the interaction term between leverage and the sales growth dummy variable reports negative and statistically significant coefficients at the 1% level.

On another hand, Tables 19 and 20 report the results obtained during and after the financial crisis of 2008, respectively. They show that the robustness of the leverage coefficients is more important after than during the crisis. Meanwhile, the coefficients of the interaction term between leverage and the sales growth dummy variable are negative and statistically significant at the 1% level after the financial crisis only.

## 5. Conclusion

Small and medium-sized enterprises are gaining higher importance nowadays as they highly contribute in the economic and financial stability of the countries. Although corporate leverage has a significant weight in the capital structure of these firms, there is little evidence on its impact on the risk-taking behavior of their corporate managers. Thus, this paper tries to fill this gap by empirically investigating the relationship between corporate leverage and managerial risk-taking.

To address this problem, the study is motivated by three of the capital structure theories that highlight the role of leverage in firms. In the first theory, Myers (1977) stated that managers are less likely to invest in positive net present value projects as a result of debt overhang. In

the second theory, Jensen (1986) showed that leverage is considered as a disciplining tool that reduces the over-investment problem of corporate managers. In contrast, Maksimovic and Titman (1991) documented in their paper that, individuals are generally reluctant to do business with a highly leveraged firm. Thus, managers engaging in a highly leveraged firm are considered to be risk-taking.

This paper uses a sample composed of 1403 French small and medium-sized firm observations listed on the Euronext Paris stock exchange over the period 2008 to 2016. In order to highlight the impact of the global crisis on managerial risk-taking, the regressions are run over the entire period and, during and after the crisis (i.e. during 2008 and from 2009 to 2016).

The empirical findings show that corporate leverage significantly amplifies the risk-taking behavior of corporate managers in French SMEs over the entire period. Nevertheless, this relationship is more robust after than during the crisis. Due to the financial crisis of 2008, banks enhanced credit rationing on SMEs' lending at the expense of a higher monitoring, which has increased managerial risk-taking. This impact is significantly present in low growth firms.

Furthermore, the positive correlation between the risk-taking behavior of managers and the corporate leverage is expected to mark some implications on the shareholders' and creditors' decision making process. On the one hand, as shareholders are expected to use debt as a disciplining tool to prevent managers from investing in negative net present value projects, they will have incentives to implement new disciplining tools since debt enhances the risk-taking behavior of managers after the financial crisis of 2008, which is not in their interest. On the other hand, since banks reduced their monitoring scope after crisis, they are expected to use very reliable and accurate tools in order to reduce the adverse selection problem when allocating debt to firms, especially to SMEs. Therefore, we address future researches to investigate the implementation of new disciplining tools applied by investors and new selection tools employed by creditors that manage the risk-taking behavior of managers in small businesses, especially after the financial crisis of 2008. In addition, one can assume that the increase in managerial risk-taking will definitely have an important impact on the firm itself (i.e. turnover, employees, etc.). Thus, it would be interesting to discover this path in small businesses by investigating the impact of the risk-taking behavior of managers on the firm characteristics.

## 6. Tables

Table 7. Sample

<b>Panel A: Sample selection</b>	
Non-financial SMEs from 2008 to 2016	1578
SMEs with Missing data	-175
Final sample	1403
<b>Panel B: Time distribution</b>	
2016	168
2015	164
2014	185
2013	169
2012	150
2011	146
2010	138
2009	147
2008	136
Final sample	1403

Table 8. Descriptive Statistics

	Entire period (2008 to 2016)					During the crisis (2008)					After the crisis (2009 to 2016)				
	Mean	Standard deviation	P25	P50	P75	Mean	Standard deviation	P25	P50	P75	Mean	Standard deviation	P25	P50	P75
Risk 1	0.087	0.114	0	0.053	0.121	0.075	0.110	0	0.035	0.107	0.088	0.115	0	0.053	0.122
Risk 2	0.088	0.116	0	0.05	0.120	0.074	0.111	0	0.029	0.108	0.089	0.116	0	0.05	0.123
Risk 3	0.275	0.585	0	0.134	0.338	0.208	0.312	0	0.103	0.271	0.283	0.605	0	0.134	0.342
Risk 4	0.272	0.602	0	0.136	0.324	0.209	0.322	0	0.099	0.295	0.277	0.623	0	0.137	0.325
Risk 5	0.085	0.110	0	0.048	0.120	0.074	0.108	0	0.036	0.113	0.086	0.110	0	0.050	0.122
Risk 6	0.085	0.111	0	0.05	0.120	0.074	0.108	0	0.035	0.108	0.086	0.111	0	0.051	0.122
Risk 7	0.273	0.578	0	0.140	0.330	0.208	0.313	0	0.103	0.272	0.281	0.596	0	0.144	0.334
Risk 8	0.271	0.592	0	0.139	0.325	0.208	0.323	0	0.110	0.291	0.278	0.611	0	0.144	0.331
ROE	-0.169	0.748	-0.220	0.010	0.100	-0.105	0.491	-0.22	0.045	0.155	-0.176	0.771	-0.22	0.010	0.100
ROA	-0.058	0.193	-0.120	0.010	0.050	-0.044	0.201	-0.09	0.020	0.070	-0.06	0.192	-0.12	0	0.05
Leverage 1	0.149	0.151	0.028	0.109	0.221	0.167	0.183	0.019	0.108	0.255	0.147	0.147	0.029	0.11	0.217
Leverage 2	0.103	0.133	0.005	0.056	0.138	0.110	0.165	0.002	0.039	0.114	0.102	0.129	0.006	0.059	0.140
Firm Size	9.705	1.236	8.964	9.703	10.43	9.648	1.428	8.927	9.783	10.50	9.711	1.214	8.965	9.695	10.42
Sales Growth	0.832	10.29	-0.078	0.048	0.214	0.189	0.562	-0.06	0.06	0.236	0.896	10.79	-0.08	0.045	0.209
Tobin's Q	1.579	2.428	0.419	0.853	1.791	0.938	1.184	0.301	0.609	1.146	1.640	2.507	0.430	0.875	1.871
Cash holdings	0.244	0.233	0.057	0.178	0.365	0.242	0.240	0.038	0.172	0.389	0.245	0.232	0.059	0.178	0.362
Tangibility	0.115	0.179	0.015	0.038	0.129	0.115	0.183	0.016	0.0443	0.129	0.115	0.179	0.015	0.038	0.129
Liquidity	3.040	6.985	1.255	1.817	2.934	3.385	8.801	1.131	1.798	2.934	3.002	6.759	1.260	1.819	2.934
Interest coverage ratio	0.054	5.289	-0.025	0.016	0.123	-0.290	5.187	-0.01	0.040	0.179	0.091	5.301	-0.03	0.015	0.119

Where Risk 1 represents the absolute value of the residuals retrieved from the OLS regression of ROA on Leverage 1 and control variables. Risk 2 represents the absolute value of the residuals retrieved from the OLS regression of ROA on leverage 2 and control variables. Risk 3 represents the absolute value of the residuals retrieved from the OLS regression of ROE on Leverage 1 and control variables. Risk 4 represents the absolute value of the residuals retrieved from the OLS regression of ROE on leverage 2 and control variables. Risk 5 represents the absolute value of the residuals retrieved from the FE regression of ROA on Leverage 1 and control variables. Risk 6 represents the absolute value of the residuals retrieved from the FE regression of ROA on leverage 2 and control variables. Risk 7 represents the absolute value of the residuals retrieved from the FE regression of ROE on Leverage 1 and control variables. Risk 8 represents the absolute value of the residuals retrieved from the FE regression of ROE on leverage 2 and control variables. Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 9. Pearson correlation matrix between independent variables

	Leverage 1	Leverage 2	Firm Size	Sales Growth	Tobin's Q	Cash holdings	Tangibility	Liquidity	Interest coverage ratio
Leverage 1	1								
Leverage 2	0.850***	1							
Firm Size	0.371***	0.370***	1						
Sales Growth	0.019	0.033	0.009	1					
Tobin's Q	-0.143***	-0.076*	-0.175***	0.242***	1				
Cash holdings	-0.343***	-0.223***	0.050	0.015	0.272***	1			
Tangibility	0.165***	0.178***	0.148***	-0.034	-0.079*	-0.203***	1		
Liquidity	-0.197***	-0.085**	0.112***	0.0003	0.154***	0.555***	-0.087**	1	
Interest coverage ratio	0.001	-0.001	0.030	0.0004	-0.021	0.047	-0.007	0.020	1

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 10. Regressions of risk-taking on leverage for the entire period

	Entire Period (2008 to 2016)							
	ROA				ROE			
Leverage 1	0.076*** (0.027)	0.080*** (0.0292)			1.410*** (0.150)	1.384*** (0.280)		
Leverage 2			0.102*** (0.029)	0.097*** (0.0323)			0.909*** (0.175)	0.853*** (0.253)
Firm Size	-0.013*** (0.004)	-0.006 (0.0044)	-0.016*** (0.004)	-0.007* (0.0044)	-0.101*** (0.021)	-0.065*** (0.0240)	-0.077*** (0.021)	-0.028 (0.0241)
Sales Growth	-0.0005 (0.0003)	-0.0004 (0.0003)	-0.0004 (0.0003)	-0.0004 (0.0004)	0.003 (0.002)	0.002 (0.002)	0.003 (0.002)	0.003 (0.002)
Tobin's Q	0.013*** (0.002)	0.012*** (0.003)	0.013*** (0.002)	0.012*** (0.003)	0.049*** (0.009)	0.046** (0.018)	0.052*** (0.01)	0.047*** (0.017)
Cash holdings	0.139*** (0.02)	0.121*** (0.025)	0.144*** (0.02)	0.119*** (0.024)	0.250** (0.113)	0.198 (0.181)	0.111 (0.117)	0.032 (0.179)
Tangibility	-0.017 (0.019)	-0.045** (0.021)	-0.025 (0.019)	-0.053** (0.021)	-0.203* (0.106)	-0.309*** (0.099)	-0.280** (0.112)	-0.382*** (0.082)
Liquidity	-0.008*** (0.002)	-0.009*** (0.002)	-0.008*** (0.002)	-0.0087*** (0.002)	-0.020** (0.009)	-0.020 (0.014)	-0.025*** (0.009)	-0.025 (0.016)
Interest coverage ratio	-0.0003 (0.0006)	0.00001 (0.0005)	-0.0003 (0.0006)	0.00005 (0.0005)	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.004)	-0.001 (0.002)
Constant	0.208*** (0.035)	0.093* (0.054)	0.234*** (0.035)	0.116** (0.055)	1.104*** (0.193)	0.478 (0.292)	1.028*** (0.206)	0.241 (0.305)
<b>Observations</b>	1,028	1,028	1,028	1,028	1,028	1,028	1,028	1,028
<b>R-squared</b>	0.136	0.154	0.148	0.156	0.124	0.138	0.081	0.095
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 11. Regressions of risk-taking (using ROA) on leverage during vs. after the crisis

	During the Crisis (2008)				After the Crisis (2009 to 2016)			
Leverage 1	-0.039 (0.090)	-0.024 (0.064)			0.100*** (0.028)	0.103*** (0.030)		
Leverage 2			-0.012 (0.102)	-0.010 (0.067)			0.136*** (0.0316)	0.126*** (0.034)
Firm Size	-0.006 (0.015)	-0.002 (0.015)	-0.010 (0.016)	-0.006 (0.014)	-0.014*** (0.004)	-0.007 (0.004)	-0.016*** (0.004)	-0.008* (0.005)
Sales Growth	-0.019 (0.024)	-0.009 (0.017)	-0.014 (0.024)	-0.0001 (0.017)	-0.0005 (0.0003)	-0.0005 (0.0003)	-0.0004 (0.0003)	-0.0004 (0.0004)
Tobin's Q	0.009 (0.021)	0.008 (0.017)	0.019 (0.021)	0.018 (0.016)	0.013*** (0.002)	0.012*** (0.003)	0.013*** (0.002)	0.012*** (0.003)
Cash holdings	0.182** (0.085)	0.179*** (0.063)	0.180** (0.084)	0.175*** (0.061)	0.140*** (0.021)	0.120*** (0.024)	0.146*** (0.021)	0.118*** (0.024)
Tangibility	-0.051 (0.067)	-0.075** (0.032)	-0.062 (0.067)	-0.080** (0.032)	-0.016 (0.020)	-0.044** (0.022)	-0.023 (0.020)	-0.052** (0.021)
Liquidity	-0.011* (0.006)	-0.010*** (0.003)	-0.011* (0.006)	-0.010*** (0.003)	-0.008*** (0.002)	-0.008*** (0.002)	-0.008*** (0.002)	-0.009*** (0.002)
Interest coverage ratio	0.001 (0.002)	0.001 (0.001)	0.001 (0.002)	0.001 (0.001)	-0.0002 (0.001)	0.0001 (0.001)	-0.0002 (0.001)	0.0001 (0.001)
Constant	0.168 (0.137)	0.093 (0.184)	0.201 (0.147)	0.124 (0.175)	0.211*** (0.036)	0.099* (0.054)	0.235*** (0.036)	0.121** (0.056)
<b>Observations</b>	90	90	90	90	938	938	938	938
<b>R-squared</b>	0.135	0.138	0.144	0.152	0.146	0.163	0.161	0.166
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 12. Regressions of risk-taking (using ROE) on leverage during vs. after the crisis

	During the Crisis (2008)				After the Crisis (2009 to 2016)			
Leverage 1	0.428*	0.460*			1.560***	1.523***		
	(0.254)	(0.262)			(0.164)	(0.313)		
Leverage 2			0.264	0.320			1.056***	0.968***
			(0.302)	(0.289)			(0.192)	(0.280)
Firm Size	-0.104**	-0.121**	-0.0952**	-0.120**	-0.101***	-0.059**	-0.076***	-0.021
	(0.042)	(0.051)	(0.046)	(0.052)	(0.022)	(0.025)	(0.023)	(0.026)
Sales Growth	-0.087	-0.085	-0.075	-0.068	0.002	0.002	0.003	0.002
	(0.067)	(0.051)	(0.072)	(0.050)	(0.002)	(0.002)	(0.002)	(0.002)
Tobin's Q	-0.057	-0.060	-0.015	-0.022	0.050***	0.046**	0.052***	0.046***
	(0.059)	(0.042)	(0.062)	(0.051)	(0.010)	(0.018)	(0.011)	(0.017)
Cash holdings	0.277	0.296*	0.162	0.182	0.268**	0.217	0.135	0.0438
	(0.240)	(0.162)	(0.250)	(0.177)	(0.121)	(0.195)	(0.125)	(0.194)
Tangibility	-0.206	-0.200*	-0.256	-0.262**	-0.208*	-0.325***	-0.272**	-0.385***
	(0.188)	(0.101)	(0.200)	(0.102)	(0.114)	(0.103)	(0.122)	(0.087)
Liquidity	-0.017	-0.018	-0.020	-0.021*	-0.019**	-0.020	-0.025**	-0.025
	(0.017)	(0.011)	(0.018)	(0.012)	(0.009)	(0.016)	(0.010)	(0.018)
Interest coverage ratio	0.007	0.007**	0.006	0.006**	-0.003	-0.003	-0.002	-0.002
	(0.006)	(0.003)	(0.006)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)
Constant	1.361***	1.624***	1.320***	1.705***	1.071***	0.369	0.991***	0.121
	(0.387)	(0.566)	(0.437)	(0.564)	(0.206)	(0.321)	(0.220)	(0.341)
<b>Observations</b>	90	90	90	90	938	938	938	938
<b>R-squared</b>	0.154	0.161	0.125	0.137	0.133	0.148	0.085	0.098
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 13. Regressions of risk-taking on leverage and growth opportunities for the entire period

	Entire Period (2008 to 2016)							
	ROA				ROE			
Leverage 1	0.108***	0.097***			2.043***	1.982***		
	(0.034)	(0.035)			(0.182)	(0.332)		
Lev1 x Gh'	-0.054	-0.029			-1.090***	-1.022***		
	(0.033)	(0.028)			(0.178)	(0.300)		
Leverage 2			0.159***	0.136***			1.403***	1.262***
			(0.0419)	(0.042)			(0.245)	(0.277)
Lev2 x Gh'			-0.079*	-0.052			-0.706***	-0.586*
			(0.044)	(0.035)			(0.255)	(0.313)
Firm Size	-0.013***	-0.006	-0.016***	-0.008*	-0.094***	-0.069***	-0.078***	-0.032
	(0.004)	(0.004)	(0.004)	(0.005)	(0.020)	(0.023)	(0.021)	(0.024)
Sales Growth	-0.0005	-0.0004	-0.0004	-0.0004	0.003*	0.003	0.003	0.003
	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.002)	(0.002)	(0.002)	(0.002)
Tobin's Q	0.013***	0.012***	0.012***	0.012***	0.055***	0.051***	0.053***	0.048***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.009)	(0.017)	(0.010)	(0.016)
Cash holdings	0.140***	0.121***	0.143***	0.119***	0.270**	0.213	0.119	0.039
	(0.020)	(0.025)	(0.020)	(0.024)	(0.110)	(0.180)	(0.116)	(0.179)
Tangibility	-0.018	-0.044**	-0.028	-0.053**	-0.192*	-0.281***	-0.283**	-0.378***
	(0.019)	(0.021)	(0.019)	(0.021)	(0.103)	(0.094)	(0.112)	(0.083)
Liquidity	-0.008***	-0.006***	-0.008***	-0.006***	-0.020**	-0.020	-0.025***	-0.025
	(0.002)	(0.002)	(0.002)	(0.002)	(0.009)	(0.014)	(0.009)	(0.016)
Interest coverage ratio	-0.0003	-0.00001	-0.0003	0.0001	-0.002	-0.002	-0.002	-0.002
	(0.0006)	(0.001)	(0.0006)	(0.001)	(0.003)	(0.003)	(0.004)	(0.003)
Constant	0.206***	0.098*	0.236***	0.123**	1.010***	0.586**	1.024***	0.300
	(0.035)	(0.054)	(0.035)	(0.055)	(0.188)	(0.276)	(0.204)	(0.298)
<b>Observations</b>	1,028	1,028	1,028	1,028	1,028	1,028	1,028	1,028
<b>R-squared</b>	0.140	0.155	0.151	0.159	0.157	0.165	0.090	0.101
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Gh' is a dummy variable equal to 1 if Sales Growth > 0 and 0 otherwise. Leverage x Gh' is the interaction term between leverage ratio and growth dummy variable. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 14. Regressions of risk-taking (using ROA) on leverage and growth opportunities during vs. after the crisis

	During the Crisis (2008)				After the Crisis (2009 to 2016)			
Leverage 1	-0.040 (0.112)	-0.040 (0.090)			0.138*** (0.035)	0.127*** (0.035)		
Lev1 x Gh'	-0.047 (0.119)	-0.029 (0.084)			-0.060* (0.035)	-0.037 (0.028)		
Leverage 2			-0.005 (0.162)	0.019 (0.118)			0.201*** (0.043)	0.167*** (0.043)
Lev2 x Gh'			-0.049 (0.166)	-0.072 (0.110)			-0.087* (0.046)	-0.055 (0.037)
Firm Size	-0.0004 (0.016)	0.005 (0.015)	-0.007 (0.016)	-0.001 (0.015)	-0.014*** (0.004)	-0.008* (0.004)	-0.017*** (0.004)	-0.009* (0.005)
Sales Growth	-0.021 (0.026)	-0.012 (0.018)	-0.014 (0.026)	0.0001 (0.018)	-0.0005 (0.0003)	-0.0004 (0.0003)	-0.0004 (0.0003)	-0.0004 (0.0003)
Tobin's Q	0.004 (0.021)	0.005 (0.018)	0.010 (0.022)	0.012 (0.018)	0.013*** (0.002)	0.012*** (0.003)	0.013*** (0.002)	0.012*** (0.003)
Cash holdings	0.166* (0.087)	0.164** (0.065)	0.171** (0.086)	0.164** (0.063)	0.141*** (0.021)	0.121*** (0.025)	0.146*** (0.021)	0.120*** (0.024)
Tangibility	-0.043 (0.068)	-0.070* (0.035)	-0.051 (0.069)	-0.069* (0.035)	-0.016 (0.020)	-0.043** (0.021)	-0.025 (0.020)	-0.051** (0.021)
Liquidity	-0.011* (0.006)	-0.010*** (0.003)	-0.010 (0.006)	-0.010*** (0.003)	-0.008*** (0.002)	-0.008*** (0.002)	-0.008*** (0.002)	-0.009*** (0.002)
Interest coverage ratio	0.002 (0.002)	0.001 (0.001)	0.001 (0.002)	0.001 (0.001)	-0.0002 (0.001)	0.0001 (0.001)	-0.0002 (0.001)	0.0001 (0.001)
Constant	0.122 (0.144)	0.038 (0.184)	0.172 (0.150)	0.085 (0.187)	0.210*** (0.036)	0.107* (0.055)	0.238*** (0.036)	0.128** (0.056)
<b>Observations</b>	90	90	90	90	938	938	938	938
<b>R-squared</b>	0.130	0.135	0.129	0.141	0.151	0.166	0.166	0.169
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Gh' is a dummy variable equal to 1 if Sales Growth > 0 and 0 otherwise. Leverage x Gh' is the interaction term between leverage ratio and growth dummy variable. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 15. Regressions of risk-taking (using ROE) on leverage and growth opportunities during vs. after the crisis

	During the Crisis (2008)				After the Crisis (2009 to 2016)			
Leverage 1	0.498 (0.310)	0.517 (0.368)			2.236*** (0.198)	2.162*** (0.383)		
Lev1 x Gh'	-0.552* (0.329)	-0.588* (0.298)			-1.165*** (0.194)	-1.084*** (0.344)		
Leverage 2			0.741 (0.469)	0.847** (0.411)			1.566*** (0.263)	1.381*** (0.304)
Lev2 x Gh'			-0.711 (0.480)	-0.809** (0.323)			-0.733*** (0.278)	-0.594* (0.350)
Firm Size	-0.053 (0.043)	-0.065 (0.05)	-0.079* (0.046)	-0.102* (0.053)	-0.096*** (0.021)	-0.067*** (0.024)	-0.077*** (0.023)	-0.026 (0.025)
Sales Growth	-0.072 (0.072)	-0.066 (0.048)	-0.056 (0.074)	-0.047 (0.052)	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)
Tobin's Q	-0.072 (0.058)	-0.069 (0.045)	-0.052 (0.062)	-0.057 (0.047)	0.055*** (0.010)	0.051*** (0.018)	0.054*** (0.011)	0.048*** (0.017)
Cash holdings	0.169 (0.241)	0.168 (0.160)	0.112 (0.248)	0.125 (0.178)	0.290** (0.117)	0.232 (0.195)	0.150 (0.125)	0.056 (0.193)
Tangibility	-0.148 (0.189)	-0.127 (0.085)	-0.207 (0.199)	-0.196* (0.108)	-0.198* (0.111)	-0.300*** (0.099)	-0.276** (0.121)	-0.382*** (0.088)
Liquidity	-0.019 (0.017)	-0.020* (0.011)	-0.018 (0.017)	-0.019 (0.013)	-0.019** (0.009)	-0.019 (0.015)	-0.025** (0.010)	-0.025 (0.018)
Interest coverage ratio	0.007 (0.006)	0.007*** (0.002)	0.007 (0.006)	0.007** (0.003)	-0.003 (0.004)	-0.003 (0.003)	-0.002 (0.004)	-0.002 (0.003)
Constant	0.893** (0.401)	1.100* (0.565)	1.183*** (0.433)	1.552** (0.605)	1.010*** (0.200)	0.511* (0.302)	0.996*** (0.218)	0.189 (0.333)
<b>Observations</b>	90	90	90	90	938	938	938	938
<b>R-squared</b>	0.170	0.170	0.148	0.159	0.166	0.176	0.094	0.105
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Gh' is a dummy variable equal to 1 if Sales Growth > 0 and 0 otherwise. Leverage x Gh' is the interaction term between leverage ratio and growth dummy variable. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 16. First stage OLS regression of leverage on cash reserves (IV) and the control variables over the entire period (2008 to 2016).

	Leverage1		Leverage2	
Cash reserves	0.026*** (0.004)	0.026*** (0.008)	0.023*** (0.003)	0.022*** (0.008)
Constant	-0.039 (0.026)	-0.031 (0.085)	-0.065*** (0.022)	-0.037 (0.075)
<b>Observations</b>	773	773	773	773
<b>R-squared</b>	0.067	0.074	0.069	0.077
<b>Year</b>	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Cash reserves is the natural logarithm of cash flow. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 17. Second stage regressions of Risk-taking on the predicted values of leverage (FIT Lev) and the control variables.

Entire Period (2008 to 2016)								
	ROA				ROE			
FIT Lev1	1.603*** (0.074)	1.538*** (0.126)			3.877*** (0.346)	3.639*** (0.336)		
FIT Lev1 x Gh'	-0.180*** (0.024)	-0.097*** (0.025)			-1.020*** (0.113)	-0.757*** (0.092)		
FIT Lev2			1.854*** (0.086)	1.836*** (0.149)			4.549*** (0.400)	4.394*** (0.401)
FIT Lev2 x Gh'			-0.236*** (0.035)	-0.124*** (0.036)			-1.343*** (0.165)	-0.955*** (0.134)
Size	-0.031*** (0.002)	-0.009** (0.004)	-0.031*** (0.002)	-0.009** (0.004)	-0.084*** (0.011)	-0.021 (0.016)	-0.084*** (0.011)	-0.020 (0.016)
Growth	0.001*** (0.0003)	0.001*** (0.0003)	0.001*** (0.0004)	0.001*** (0.0003)	0.017*** (0.002)	0.016*** (0.001)	0.017*** (0.002)	0.016*** (0.001)
Tobin's Q	0.024*** (0.001)	0.020*** (0.002)	0.024*** (0.001)	0.020*** (0.002)	0.080*** (0.005)	0.070*** (0.008)	0.081*** (0.005)	0.070*** (0.008)
Cash holdings	0.212*** (0.012)	0.195*** (0.014)	0.212*** (0.012)	0.196*** (0.014)	0.170*** (0.054)	0.135** (0.064)	0.176*** (0.054)	0.139** (0.064)
Tangibility	-0.045*** (0.009)	-0.057*** (0.014)	-0.045*** (0.009)	-0.058*** (0.014)	-0.212*** (0.041)	-0.270*** (0.038)	-0.212*** (0.041)	-0.273*** (0.038)
Liquidity	-0.005*** (0.001)	-0.007*** (0.001)	-0.005*** (0.001)	-0.007*** (0.001)	-0.004 (0.004)	-0.004 (0.007)	-0.005 (0.004)	-0.004 (0.007)
Interest coverage ratio	-0.003*** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)	-0.002*** (0.001)	-0.007** (0.003)	-0.006 (0.005)	-0.007** (0.003)	-0.006 (0.005)
Constant	0.128*** (0.018)	-0.222*** (0.032)	0.180*** (0.019)	-0.204*** (0.033)	0.532*** (0.085)	-0.501*** (0.135)	0.643*** (0.089)	-0.480*** (0.138)
<b>Observations</b>	621	621	621	621	621	621	621	621
<b>R-squared</b>	0.718	0.708	0.719	0.709	0.503	0.502	0.500	0.501
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. FIT Lev is a prediction of the leverage. Gh' is a dummy variable equal to 1 if sales growth is >0 and 0 otherwise. FIT Lev x Gh' is the interaction term between the prediction of the leverage and the growth dummy variable. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 18. First stage OLS regression of leverage on cash reserves (IV) and the control variables during versus after the crisis.

	During the Crisis (2008)				After the Crisis (2009 to 2016)			
	Leverage1		Leverage2		Leverage1		Leverage2	
Cash reserves	0.033**	0.033*	0.040***	0.036**	0.026***	0.025***	0.021***	0.020**
	(0.014)	(0.018)	(0.012)	(0.015)	(0.004)	(0.008)	(0.003)	(0.008)
Constant	-0.085	-0.075	-0.178**	-0.125	-0.034	-0.024	-0.052**	-0.030
	(0.097)	(0.181)	(0.083)	(0.147)	(0.026)	(0.085)	(0.023)	(0.075)
<b>Observations</b>	80	80	80	80	693	693	693	693
<b>R-squared</b>	0.073	0.073	0.132	0.135	0.066	0.074	0.063	0.071
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. Cash reserves is the natural logarithm of cash flow. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 19. Second stage regressions of Risk-taking on the predicted values of leverage (FIT Lev) and the control variables during the financial crisis.

	ROA				ROE			
FIT Lev1	0.670**	0.806**			0.143	0.413		
	(0.270)	(0.347)			(1.158)	(1.113)		
FIT Lev1 x Gh'	0.007	0.003			0.428	0.399		
	(0.092)	(0.061)			(0.396)	(0.248)		
FIT Lev2			0.820***	0.866***			1.144	1.352
			(0.246)	(0.297)			(1.018)	(0.850)
FIT Lev2 x Gh'			-0.137	-0.103			-0.107	-0.132
			(0.125)	(0.074)			(0.515)	(0.246)
Size	-0.010	0.001	-0.014	-0.002	-0.052	-0.037	-0.068	-0.065**
	(0.010)	(0.010)	(0.010)	(0.093)	(0.043)	(0.0368)	(0.0413)	(0.0301)
Growth	-0.006	-0.014	0.007	0.004	-0.102	-0.122	-0.049	-0.053
	(0.016)	(0.024)	(0.016)	(0.028)	(0.067)	(0.077)	(0.065)	(0.089)
Tobin's Q	0.009	0.011	0.015	0.018	-0.082	-0.076**	-0.052	-0.055
	(0.012)	(0.012)	(0.012)	(0.012)	(0.050)	(0.037)	(0.049)	(0.034)
Cash holdings	0.270***	0.260***	0.263***	0.255***	0.196	0.198	0.226	0.225*
	(0.043)	(0.034)	(0.043)	(0.029)	(0.183)	(0.137)	(0.177)	(0.116)
Tangibility	-0.053*	-0.074**	-0.066**	-0.082***	-0.111	-0.126	-0.170	-0.181*
	(0.029)	(0.030)	(0.029)	(0.030)	(0.122)	(0.094)	(0.118)	(0.106)
Liquidity	-0.010***	-0.008***	-0.009***	-0.009***	-0.012	-0.012	-0.014	-0.013
	(0.003)	(0.002)	(0.003)	(0.002)	(0.012)	(0.009)	(0.011)	(0.008)
Interest coverage ratio	-0.0003	-0.001	-0.001	-0.001**	0.004	0.003**	0.002	0.002
	(0.001)	(0.0004)	(0.001)	(0.0004)	(0.004)	(0.002)	(0.004)	(0.001)
Constant	0.062	-0.168	0.120	-0.124	0.797**	0.488	0.884**	0.762***
	(0.078)	(0.101)	(0.085)	(0.091)	(0.333)	(0.338)	(0.352)	(0.271)
<b>Observations</b>	55	55	55	55	55	55	55	55
<b>R-squared</b>	0.623	0.641	0.643	0.656	0.267	0.280	0.256	0.259
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. FIT Lev is a prediction of the leverage. Gh' is a dummy variable equal to 1 if sales growth is >0 and 0 otherwise. FIT Lev x Gh' is the interaction term between the prediction of the leverage and the growth dummy variable. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

Table 20. Second stage regressions of Risk-taking on the predicted values of leverage (FIT Lev) and the control variables after the financial crisis.

	ROA				ROE			
FIT Lev1	1.665*** (0.08)	1.563*** (0.137)			4.060*** (0.377)	3.757*** (0.345)		
FIT Lev1 x Gh'	-0.182*** (0.025)	-0.090*** (0.027)			-1.031*** (0.120)	-0.725*** (0.114)		
FIT Lev2			2.021*** (0.097)	1.939*** (0.169)			4.983*** (0.458)	4.705*** (0.427)
FIT Lev2 x Gh'			-0.242*** (0.037)	-0.119*** (0.039)			-1.392*** (0.176)	-0.938*** (0.166)
Size	-0.032*** (0.003)	-0.009** (0.004)	-0.033*** (0.003)	-0.009** (0.004)	-0.085*** (0.012)	-0.016 (0.016)	-0.084*** (0.012)	-0.015 (0.016)
Growth	0.001*** (0.0004)	0.001*** (0.0003)	0.001*** (0.0004)	0.001*** (0.0003)	0.017*** (0.002)	0.016*** (0.0009)	0.017*** (0.002)	0.016*** (0.001)
Tobin's Q	0.024*** (0.001)	0.020*** (0.001)	0.024*** (0.001)	0.020*** (0.001)	0.081*** (0.005)	0.069*** (0.008)	0.082*** (0.005)	0.069*** (0.008)
Cash holdings	0.214*** (0.012)	0.196*** (0.014)	0.215*** (0.012)	0.196*** (0.014)	0.186*** (0.056)	0.144** (0.064)	0.194*** (0.056)	0.149** (0.064)
Tangibility	-0.045*** (0.009)	-0.053*** (0.014)	-0.046*** (0.009)	-0.053*** (0.014)	-0.217*** (0.044)	-0.268*** (0.038)	-0.216*** (0.044)	-0.270*** (0.038)
Liquidity	-0.005*** (0.001)	-0.007*** (0.001)	-0.005*** (0.001)	-0.007*** (0.0005)	-0.003 (0.004)	-0.002 (0.008)	-0.004 (0.004)	-0.003 (0.008)
Interest coverage ratio	-0.004*** (0.002)	-0.004*** (0.001)	-0.004*** (0.002)	-0.004*** (0.001)	-0.022*** (0.007)	-0.017 (0.016)	-0.022*** (0.007)	-0.017 (0.016)
Constant	0.130*** (0.019)	-0.235*** (0.032)	0.174*** (0.020)	-0.218*** (0.032)	0.511*** (0.089)	-0.619*** (0.141)	0.607*** (0.093)	-0.599*** (0.143)
<b>Observations</b>	566	566	566	566	566	566	566	566
<b>R-squared</b>	0.729	0.707	0.730	0.707	0.522	0.511	0.520	0.509
<b>Year</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>Firm</b>	No	Yes	No	Yes	No	Yes	No	Yes

Where Leverage 1 is the ratio of financial debt to total assets. Leverage 2 is defined as the long-term debt divided by total assets. FIT Lev is a prediction of the leverage. Gh' is a dummy variable equal to 1 if sales growth is >0 and 0 otherwise. FIT Lev x Gh' is the interaction term between the prediction of the leverage and the growth dummy variable. Firm Size is measured by the logarithm of total assets. Sales growth is measured by the difference between the net sales of two consecutive years divided by net sales of the earlier year. Tobin's Q ratio is equal to the market capitalization of the firm divided by the book value of its total assets. Cash holdings is defined as the ratio of cash and cash equivalents over the total assets. Tangibility is measured by the ratio of fixed assets over the firm's total assets. Liquidity is estimated by current assets divided by current liabilities. Interest coverage ratio is equal to the ratio of paid interest over EBITDA. Standard errors clustered at the firm level are in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% level, respectively.

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Essay 2:

The Impact of Financial Reporting Quality on  
Firms' Access to Leverage Financing: The  
Case of French Listed SMEs

# 1. Introduction

Ever since the theory of asymmetric information was introduced in the 1970s (Akerlof, 1970), researchers have highlighted its presence in most of the corporate relationships, most particularly in the lender–borrower relationship. This problem, characterized by an imbalance of firm-related information between these two parties, has created several issues, such as the adverse selection and the moral hazard problems. In these asymmetric frameworks, the lender seeking to gather information about the firm’s financial situation and risks is generally less informed than the borrower is. As a consequence, credit institutions tend (1) to impose stringent conditions on firms’ debt financing, as demonstrated by a higher cost of debt, shorter maturities, and stricter collateral requirements; (2) to lower the firms’ access to financing; (3) to ration credit to firms, to a certain extent (Stiglitz & Weiss, 1981). These restrictions are more associated with small and medium-sized enterprises (SMEs) as compared to larger firms, given that they are characterized by a lower historical traceability and a reduced financial visibility, which make their structure more opaque and risky (Berger & Udell, 1998).

Among many remedies to these issues, previous studies have underlined the efficient role of financial reporting quality (hereafter FRQ) when it comes to alleviating information asymmetry problems between lenders and borrowers (Healy & Palepu, 2001). As FRQ ensures a better visibility of the borrower’s financial situation, credit institutions are more capable of assessing the future revenues and the riskiness of the firms (De Meyere, Vander Bauwhede, & Van Cauwenberge, 2018). More recently, several studies have highlighted the economic advantages of reporting of a higher quality on debt contracting for privately held SMEs. They have provided evidence that FRQ plays an effective role in enhancing the SMEs’ level of debt (Van Caneghem & Van Campenhout, 2012); reducing the cost of debt (Vander Bauwhede, De Meyere, & Van Cauwenberge, 2015); and improving SMEs’ access to bank and supplier financing (García-Teruel, Martínez-Solano, & Sánchez-Ballesta, 2014b, 2014a). Moreover, De Meyere et al. (2018) have showed that high quality reporting is positively correlated to the proportion of debt in the firm and to the likelihood of having long-term debt.

In addition to its usefulness for the private firms’ leverage contracting, FRQ is proven to be highly successful for the public firms’ leverage access, as the technique of financial statement lending focuses more on transparent borrowers (Berger & Udell, 2006). In fact, according to the “demand hypothesis,” publicly held firms are required to submit higher-quality financial statements in comparison to privately held firms, as they are characterized by a dispersion of

ownership and a separation of control that amplify information asymmetry problems with the creditors (Hope, Thomas, & Vyas, 2013). Yet, to the best of our knowledge, the examination of FRQ's role regarding access to financing for publicly held small and medium-sized enterprises remains undiscovered. Therefore, the main purpose of this essay is to investigate the extent to which FRQ enhances the firms' access to external debt financing in the context of French listed SMEs. In fact, the French framework is an extremely interesting territory to explore because of its legal system. Given that France is a code law country in which creditor and investor protection is weak (La Porta, Lopez-de-silanes, Shleifer, & Vishny, 1998) and the disclosure levels are low (Leuz, Nanda, & Wysocki, 2003), managers have more incentives to exhibit higher levels of earnings management<sup>47</sup> with regard to Anglo-Saxon countries, which implies severer information asymmetry problems with creditors. For these reasons, French SMEs are particularly encouraged to report high-quality financial statements in order to access the desired debt financing.

To conduct the analysis, this paper considers a dataset composed of 603 firm-observations over the period 2008 to 2016. The financial reporting quality is measured according to two accrual-based models proposed by Dechow & Dichev (2002) and Kasznik (1999), which have been extensively employed in the previous literature. In addition to acknowledging the total leverage financing as the main debt measure, this paper covers the debt maturity of firms by recognizing two additional debt measures: long-term financial debt and short-term financial debt. Consistent with the argument that FRQ alleviates information asymmetry problems, the empirical findings prove that the listed firms' FRQ enhances external debt access. This impact is more striking for long-term bank financing, yet is not significant for short-term bank financing. Further, given that the period of study includes the financial crisis year, we distinguish between the periods during and after the financial crisis (i.e., 2008 and from 2009 to 2016, respectively). Our findings reveal a positive association between FRQ and the three debt financing measures for the post-crisis period, yet this relationship is either negative and/or insignificant during the crisis period. We extend our analysis to investigate whether the existence of growth opportunities influences the positive relationship between FRQ and debt financing.

This paper provides several contributions to the previous financial and accounting literature on FRQ. To the best of our knowledge, this paper constitutes a first empirical attempt to investigate

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<sup>47</sup> Earnings management has been defined as a strategy that “occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers” (Healy & Wahlen, 1999, p.368).

the role of FRQ on French listed SMEs' external financing. In fact, this paper proves that FRQ has a significant impact on the access to external financing, especially for small publicly held risky businesses. Second, we attempt to enlarge the examination process of this relationship by proposing several proxies of debt financing (total debt, long-term bank debt, short-term bank debt), which adds to the literature of FRQ and SMEs' financing. Third, we try to highlight the impact of the financial crisis of 2008 and the presence of growth opportunities on the relationship between FRQ and debt financing.

The remainder of this paper is organized as follows. Section 2 reviews the previous literature related to the FRQ and external debt access for small businesses, and develops our hypothesis. Section 3 describes the sample construction and details the research design of our model including the measurement of FRQ, the proxies of debt financing and other explanatory variables. Section 4 provides the empirical finding of our regressions and the discussions. Section 5 concludes the paper.

## 2. Literature review

Throughout the lending process, the credit institution's decisions about granting loans and pricing terms are based on the assessment of the borrower's riskiness and reimbursement capacity (Bharath, Sunder, & Sunder, 2008; Cassar, Ittner, & Cavalluzzo, 2015; De Meyere et al., 2018). Often, the realization of this procedure is influenced by the striking presence of information asymmetries between lenders and borrowers. The fact that borrowers are better informed about their past and future riskiness than are lenders significantly alters the lending process (Cassar et al., 2015) and imposes agency costs on them. In spite of their presence in most of the firms, the information asymmetry problems are severer in small businesses, known for their informationally opaque structures (Berger, Klapper, & Udell, 2001; Berger & Udell, 1995). This considerably toughens their credit conditions and access to financing in comparison to larger firms (Beck & Demirguc-Kunt, 2006).

A large body of literature has been involved in treating this major problem by proposing several lending techniques suited for small businesses. Some of them are based on soft information such as long-term relationship lending (Berger & Udell, 1995; Boot, 2000; Elyasiani & Goldberg, 2004), while others are based on hard information, such as asset-based lending and credit scoring (Berger & Udell, 2006). In addition, researchers have shed the light on another

hard-information lending technique based on the use of the companies' financial statements by creditors, which helps confront information asymmetry problems and reduce agency costs (Berger & Udell, 2006). This so-called accounting-based lending or financial statement lending is described as "a transaction technology based on the strength of the borrower's financial statements" (García-Teruel, Martínez-Solano, & Sánchez-Ballesta, 2014b, p.187).

Under this lending technique, creditors employ the financial statements' information of companies to forecast their future operating cash flow to determine their riskiness and capacity of reimbursing (García-Teruel et al., 2014b). Previous studies proved that the use of accruals accounting is more efficient than cash accounting when estimating the firm's future performance (Dechow, Kothari, & Watts, 1998). The underlying rationale for this preference relies on the fact that since the actual "receipt or disbursement" of cash flows and the "recognition of the transaction as an expense or a revenue" are two separate transactions because of their occurrence in different time horizons, accruals accounting recognizes the financial events at the time of the transaction occurrence in contrast to cash accounting (Dechow & Dichev, 2002, p.37). Thus, it enables creditors to forecast the borrowers' future cash flow more accurately. Nevertheless, in spite of its explanatory power, the accruals' process is exposed to inevitable errors of estimation caused by its foundation on strict assumptions and estimates (Dechow & Dichev, 2002). Some of these are associated with unintentional errors of estimation (such as the valuation of tangible fixed assets, the prediction of provisions for bad debt, etc. (Vander Bauwhede, De Meyere, & Van Cauwenberge, 2015, p.151), while others are associated with intentional errors such as earnings management. Dechow & Dichev (2002) stated that regardless of the origin of these errors, their presence significantly reduces the quality of accruals. Actually, the more accurate the estimation of accruals (i.e., the less they are damaged by noise caused by either intentional or unintentional errors of estimation), the higher their explanatory quality, which boosts the quality of the financial reporting and thus enables lenders to better assess the riskiness of the borrower. Consistent with this line of research, Jones (1991) measured earnings management by the discretionary part in total accruals and reported that higher accruals quality is less affected by the intentional errors of estimation, which increases its explanatory power and contributes to the alleviation of the information asymmetry.

Moreover, following the signaling theory proposed by Spence (1973), managers use their financial statements' quality as a signal<sup>48</sup> to inform credit institutions about their situation. In

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<sup>48</sup> In his novel work, Spence (1973) differentiated between signals and indices. The author defined the former as an alterable characteristic and the latter as a fixed characteristic.

general, insiders possess more private information and a greater awareness of their quality than do outsiders. Consequently, poorly-informed creditors tend to impose higher constraints and limit the access to financing of all firm types without regard to their quality. Thus, in order to avoid the severe financing conditions and to increase their chance of accessing debt, managers send signals to creditors through their financial reporting quality. This mitigates the existing information asymmetry problems by enabling creditors to assess the future borrower's riskiness more accurately.

In line with the previous developments, a large body of literature has empirically examined the effect of FRQ on external capital allocations to privately held SMEs in Europe (De Meyere et al., 2018; García-Teruel et al., 2014b, 2014a; Van Caneghem & Van Campenhout, 2012; Vander Bauwhede et al., 2015) and has revealed the economic benefits of reporting high-quality financial statements on the access and terms of leverage financing. More precisely, while employing dichotomous variables to measure the quality and the quantity of the financial reporting quality of SMEs (for example, a variable that takes the value of 1 if the SME files its financial statements according to the complete format, and 0 otherwise), Van Caneghem & Van Campenhout (2012) reported that the quality and the amount of financial statements positively affect Belgian SMEs' access to leverage financing. Furthermore, Vander Bauwhede et al. (2015) examined whether the quality of financial reporting influences the cost of debt of SMEs. They also considered a sample composed of 8,908 private SME observations in Belgium, and found that the lower the estimation error (i.e., higher reporting quality), the lower the asymmetry of information between the bank and the firm and the lower the interest cost of debt imposed on their financing. García-Teruel et al. (2014a, b) investigated the Spanish market of SMEs' financial reporting and reported evidence that higher reporting quality alleviates information asymmetry problems, which facilitates their access to bank financing as well as supplier financing even though "financial reporting quality has a more limited role in countries like Spain than in those with higher enforcement and more developed capital markets" (p.1198). More recently, De Meyere et al. (2018) explored whether the reporting quality of financial statements has an impact on the debt maturity of privately held corporations. While considering a sample composed of Belgian firms, they claimed that reporting with high quality increases the proportion of debt in total debt as well as the likelihood of having long-term debt. Further, they reported that these relationships are more pronounced in SMEs.

Although these empirical studies have investigated the relationship between FRQ and leverage financing for privately held SMEs, other researchers have proved the existence of a demand for

higher reporting quality for publicly held firms in comparison to privately held firms (Ball & Shivakumar, 2005; Burgstahler, Hail, & Leuz, 2006). The “demand hypothesis” suggests that as publicly held firms are characterized by a dispersion of ownership and a separation of control that amplify information asymmetries, they have greater incentives submit higher-quality financial statements in order to access debt financing with good terms (Hope et al., 2013).<sup>49</sup> Yet, to the best of our knowledge, the examination of FRQ’s role regarding access to financing for publicly held SMEs remains uncharted, and we are interested in discovering this relationship in France.

France is an extremely interesting country to explore in this context for several reasons. First, France is classified as a code law country (La Porta et al., 1998), so it is characterized by weaker creditor and investor protection than are common law countries. Regarding creditor protection in French civil law countries, La Porta et al. (1998) reported that

few of them (26 percent, tied with Scandinavia) have no automatic stay on assets; relatively few (26 percent) assure that secured creditors are paid first; few (46 percent—still more than German civil-law countries) place restrictions on managers seeking court protection from creditors; and relatively few (26 percent) remove managers in reorganization proceedings. (p.1138)

Hence, within this particular framework, managers have higher incentives for earnings management, which increases their discretionary earnings (Filip & Raffournier, 2014). Thus, high-quality reporting of financial statements is of a considerable importance for the lending process in civil law countries.

Second, civil law countries are known for the detailed regulations (Van Caneghem & Van Campenhout, 2012) they impose on firms for reporting their financial statements according to the latest dispositive. In fact, the AMF (Autorité des Marchés Financiers),<sup>50</sup> which controls the financial markets in France, requires French listed firms to disclose ongoing and periodic financial information publicly. More precisely, the first disclosure form presumes an instant disclosure of any information that could impact the share prices of listed corporations on the market (Art. 223-2 of the AMF General Regulation). Most importantly, the second disclosure

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<sup>49</sup> Despite the fact that information asymmetries are also present in privately held structures, creditors would rather resolve these problems by collecting information about companies through private channels (i.e., make use of “insider access” to information), which limits the active role of financial reporting quality in privately held corporations (Chen, Hope, Li, & Wang, 2011).

<sup>50</sup> For more information, see <https://www.amf-france.org/Acteurs-et-produits/Societes-cotees-et-operations-financieres/Information-financiere-et-comptable/Obligations-d-information>.

form makes it compulsory for firms to report their financial statements on an annual basis. Every corporation must disclose a full annual financial report within a period of four months after the end of the financial year. Further, they must divulge information regarding internal control and a report of corporate governance (Art. 221-3 of the AMF General Regulation and Art. L. 225-37 of the Commercial Code) as well as auditor fees (Art. 222-8 of the AMF General Regulation) and other financial information.

Consequently, the accounting standards of financial reporting disclosure ensure the high quality of the statements and better visibility of the small listed businesses' financial information submitted to leverage providers. This contributes to the mitigation of the information asymmetry problems between lenders and borrowers. In light of the aforementioned arguments, we expect a positive relationship between the access to leverage and the financial reporting quality of French listed SMEs.

**H1:** There is a positive relationship between the FRQ of French publicly held SMEs and their proportion of total debt financing.

This study further examines whether the impact of FRQ on the access to leverage varies with respect to the maturity of debt. In fact, the influence of FRQ is expected to be more pronounced for long-term financial debt than for short-term financial debt, as information asymmetries are severer in the first setting. As reported in De Meyere et al. (2018), this is due to two reasons. First, as long-term debt operates over a longer time horizon, the creditors' forecasting of cash flow is more affected by information asymmetries. Second, given that long-term debt generates lower renegotiation terms and higher monitoring costs, creditors favor short-term debt to control the severer information asymmetries. Consequently, higher FRQ mitigates information asymmetry problems and thus increases access to long-term financial debt.

**H2:** The positive relationship between FRQ and debt financing of French listed SMEs is more pronounced for high debt maturities.

Given that the period of study includes the financial crisis year of 2008, we investigate more profoundly the impact of this economic downturn on the relationship between FRQ and firms' access to leverage financing. In fact, during the financial crisis, companies performed higher-quality reporting of financial statements. As discussed in Filip & Raffournier (2014), this is due to several reasons. First, they are highly monitored by external capital providers (i.e., shareholders, banks, etc.), which attenuates the level of discretionary accruals. Second, since firms face severer litigation risks during a recession, managers have lesser incentives for

earnings management. Third, firms are obliged to submit higher-quality reports during a recession. As high-quality reporting during the crisis was exclusively influenced by the severe risks encountered during this period, creditors were not able to accurately assess the riskiness of firms. Therefore, we expect that the positive correlation between FRQ and the allocation of leverage will be more striking after than during the financial crisis.

**H3:** The positive relationship between FRQ and debt financing of French listed SMEs is more pronounced after than during the financial crisis.

### 3. Sample and methodology

In this section, we describe the sample selection as well as the methodology used in this article. The first subsection details the procedure of the sample selection. Then, the second subsection specifies the empirical model on which this article is based and the measurement of the dependent and independent variables.

#### 3.1. Sample selection

To address the hypotheses of this paper, financial information—balance sheets and income statements (profit and loss accounts)—was extracted from the Amadeus database. This database, published by the Bureau van Dijk, provides information on about 22 million companies in 44 countries. A second source of information was used to measure the control variable “firm age.” It required gathering of the firms’ dates of registration at the Registre du Commerce et des Sociétés from the French website ([www.societe.com](http://www.societe.com)) that provides legal information on French companies.

Since this study is based on French SMEs listed on the Euronext Paris stock exchange over the period 2008 to 2016, we first follow the European Commission definition of small and medium-sized enterprises. According to EU recommendation 2003/361,<sup>51</sup> a firm is acknowledged as an SME when it has (1) fewer than 250 employees and (2) an annual turnover not exceeding 50

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<sup>51</sup> For more information, see “COMMISSION RECOMMENDATION of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (notified under document number C (2003) 1422),” <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003H0361&from=EN>.

million euros and/or an annual balance sheet lower than 34 million euros. Second, we exclude from our sample all the financial institutions whose NACE Rev. 2 codes<sup>52</sup> are 64–66, 69, 70, and 99 because of their business natures are different from those of non-financial SMEs. Afterward, several firm-observations are eliminated because of missing data, which leaves us with a sample composed of 1,403 firm-observations.

Then, because the estimation of accruals quality (detailed below in section 3.2.3) imposes strict data requirements (i.e., a minimum of five observations for each industry-year group, as well as non-missing values of total and current accruals, cash flow of three consecutive years, plant property and equipment, change in revenues, change in cash flow), the final sample drops to 603 firm-observations.

Table 21 displays the sample selection procedure. Table 22 reveals the distribution of the samples throughout the years of the chosen period, showing that the number of small businesses has been increasing since the financial crisis of 2008.

## 3.2. Methodology

### 3.2.1. Model specification

This paper investigates the impact of FRQ on the leverage financing of SMEs. We examine this relationship according to the following model:

$$Lev_{i,t} = \alpha_0 + \alpha_1 FRQ_{i,t} + \alpha_2 Y^a_{i,t} + \alpha_3 X_{i,t} + \varepsilon_{i,t} \quad (1)$$

where (i)  $Lev_{i,t}$  is represented by the leverage financing proxies of firm  $i$  at time  $t$ ; (ii)  $FRQ_{i,t}$  is defined as the Financial Reporting Quality of firm  $i$  at time  $t$ ; (iii)  $Y^a_{i,t}$  is a vector of firm characteristics that is associated with the leverage financing of SMEs, as follows:  $S_{i,t}$  is the Firm Size of firm  $i$  at time  $t$ ;  $A_{i,t}$  is the Firm Age of firm  $i$  at time  $t$ ;  $Gh_{i,t}$  is the Sales Growth of firm  $i$  at time  $t$ ;  $Itg_{i,t}$  is the Intangibility of firm  $i$  at time  $t$ ;  $ROA_{i,t}$  is the Return On Assets ratio of firm  $i$  at time  $t$ ;  $Pr_{j,t}$  is the Profitability defined as the Tobin's Q ratio of firm  $i$  at time  $t$ ; and  $Ic_{i,t}$  is the Interest coverage ratio of firm  $i$  at time  $t$ ; (iv)  $X_i$  is determined as the set of dummy variables that controls for year and firm effects; and (v)  $\varepsilon_{i,t}$  is defined as the error term.

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<sup>52</sup> NACE codes serve as an industry classification code for European firms (source: Eurostat).

### 3.2.2. Dependent variable: leverage financing

This study considers three proxies for leverage financing. The two main proxies are total debt over total assets and total financial debt over total assets. However, since the former proxy is broader, as it includes more leverage components when compared to the latter one, we choose to report the results according to the former measure of leverage financing. In order to investigate the relationship between debt maturity and FRQ, we select two additional proxies: long-term financial debt divided by total assets and short-term financial debt scaled by total assets.

### 3.2.3. Financial Reporting Quality estimation

There is no consensus among researchers regarding a single measure of financial reporting quality. However, the accuracy of reported accruals has been shown to reflect at its best the quality of the financial information that creditors use to assess the borrowers' riskiness, to forecast their future performance, and to make decisions<sup>53</sup> (Dechow, Ge, & Schrand, 2010). This accounting-based measure is the most accepted proxy and extensively used in previous empirical studies (Dechow & Dichev, 2002; Francis, LaFond, Olsson, & Schipper, 2005; Jones, 1991; Kasznik, 1999). Thus, this paper considers two of the accruals quality models.

The first proxy for accruals quality is obtained from the model proposed by Kasznik (1999), which is an extension of the model previously developed by Jones (1991). In this model, accruals quality is measured by the extent to which the variation of revenues (which represents "the economic environment of the firm"), gross property, plant, and equipment<sup>54</sup> (which represent "nondiscretionary depreciation expense"), and the variation of cash flow can explain the total reported accruals.

Thus, Kasznik (1999) proposed the following model:

$$TA_{i,t} = \beta_0 + \beta_1 \Delta Sales_{i,t} + \beta_2 PPE_{i,t} + \beta_3 \Delta CFO_{i,t} + \varepsilon_{i,t} \quad (2)$$

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<sup>53</sup> While some studies highlight the explanatory power of cash flow regarding firm performance, reported earnings remains the major proxy for firm performance (Dechow et al., 1998).

<sup>54</sup> The author has also reported that the use of gross property, plant, and equipment in the estimation of total accruals model instead of its variation is related to the fact that total depreciation is included in the computation of total accruals.

Where  $TA_{i,t}$  represents the total accruals measured by the variation in non-liquid current assets, minus the variation in current liabilities, plus the variation in short-term financial debt, minus the depreciation.  $\Delta Sales_{i,t}$  is defined as the change in revenues of two consecutive years.  $PPE_{i,t}$  is the property, plant, and equipment.  $\Delta CFO_{i,t}$  is measured by the change in cash flow from operations. All the dependent and independent variables are scaled by lagged total assets to attenuate heteroscedasticity problems (Jones, 1991).

Equation (2) is estimated cross-sectionally for each year and industry group with a minimum of five observations. The accruals quality is proxied by the error terms in equation (2). For instance, the residuals represent the variation of total accruals that is not explained by the variation of sales, PPE, and the change in CFO. Thus, the first proxy of FRQ is equal to -1 multiplied by the absolute value of the error term in equation (2). Hence, the lower the error estimation of accruals, the higher the financial reporting quality.

The second proxy for accruals quality is obtained from the model proposed by Dechow & Dichev (2002). In their model, the authors measured the accruals quality by the extent to which the working capital accruals map into the realization of operating cash flows of the previous, current, and future years. Thus, the more the realization of cash flows is reflected in the reported accruals, the less noise in the accruals' estimation, which increases their quality.

Thus, Dechow & Dichev (2002) proposed the following model:

$$WCA_{i,t} = \beta_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \varepsilon_{i,t} \quad (3)$$

where  $WCA_{i,t}$  represents the working capital accruals equal to the variation in non-liquid current assets, minus the variation in current liabilities, plus the variation in short-terms bank debt.  $CFO_{i,t-1}$ ,  $CFO_{i,t}$ , and  $CFO_{i,t+1}$  are defined as the operating cash flows of lagged, current and future years, respectively. All the dependent and independent variables are divided by average total assets to avoid any heteroskedasticity issues.

Equation (3) is estimated cross-sectionally for each year and industry group. In addition, a minimum of five observations is retained, which greatly reduces the number of observations in our sample. Accruals quality is estimated by the error terms in equation (3). It represents the variation of working capital accruals that is not reflected by the realization of lagged, current, and future cash flow. Thus, the second proxy of FRQ is equal to -1 times the absolute value of the error term in equation (3), which indicates that the lower the error estimation of accruals, the higher the financial reporting quality.

### 3.2.4. Firm characteristics

Prior literature on debt financing has highlighted the effects of several firm characteristics on small businesses' access to leverage. Among these characteristics, we include in our model the *firm size*, measured as the natural logarithm of the firm's total assets. Since smaller firms suffer from high information asymmetries because of their opaque structure (Berger et al., 2001) and are more exposed to the event of default, as they are less diversified than larger firms (Pettit & Singer, 1985), they are less capable of contracting debt, especially debt with higher maturities (i.e., long-term debt) (Benkraiem & Gurau, 2013; Michaelas, Chittenden, & Poutziouris, 1999). Hence, this paper predicts a positive relationship between firm size and leverage. In addition, we control for the *firm age*, computed as the natural logarithm of the difference between the observation year and the incorporation year of the firm. Similarly, as older firms are characterized by a more detailed historical traceability, a higher diversifiable nature, a less severe default probability, and hence, lower information asymmetry problems (Berger & Udell, 1998), they have better access to financing than younger firms have. Thus, we expect a positive relationship between firm age and leverage. Further, since it is vital to control for the firm's growth opportunities, we include in our model two proxies: firm *sales growth*, computed as the difference between the sales of two consecutive years divided by the sales of the earlier year; and *intangibility*, measured as the ratio of intangibles over total assets. Since high growth firms tend to have higher probabilities of default and severer asymmetries of information when compared to low growth firms, their access to debt financing is reduced (Cole, 2013). Thus, we expect a negative relationship between firm growth and leverage. Moreover, we control for *profitability*, measured by the return on assets ratio that is equal to the firm's net income scaled by its total assets. According to the Pecking Order Theory (Myers & Majluf, 1984), a profitable firm favors self-financing its projects rather than referring to external financing in order to avoid information asymmetry problems and to refrain from debt payments and costs (Cole, 2013; Heyman, Deloof, & Ooghe, 2008; Matias & Serrasqueiro, 2017; Van Caneghem & Van Campenhout, 2012). Thus, this paper predicts a negative relationship between profitability and leverage. In addition, we include the Tobin's Q ratio, which is measured as the ratio of the firm's capitalization to its total assets. According to the Market Timing Theory,<sup>55</sup> "low leverage firms are those that raised funds when their market valuations were high ... while high leverage

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<sup>55</sup> The Market Timing Theory (MTT) introduced by Baker & Wurgler (2002) considers the choice of debt or equity financing, rather, to depend on the market valuation of the firm at the considered time. Firms opt for debt financing during a low market valuation and issue equity during a high market valuation.

firms are those that raised funds when their market valuations were low” (Baker & Wurgler, 2002, p.2). Therefore, this paper expects a negative association between Tobin’s Q and leverage. Finally, we control for the *interest coverage ratio*, computed by the ratio of the firm’s interest paid to its earnings before interests and taxes (EBIT). In fact, interest coverage ratio indicates the ability of the firm to reimburse its interest payments. By all means, a firm facing difficulties in repayments will suffer from complicated access to debt financing. Hence, this paper expects a negative relationship between interest coverage ratio and leverage.

## 4. Descriptive statistics and empirical results

This section displays the summary statistics and the empirical results of our regressions. The first segment reports the distribution of the sample according to size, age, industry, and years characteristics; the summary statistics of the sample and the two sub-samples (i.e., during and after the financial crisis of 2008); and the findings of the Pearson correlation matrix. The second segment reports the results obtained from the ordinary least square and the fixed effects regressions. The third segment provides the results of the sensitivity analysis.

### 4.1. Descriptive statistics

Table 23 reports the summary statistics of the dependent and independent variables during the entire period and the two sub-periods (Panel A and B, respectively). The two proxies of FRQ according to the Kasznik (1999) and Dechow & Dichev (2002) models reveal a mean (median) of -0.147 (-0.068) and -0.077 (-0.026), respectively. These values are consistent with previous studies in European countries (Cutillas Gomariz & Sánchez Ballesta, 2014; De Meyere et al., 2018; García-Teruel, Martínez-Solano, & Sánchez-Ballesta, 2010; Vander Bauwhede et al., 2015) and in the US (Francis et al., 2005). In addition, the FRQ proxies report higher values on average during than after the financial crisis. This is consistent with the findings of Filip & Raffournier (2014), who reported that firms carried out higher-quality reporting of financial statements during the financial crisis.

On the other hand, leverage proxies reveal either similar or slightly lower averages (short-term debt) after than during the financial crisis. Yet, total leverage still reports an average of about

49% of total assets, which implies that French SMEs are leverage dependent. The mean value of firm size is very similar during and after the crisis. However, the two proxies of growth prospects marked a significant increase after the crisis. In fact, sales growth reports an average of 21.7% during the crisis against 44.6% after the crisis, and intangibility reports an average of 12.3% during the crisis against 15.1% after the crisis. Further, the return on assets ratio shows a slight decrease after the crisis on average. Tobin's Q marks a significant rise after the crisis with an average of 0.9 and 1.8 during and after the crisis, respectively. This implies that the listed SMEs' market performance is more pronounced after the crisis. As expected, firms were less able to cover their loan interest during the financial crisis than after it.

Table 24 presents the Pearson correlation matrix between independent variables. The correlations between our variables report low coefficients, which allows us to conduct our regressions without serious multicollinearity issues. As expected, the two proxies of FRQ show the highest correlation. In addition, leverage proxies are positively and significantly correlated to FRQ proxies, implying that a higher level of FRQ is associated with a higher level of leverage.

## 4.2. Empirical results

Tables 25 and 26 provide the findings of the equation (1)'s estimation while using three leverage measures and two FRQ proxies. The first row in each table shows the FRQ proxy proposed by Kasznik (1999), while the second row shows the FRQ proxy proposed by Dechow & Dichev (2002). All of the regressions in this paper are carried out using ordinary least square (OLS) estimation and the fixed effect (FE) panel estimation in order to control for the unobserved year and industry effects.

According to table 25, the two FRQ proxies report positive and statistically significant coefficients. More precisely, the FRQ measure proposed by Kasznik (1999) reveals coefficients of 0.157 and 0.109, while the FRQ measure proposed by Dechow & Dichev (2002) yields a coefficient of 0.327 and 0.245 for OLS and FE estimations, respectively. In fact, these positive and statistically significant correlations indicate that the amount of total leverage in the firm increases with the quality of reporting of its financial statements, which supports hypothesis H1. This supports the conclusion that since FRQ mitigates information asymmetry problems between borrowers and creditors by providing better financial visibility of the company's future

revenues and risks to creditors, the SMEs' access to funds is improved and facilitated. These results are in line with those reported by García-Teruel, Martínez-Solano, & Sánchez-Ballesta (2014b). As for other control variables, our findings report that the coefficients of the firm size variable are surprisingly negative but not highly significant for FE estimations. On the other hand, the age variable reveals positive and statistically significant coefficients. This implies that older firms have better access to debt on average since they are characterized by a more detailed financial and historical traceability than younger firms. Meanwhile, the firm's growth prospect as measured by intangibility reports negative and statistically significant coefficients. This is because high growth firms have higher information asymmetry problems as well as a higher probability of default, which reduce their access to debt financing. As for profitability computed by the return on assets ratio, the coefficients are negative and statistically significant. This implies that profitable companies favor self-financing rather than seeking external funding in order to refrain from debt payments and to reduce the information asymmetry problems with creditors. Furthermore, neither sales growth nor Tobin's Q variable reports significant coefficients. The interest coverage ratio is only significant for the FE regression using the first proxy of FRQ.

Additionally, we investigate the impact of FRQ on debt maturity in table 26. The coefficients of FRQ are positive and statistically significant for short-term financial debt when using the OLS estimation only, yet they are positive and statistically significant for long-term financial debt when using both OLS and FE estimations. These results indicate that firms with higher reporting quality are more capable of contracting debt with longer maturity than those with lower reporting quality (García-Teruel et al., 2010), which supports hypothesis H2. This finding is as highly consistent with the findings of De Meyere et al. (2018), who reported that the proportion of long-term debt and the likelihood of having long-term debt increases with accruals quality. More precisely, since long-term financing operates over a long-time horizon in comparison to short-term debt financing, it requires, from the creditor's point of view, more extensive gathering of information about the borrower's financial situation (De Meyere et al., 2018). Thus, information asymmetry imposes a higher cost on long-term debt financing. Consequently, when reporting high-quality financial statements, SMEs ensure a better financial visibility to creditors. This mitigates information asymmetry problems and thus enhances their access to long-term bank financing especially. Meanwhile, firms with a poorer reporting quality will face restrained access to long-term financing because credit institutions will favor granting them short-term debt in order to monitor them through the debt renegotiating contract terms,

which is less costly for creditors (García-Teruel et al., 2010). Indeed, our results have revealed insignificant correlations between reporting quality and short-term debt. This explains the fact that when granting short-term debt, credit institutions generally rely more on debt renegotiating contract terms to monitor borrowers than on the quality of their financial statements reporting, which confirms our previous statements. Thus, the FRQ's role in granting funds is more efficient in allocating long-term debt than short-term debt.

As regards to the other control variables included in our model to explain the SMEs' access to debt, we find that firm size yields more positive and more significant coefficients for long-term financial debt than for short-term financial debt. This shows that larger firms have a higher access to debt with longer maturities than smaller firms, because of their higher diversification and lower probability of default (Michaelas et al., 1999). However, the age variable has a more positive impact on access to short-term debt than to long-term debt. Meanwhile, intangibility reports negative and statistically significant coefficients with long-term debt only. The return on assets ratio reveals negative and statistically significant coefficients the long-term and short-term debt measures. The coefficients of the Tobin's Q ratio as well as those of the sales growth variable are not significant for either sub sample. In addition, the coefficients of the interest coverage ratio are insignificant for short-term debt, while they are positive and slightly significant for long-term debt.

As explained above, since the period of study includes the financial crisis year of 2008, we are interested in investigating whether this economic downturn period had an influence on the relationship between FRQ and the firms' access to total leverage financing, long-term financial debt, and short-term financial debt. Thus, we divide our sample between two sub-periods: during the financial crisis (2008) and after the financial crisis (from 2009 to 2016). Then, we re-run our previous regressions over these two sub-periods while using the OLS and FE estimators. Tables 27, 28, and 29 report the findings of these estimations. The results of the post-crisis period show that the coefficients of both FRQ proxies are positive and statistically significant for total leverage and long-term financial debt, yet are insignificant for short-term financial debt when using the FE estimator. However, during the financial crisis year, these coefficients report insignificant values for the three leverage measures (i.e., total leverage, long-term financial debt, short-term financial debt) when using the FE estimator. These results indicate that firms with a higher reporting quality have had a better access to total leverage and long-term debt financing after the crisis period than during it. The intuition behind these findings is that even though firms had incentives to submit higher-quality reports during the

recession period, this information was insufficient for creditors to assess the riskiness of the firms, especially the small, vulnerable ones. Therefore, due to the severe risks encountered during this period, FRQ was unable to mitigate the information asymmetry problems marked by the crisis. This explains its negative or insignificant impact on debt financing. For the other variables included in our model, the tables show correlations similar to the ones described previously.

### 4.3. Additional analysis

This analysis is extended to take into consideration the firms' opportunities for growth. We examine whether the growth level of firms has an influence on the relationship between their quality of financial reporting and their level of leverage. Following previous studies, we distinguish between high-growth and low-growth small businesses (Aivazian, Ge, & Qiu, 2005; Benkraiem, Bouattour, Miloudi, & Vigneron, 2017; Lang, Ofek, & Stulz, 1996). This differentiation is based on the construction of two subsets according to the sales growth of each company in our sample as follows: If the sales growth variable is higher than zero, then the firm in question is categorized a high-growth firm; if the sales growth variable is lower than or equal to zero, then the firm is considered a low-growth firm.

Tables 30, 31, and 32 report the empirical findings of this distinction according to the three leverage measures (total leverage, short-term debt financing, long-term debt financing respectively). As sketched above, we present these results while using the ordinary least square and the fixed effects estimators in the first and second column of each section, respectively. Table 30 clearly shows that the role of financial reporting quality is more robust for firms with high growth opportunities than for firms with low growth opportunities. More precisely, the coefficients of the two FRQ proxies are positive and statistically significant at 1% for high-growth small businesses when employing the OLS and FE models. Nevertheless, these coefficients are significant for OLS, yet not significant for FE estimations when studying the impact of FRQ on total leverage access for low-growth firms. In fact, small businesses with high growth opportunities are more exposed to problems of conflict of interests between their managers and shareholders (Jensen, 1986). Thus, creditors tend to increase their monitoring scope on these firms' access to debt. Subsequently, reporting with a higher quality has a vital role in this setting, as it permits creditors to achieve accurate monitoring and estimation of the firms' future revenues. This increases the firms' access to financing. Meanwhile, the other

control variables report similar coefficients to the ones detailed earlier in section 25. For high-growth firms, the age variable has a positive and significant impact on firms' access to leverage, while the variables of intangibility and ROA reveal negative and statistically significant coefficients. For low-growth firms, the variables of intangibility and Tobin's Q have a negative and a significant impact on the total leverage variable.

Likewise, the empirical findings in table 31 reveal that the influence of reporting with a higher quality on access to long-term financing is more striking for high-growth firms than for low-growth firms. Nevertheless, this is not the case for access to short-term debt. More precisely, table 32 show that the coefficients of the two FRQ proxies are insignificant for both subsets (i.e., high-growth and low-growth firms). These results prove that creditors make use of the firms' financial reporting when granting long-term debt for high-growth firms in which there is a higher conflict of interest. In addition, the coefficients of the other control variables are comparable to those reported in section 26.

#### 4.4. Sensitivity analysis

In this section, we treat the potential endogeneity between the FRQ and the leverage measures. In fact, debt can influence the accruals quality (García-Teruel et al., 2014b) because managers might manipulate their earnings to refrain from debt covenants. Therefore, we employ the two-stages least square instrumental variable approach in order to address this vital issue.

More precisely, this paper considers the cash of the firms equal to the ratio of cash to lagged total assets to curb heteroskedasticity, as an instrumental variable. This choice of instrumental variable is motivated by the fact that the higher the cash of the firm, the higher the incentives of the managers to expropriate benefits and to misreport financial statements (Fransman, 1994; Jensen, 1986). This implies a negative impact of cash on accruals quality. The accomplishment of the two-stages least square regressions consists of two steps. In the first step (the so-called first stage), we regress the two proxies of financial reporting quality on the instrumental variable and other control variables, respectively. Afterwards, in the second step (the so-called second stage), we regress the three leverage measures on the predicted values of financial reporting quality obtained from the first-stage regression and on the rest of the control variables. The results of the first stage regression are reported in table 33. They show that the coefficients of cash are negative and strongly statistically significant.

Table 34 reports the results of the second-stage estimation. The coefficients of the FRQ predicted values display positive and statistically significant values, which is consistent with our previous results. For instance, the positive significant correlations between the FRQ predicted values and both the total leverage and long-term debt hold when using both the OLS and the FE estimators. The correlations between FRQ predicted values and short-term debt are not significant when using FE estimators, which is consistent with the previously reported results. In addition, the other explanatory variables show comparable coefficients to the previous ones.

## 5. Conclusion

The presence of severe information asymmetry problems between creditors and small businesses significantly alters the conditions of the lending process. Previous literature argued that high-quality reporting of financial statements can mitigate these problems as it provides an accurate vision for lenders on the financial situation of firms. We aimed to investigate in this essay the impact of FRQ on three types of SMEs' debt contracting (total leverage financing, long-term financial debt, and short-term financial debt). To address this issue, this paper considered a dataset composed of 603 firm-observations of non-financial French firms listed on the Euronext Paris stock exchange over the period 2008 to 2016. Following previous studies, FRQ was measured according to two estimations of the accruals quality models proposed by Dechow & Dichev (2002) and Kasznik (1999).

After running the regressions, in which we control for industry and year effects, our empirical findings indicate that FRQ enhances SMEs' access to debt financing through the alleviation of information asymmetry problems. This impact is more pronounced for long-term debt financing and is less significant for short-term debt financing. The reason behind these results is likely that since long-term bank debt operates over a longer-time horizon in comparison to short-term bank debt, it requires more valuable and accurate information from the lender's point of view. Thus, FRQ plays a more important effective role in the former setting. Furthermore, we extended our study to test the impact of the financial crisis period on the relationship between FRQ and debt financing. After distinguishing between the periods of during and after the financial crisis, our findings show that FRQ measures are positively correlated with total leverage and long-term debt financing after the crisis period, while they are either negatively or

insignificantly correlated during the crisis period. This implies that although firms used high-quality reporting of their financial statements during the crisis, as they were highly monitored by credit institutions, this did not mitigate the information asymmetry problems between parties because of the high risks encountered during the economic downturn period. Moreover, we examined whether the existence of growth opportunities influences the role of FRQ when it comes to improving the firms' access to financing. After we constructed two subsets of firms—those with high growth opportunities and those with low growth opportunities—our findings reveal a positive and more striking impact of FRQ on access to total leverage for high-growth small businesses exclusively. In fact, since high-growth firms are more exposed to conflict of interests between their managers and shareholders, creditors make more use of their financial statements in order to grant them credit. Thus, a higher quality of financial statement reporting improves these firms' access to debt, especially to long-term debt.

Overall, the findings of this essay provide useful insights for managers and credit institutions on their decision-making process in their respective fields. This essay encourages managers to perform high-quality reporting of their financial statements in order to access the desired amount of debt. In addition, it highlights for creditors the importance of the examination of financial statements before granting credit and invites future researchers to investigate whether other parties of the firms are as interested in financial reporting quality as creditors are. For instance, we believe it would be interesting to examine the market's reaction toward a higher quality of reporting of financial statements. This leads us to the following questions: Do investors take into account the quality of a firm's financial statements when making investment decisions? If so, is the influence of FRQ more present for investments in SMEs or for larger firms?

## 6. Tables

Table 21. Sample construction

<b>Sample selection</b>	
Non-financial SMEs from 2008 to 2016	1403
AQ Missing data	-800
Final sample	603

Table 22. Sample distribution by years

	Number	Percentage
2008	53	8.79
2009	56	9.29
2010	63	10.45
2011	67	11.11
2012	65	10.78
2013	72	11.94
2014	80	13.27
2015	77	12.77
2016	70	11.61
Total	603	100

Table 23. Summary Statistics

Panel A. Entire period (i.e. from 2008 to 2016)

	Observations	Mean	Standard Deviation	Percentile 25	Percentile 50	Percentile 75
FRQ_Kas	598	-0.147	0.237	-0.181	-0.068	-0.025
FRQ_DD	514	-0.077	0.149	-0.065	-0.026	-0.011
TDTA	603	0.488	0.195	0.341	0.490	0.621
LTTA	599	0.098	0.128	0.011	0.058	0.120
STTA	603	0.049	0.082	0.001	0.019	0.061
Firm Size	603	9.888	1.183	9.206	9.957	10.450
Age	603	2.672	0.620	2.303	2.708	3.091
Sales Growth	588	0.426	3.338	-0.075	0.068	0.238
Intangibility	603	0.148	0.171	0.010	0.092	0.229
ROA	603	-0.087	0.196	-0.170	-0.020	0.030
Tobin's Q	564	1.724	2.455	0.437	0.923	2.036
Interest coverage	565	0.063	2.501	-0.058	-0.005	0.119

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. TDTA is defined as the ratio of total leverage over total assets. LTTA is the long-term financial debt over total assets. STTA is the short-term financial debt over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT).

Panel B. During VS. After the Financial Crisis of 2008

	During the Financial Crisis (i.e. 2008)						After the Financial Crisis (i.e. From 2009 to 2016)					
	N	Mean	Standard Deviation	P25	P50	P75	N	Mean	Standard Deviation	P25	P50	P75
FRQ_Kas	53	-0.076	0.081	-0.096	-0.058	-0.021	545	-0.153	0.246	-0.186	-0.071	-0.026
FRQ_DD	53	-0.039	0.036	-0.049	-0.031	-0.011	461	-0.082	0.156	-0.067	-0.025	-0.010
TDTA	53	0.472	0.200	0.338	0.434	0.568	550	0.489	0.195	0.344	0.496	0.622
LTTA	52	0.094	0.152	0.002	0.037	0.099	547	0.098	0.125	0.014	0.062	0.123
STTA	53	0.057	0.106	0.005	0.016	0.048	550	0.048	0.080	0.001	0.020	0.061
Firm Size	53	10.008	1.364	9.242	10.083	10.736	550	9.876	1.165	9.198	9.956	10.432
Age	53	2.537	0.524	2.197	2.398	2.944	550	2.685	0.628	2.303	2.708	3.091
Sales Growth	53	0.217	0.654	-0.051	0.117	0.285	535	0.446	3.493	-0.076	0.059	0.237
Intangibility	53	0.123	0.157	0.008	0.068	0.144	550	0.151	0.172	0.010	0.094	0.236
ROA	53	-0.038	0.168	-0.110	0.000	0.080	550	-0.091	0.198	-0.180	-0.020	0.030
Tobin's Q	47	0.915	0.793	0.327	0.612	1.602	517	1.798	2.541	0.455	0.963	2.207
Interest coverage	49	0.204	2.346	-0.045	0.006	0.132	516	0.049	2.517	-0.058	-0.006	0.115

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. TDTA is defined as the ratio of total leverage over total assets. LTTA is the long-term financial debt over total assets. STTA is the short-term financial debt over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT).

Table 24. Pearson Correlation Matrix

	FRQ_Kas	FRQ_DD	Firm Size	Age	Sales Growth	Intangibility	ROA	Tobin's Q	Interest coverage
FRQ_Kas	1								
FRQ_DD	0.659***	1							
Firm Size	-0.148**	-0.258***	1						
Age	0.203***	0.224***	0.0696	1					
Sales Growth	-0.0385	-0.0157	0.0643	-0.210***	1				
Intangibility	0.149**	0.143**	0.0654	-0.0516	0.0171	1			
ROA	0.242***	0.274***	-0.0377	0.282***	0.0155	-0.0194	1		
Tobin's Q	-0.282***	-0.327***	-0.117*	-0.294***	0.157**	-0.194***	-0.309***	1	
Interest coverage	0.0127	0.0358	0.0124	0.0101	-0.0207	0.0477	0.00798	-0.0147	1

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 25. Regression of Total Leverage on FRQ proxies and other explanatory variables

	Total Leverage			
FRQ_Kas	0.157*** (0.0345)	0.109*** (0.0331)		
FRQ_DD			0.327*** (0.0547)	0.245*** (0.0685)
Firm Size	-0.0248*** (0.00829)	-0.0188* (0.0104)	-0.0171* (0.00916)	-0.0179 (0.0111)
Age	0.0636*** (0.0143)	0.0622*** (0.0132)	0.0550*** (0.0146)	0.0528*** (0.0133)
Sales growth	0.000985 (0.00137)	0.00140 (0.00175)	-3.47e-05 (0.00132)	0.000677 (0.00172)
Intangibility	-0.153*** (0.0468)	-0.197*** (0.0465)	-0.158*** (0.0518)	-0.191*** (0.0522)
ROA	-0.107** (0.0462)	-0.179*** (0.0469)	-0.132*** (0.0511)	-0.183*** (0.0513)
Tobin's Q	-0.0156** (0.00692)	-0.0108 (0.00690)	-0.0121* (0.00694)	-0.00955 (0.00705)
Interest coverage	-0.00127 (0.00203)	-0.00353** (0.00167)	-0.000913 (0.00241)	-0.00215 (0.00142)
Constant	0.640*** (0.0897)	0.415*** (0.109)	0.582*** (0.0970)	0.421*** (0.117)
Observations	517	517	440	440
R squared	0.156	0.304	0.166	0.310
Industry Fixed Effects	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. TDTA is defined as the ratio of total leverage over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). Robust standard errors are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 26. Regression of Long-term Debt VS. Short-term Debt on FRQ proxies and other explanatory variables

	Short-term financial debt				Long-term financial debt			
FRQ_Kas	0.0270*** (0.0103)	0.00469 (0.0108)			0.101*** (0.0255)	0.0469** (0.0191)		
FRQ_DD			0.0597*** (0.0180)	0.00762 (0.0234)			0.183*** (0.0364)	0.0693* (0.0392)
Firm Size	0.00504 (0.00308)	0.00675 (0.00422)	0.00783** (0.00335)	0.00779* (0.00449)	0.0597*** (0.00680)	0.0423*** (0.00627)	0.0696*** (0.00744)	0.0460*** (0.00671)
Age	0.0219*** (0.00688)	0.0175** (0.00742)	0.0217*** (0.00746)	0.0158* (0.00812)	0.0186 (0.0121)	-0.000607 (0.0106)	0.0186 (0.0135)	-0.00239 (0.0116)
Sales growth	0.000113 (0.000580)	0.000175 (0.000311)	-0.000106 (0.000619)	0.000143 (0.000356)	-0.000554 (0.00196)	-0.000642 (0.00105)	-0.00102 (0.00205)	-0.000861 (0.00104)
Intangibility	-0.00988 (0.0183)	0.00612 (0.0189)	-0.0184 (0.0191)	0.000928 (0.0200)	-0.122*** (0.0266)	-0.0809*** (0.0264)	-0.136*** (0.0293)	-0.0841*** (0.0299)
ROA	-0.0550*** (0.0183)	-0.0694*** (0.0198)	-0.0535*** (0.0197)	-0.0680*** (0.0206)	-0.0383 (0.0279)	-0.0660*** (0.0240)	-0.0466 (0.0325)	-0.0712*** (0.0262)
Tobin's Q	-0.00451** (0.00178)	-0.00261 (0.00172)	-0.00353* (0.00191)	-0.00206 (0.00183)	0.00105 (0.00386)	0.00442 (0.00380)	0.00304 (0.00385)	0.00543 (0.00397)
Interest coverage	-0.00234* (0.00119)	-0.00256 (0.00157)	-0.00144* (0.000829)	-0.00144 (0.00117)	0.00234* (0.00121)	0.00147* (0.000864)	0.00264* (0.00156)	0.00197* (0.00110)
Constant	-0.0526 (0.0390)	-0.0779 (0.0482)	-0.0793* (0.0433)	-0.0834 (0.0528)	-0.517*** (0.0767)	-0.331*** (0.0690)	-0.618*** (0.0845)	-0.370*** (0.0750)
Observations	517	517	440	440	515	515	438	438
R squared	0.066	0.170	0.073	0.173	0.297	0.474	0.347	0.535
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. LTFA is the long-term financial debt over total assets. STFA is the short-term financial debt over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). Robust standard errors are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 27. Regression of Total Leverage on FRQ proxies and other explanatory variables during versus after the Financial Crisis of 2008

	Total Leverage							
	During the financial crisis (i.e. 2008)				After the financial crisis (i.e. from 2009 to 2016)			
FRQ_Kas	-0.217 (0.418)	-0.176 (0.458)			0.166*** (0.0352)	0.116*** (0.0334)		
FRQ_DD			0.0491 (0.890)	-1.279 (1.243)			0.346*** (0.0545)	0.269*** (0.0707)
Firm Size	0.0123 (0.0207)	0.0576* (0.0297)	0.00917 (0.0200)	0.0710** (0.0321)	-0.0244*** (0.00856)	-0.0192* (0.0108)	-0.0159* (0.00950)	-0.0181 (0.0116)
Age	0.0446 (0.0541)	0.0412 (0.0585)	0.0394 (0.0542)	0.0603 (0.0604)	0.0586*** (0.0148)	0.0621*** (0.0136)	0.0481*** (0.0151)	0.0516*** (0.0138)
Sales growth	0.0197 (0.0314)	0.0355 (0.0360)	0.0163 (0.0306)	0.0632 (0.0420)	0.000647 (0.00135)	0.00111 (0.00170)	-0.000463 (0.00132)	0.000302 (0.00166)
Intangibility	-0.162 (0.164)	-0.536** (0.207)	-0.152 (0.169)	-0.588** (0.214)	-0.161*** (0.0486)	-0.192*** (0.0481)	-0.169*** (0.0544)	-0.185*** (0.0545)
ROA	-0.00879 (0.160)	-0.124 (0.181)	0.0223 (0.147)	-0.254 (0.232)	-0.112** (0.0475)	-0.180*** (0.0487)	-0.142*** (0.0524)	-0.187*** (0.0535)
Tobin's Q	-0.182*** (0.0399)	-0.207*** (0.0485)	-0.175*** (0.0374)	-0.202*** (0.0459)	-0.0152** (0.00689)	-0.00999 (0.00678)	-0.0116* (0.00682)	-0.00862 (0.00682)
Interest coverage	-0.00660 (0.0112)	-0.0182* (0.0106)	-0.00677 (0.0113)	-0.0196* (0.00959)	-0.000790 (0.00221)	-0.00279* (0.00165)	-0.000145 (0.00285)	-0.00101 (0.00174)
Constant	0.366 (0.270)	-0.190 (0.280)	0.428 (0.259)	-0.398 (0.368)	0.656*** (0.0922)	0.432*** (0.115)	0.596*** (0.0996)	0.445*** (0.123)
Observations	43	43	43	43	474	474	397	397
R squared	0.440	0.664	0.434	0.680	0.164	0.300	0.180	0.311
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. TDTA is defined as the ratio of total leverage over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). Robust standard errors are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 28. Regression of Long-term Debt on FRQ proxies and other explanatory variables during versus after the Financial Crisis of 2008

	Long-term financial debt							
	During the financial crisis (i.e. 2008)				After the financial crisis (i.e. from 2009 to 2016)			
FRQ_Kas	-0.447** (0.195)	-0.712*** (0.139)			0.107*** (0.0267)	0.0568*** (0.0204)		
FRQ_DD			0.0409 (0.385)	-0.518 (0.519)			0.192*** (0.0364)	0.0811** (0.0407)
Firm Size	0.126*** (0.0187)	0.0388** (0.0179)	0.119*** (0.0193)	0.0456* (0.0223)	0.0572*** (0.00703)	0.0426*** (0.00642)	0.0675*** (0.00774)	0.0467*** (0.00689)
Age	-0.0320 (0.0495)	0.0445 (0.0299)	-0.0417 (0.0495)	0.0253 (0.0357)	0.0202 (0.0126)	0.00157 (0.0111)	0.0202 (0.0141)	-0.000230 (0.0123)
Sales growth	0.00529 (0.0210)	0.0249 (0.0147)	-0.00126 (0.0202)	0.0280 (0.0181)	-0.000554 (0.00194)	-0.000682 (0.00109)	-0.00102 (0.00202)	-0.000902 (0.00107)
Intangibility	-0.159 (0.108)	-0.0715 (0.0825)	-0.137 (0.108)	-0.0213 (0.120)	-0.125*** (0.0275)	-0.0870*** (0.0262)	-0.141*** (0.0306)	-0.0916*** (0.0297)
ROA	0.201** (0.0890)	0.00144 (0.0747)	0.263*** (0.0943)	0.00906 (0.114)	-0.0574** (0.0269)	-0.0771*** (0.0238)	-0.0702** (0.0311)	-0.0853*** (0.0258)
Tobin's Q	-0.0880*** (0.0250)	-0.0463* (0.0241)	-0.0741*** (0.0248)	-0.0221 (0.0291)	0.000886 (0.00387)	0.00432 (0.00379)	0.00278 (0.00383)	0.00535 (0.00396)
Interest coverage	-7.59e-05 (0.00728)	0.00414 (0.00475)	-0.000314 (0.00688)	-0.000873 (0.00534)	0.00268** (0.00109)	0.00187*** (0.000716)	0.00319** (0.00154)	0.00257** (0.00100)
Constant	-1.047*** (0.269)	-0.484*** (0.171)	-0.923*** (0.273)	-0.467** (0.221)	-0.495*** (0.0791)	-0.326*** (0.0734)	-0.598*** (0.0879)	-0.367*** (0.0804)
Observations	43	43	43	43	472	472	395	395
R squared	0.680	0.908	0.640	0.853	0.293	0.445	0.346	0.509
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. LTTA is the long-term financial debt over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). Robust standard errors are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 29. Regression of Short-term Debt on FRQ proxies and other explanatory variables during versus after the Financial Crisis of 2008

	Short-term financial debt							
	During the financial crisis (i.e. 2008)				After the financial crisis (i.e. from 2009 to 2016)			
FRQ_Kas	-0.270 (0.281)	0.0654 (0.220)			0.0310*** (0.0112)	0.00532 (0.0111)		
FRQ_DD			-0.418 (0.324)	-0.580 (0.544)			0.0667*** (0.0188)	0.00971 (0.0247)
Firm Size	0.00583 (0.0107)	0.0303 (0.0300)	0.00111 (0.00763)	0.0361 (0.0300)	0.00579* (0.00332)	0.00678 (0.00443)	0.00902** (0.00363)	0.00796* (0.00472)
Age	0.0213 (0.0208)	-0.0177 (0.0235)	0.0233 (0.0166)	-0.00300 (0.0256)	0.0205*** (0.00735)	0.0163** (0.00773)	0.0199** (0.00806)	0.0141* (0.00852)
Sales growth	-0.0101 (0.0129)	-0.0159 (0.0198)	-0.0107 (0.0127)	-0.00145 (0.0200)	7.91e-05 (0.000584)	0.000160 (0.000301)	-0.000167 (0.000624)	0.000109 (0.000346)
Intangibility	-0.0240 (0.0461)	-0.0647 (0.0924)	0.000236 (0.0531)	-0.105 (0.103)	-0.0117 (0.0201)	0.00626 (0.0200)	-0.0216 (0.0213)	6.49e-05 (0.0214)
ROA	-0.112 (0.0837)	-0.0730 (0.0801)	-0.0901 (0.0617)	-0.146 (0.0923)	-0.0539*** (0.0195)	-0.0690*** (0.0209)	-0.0532** (0.0211)	-0.0681*** (0.0218)
Tobin's Q	-0.0315 (0.0235)	-0.0408 (0.0325)	-0.0296 (0.0182)	-0.0437 (0.0301)	-0.00444** (0.00181)	-0.00232 (0.00171)	-0.00344* (0.00195)	-0.00169 (0.00181)
Interest coverage	-0.00431 (0.00898)	-0.0124 (0.0118)	-0.00364 (0.00948)	-0.0121 (0.0118)	-0.00217* (0.00111)	-0.00220 (0.00151)	-0.00111*** (0.000364)	-0.000834 (0.000760)
Constant	-0.0703 (0.147)	-0.187 (0.247)	-0.0231 (0.0967)	-0.305 (0.243)	-0.0544 (0.0416)	-0.0728 (0.0510)	-0.0842* (0.0465)	-0.0765 (0.0556)
Observations	43	43	43	43	474	474	397	397
R squared	0.157	0.368	0.125	0.388	0.068	0.170	0.077	0.177
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. STTA is the short-term financial debt over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). Robust standard errors are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 30. Regression of total leverage on FRQ proxies and other explanatory variables for high-growth versus low-growth firms

	Total Leverage							
	High growth opportunities				Low growth opportunities			
FRQ_Kas	0.158*** (0.0359)	0.105*** (0.0343)			0.205** (0.0958)	0.131 (0.118)		
FRQ_DD			0.337*** (0.0563)	0.258*** (0.0733)			0.261** (0.119)	0.209 (0.143)
Firm Size	-0.0185* (0.0100)	-0.0204 (0.0127)	-0.0116 (0.0106)	-0.0177 (0.0132)	-0.0251** (0.0127)	-0.0210 (0.0163)	-0.0224 (0.0152)	-0.0244 (0.0184)
Age	0.0768*** (0.0173)	0.0735*** (0.0168)	0.0662*** (0.0176)	0.0630*** (0.0170)	0.0333 (0.0240)	0.0331 (0.0230)	0.0310 (0.0254)	0.0283 (0.0242)
Sales growth	2.49e-05 (0.00134)	0.000669 (0.00168)	-0.000822 (0.00126)	2.81e-05 (0.00163)	0.172** (0.0751)	0.149* (0.0796)	0.155* (0.0912)	0.137 (0.0919)
Intangibility	-0.177*** (0.0591)	-0.200*** (0.0620)	-0.190*** (0.0692)	-0.219*** (0.0756)	-0.133* (0.0716)	-0.173** (0.0784)	-0.124 (0.0764)	-0.130 (0.0825)
ROA	-0.0629 (0.0600)	-0.156** (0.0655)	-0.0976 (0.0637)	-0.157** (0.0722)	-0.272*** (0.0763)	-0.275*** (0.0746)	-0.262*** (0.0860)	-0.270*** (0.0827)
Tobin's Q	-0.00768 (0.00824)	-0.00247 (0.00825)	-0.00558 (0.00822)	-0.00141 (0.00841)	-0.0252*** (0.00569)	-0.0286*** (0.00654)	-0.0231*** (0.00686)	-0.0274*** (0.00753)
Interest coverage	0.00177 (0.00309)	-0.00336 (0.00295)	0.000487 (0.00832)	-0.00263 (0.00727)	-0.00252 (0.00206)	-0.00308 (0.00213)	-0.00166 (0.00213)	-0.00181 (0.00117)
Constant	0.544*** (0.111)	0.428*** (0.139)	0.503*** (0.116)	0.423*** (0.148)	0.744*** (0.128)	0.490*** (0.159)	0.709*** (0.156)	0.519*** (0.185)
Observations	314	314	259	259	203	203	181	181
R squared	0.187	0.357	0.205	0.370	0.193	0.345	0.179	0.349
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. TDTA is defined as the ratio of total leverage over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). Robust standard errors are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 31. Regression of long-term debt on FRQ proxies and other explanatory variables for high-growth versus low-growth firms

	Long-term financial debt							
	High growth opportunities				Low growth opportunities			
FRQ_Kas	0.106*** (0.0295)	0.0493** (0.0231)			0.0799 (0.0571)	0.0199 (0.0496)		
FRQ_DD			0.198*** (0.0401)	0.0707 (0.0461)			0.125* (0.0659)	0.0537 (0.0662)
Firm Size	0.0652*** (0.00887)	0.0408*** (0.00840)	0.0761*** (0.00962)	0.0429*** (0.00964)	0.0546*** (0.00945)	0.0406*** (0.00923)	0.0602*** (0.0110)	0.0429*** (0.00972)
Age	0.0252* (0.0144)	0.00389 (0.0129)	0.0219 (0.0166)	-0.00133 (0.0141)	0.00943 (0.0230)	-0.00738 (0.0205)	0.0159 (0.0243)	-0.000160 (0.0216)
Sales growth	-0.00110 (0.00215)	-0.00112 (0.00109)	-0.00141 (0.00217)	-0.00119 (0.00103)	0.0945** (0.0422)	0.0925*** (0.0344)	0.0794 (0.0486)	0.0797** (0.0396)
Intangibility	-0.0954*** (0.0365)	-0.0549 (0.0417)	-0.105** (0.0415)	-0.0544 (0.0543)	-0.156*** (0.0390)	-0.128*** (0.0358)	-0.157*** (0.0418)	-0.131*** (0.0380)
ROA	-0.0394 (0.0347)	-0.0734** (0.0333)	-0.0683* (0.0394)	-0.0973*** (0.0372)	-0.0955** (0.0468)	-0.111*** (0.0397)	-0.0667 (0.0543)	-0.0952** (0.0445)
Tobin's Q	0.00391 (0.00486)	0.00714 (0.00495)	0.00482 (0.00507)	0.00777 (0.00542)	-0.00266 (0.00426)	-0.00229 (0.00374)	0.000239 (0.00420)	-0.000747 (0.00340)
Interest coverage	0.00359 (0.00416)	0.00101 (0.00274)	0.00631 (0.0121)	0.00110 (0.00751)	0.00184*** (0.000617)	0.00160 (0.00103)	0.00196*** (0.000705)	0.00191* (0.00101)
Constant	-0.592*** (0.0950)	-0.314*** (0.0901)	-0.697*** (0.106)	-0.329*** (0.104)	-0.427*** (0.124)	-0.302*** (0.112)	-0.505*** (0.138)	-0.350*** (0.120)
Observations	312	312	257	257	203	203	181	181
R squared	0.328	0.510	0.385	0.589	0.280	0.495	0.304	0.523
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. LTTA is the long-term financial debt over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation and the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). Robust standard errors are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 32. Regression of short-term debt on FRQ proxies and other explanatory variables for high-growth versus low-growth firms

	Short-term financial debt							
	High growth opportunities				Low growth opportunities			
FRQ_Kas	0.0242** (0.0106)	0.00910 (0.0117)			0.00596 (0.0414)	-0.0630 (0.0491)		
FRQ_DD			0.0619*** (0.0226)	0.0191 (0.0281)			0.0425 (0.0406)	-0.0207 (0.0545)
Firm Size	0.00429 (0.00388)	0.00250 (0.00537)	0.00683* (0.00405)	0.00444 (0.00560)	0.0103* (0.00573)	0.0135* (0.00695)	0.0128* (0.00669)	0.0127 (0.00788)
Age	0.0250*** (0.00771)	0.0183** (0.00756)	0.0262*** (0.00914)	0.0177** (0.00859)	0.0141 (0.0137)	0.00901 (0.0168)	0.0114 (0.0137)	0.00572 (0.0174)
Sales growth	-4.92e-06 (0.000573)	-9.90e-05 (0.000395)	-8.60e-05 (0.000596)	-2.74e-05 (0.000438)	0.0596** (0.0302)	0.0398 (0.0318)	0.0517 (0.0331)	0.0366 (0.0328)
Intangibility	0.0254 (0.0221)	0.0375 (0.0237)	0.0169 (0.0232)	0.0238 (0.0279)	-0.0637** (0.0307)	-0.0196 (0.0311)	-0.0572* (0.0316)	0.00170 (0.0335)
ROA	-0.0690*** (0.0221)	-0.0779*** (0.0210)	-0.0773*** (0.0247)	-0.0812*** (0.0221)	-0.0521 (0.0347)	-0.0449 (0.0386)	-0.0397 (0.0364)	-0.0427 (0.0394)
Tobin's Q	-0.00126 (0.00196)	0.000111 (0.00192)	-0.000781 (0.00216)	0.000210 (0.00212)	-0.00917*** (0.00318)	-0.00756** (0.00326)	-0.00698* (0.00356)	-0.00563 (0.00346)
Interest coverage	-0.00297 (0.00248)	-0.00389 (0.00240)	0.00173 (0.00171)	0.000510 (0.00188)	-0.00200* (0.00114)	-0.00216 (0.00140)	-0.00184* (0.00109)	-0.00191 (0.00138)
Constant	-0.0698 (0.0456)	-0.0547 (0.0538)	-0.0968* (0.0500)	-0.0772 (0.0575)	-0.0501 (0.0729)	-0.0887 (0.0909)	-0.0717 (0.0843)	-0.0665 (0.101)
Observations	314	314	259	259	203	203	181	181
R squared	0.079	0.190	0.096	0.209	0.094	0.260	0.089	0.232
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. STTA is the short-term financial debt over total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). Robust standard errors are in parentheses. \*,\*\*,\*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 33. First stage instrumental variable regression

	FRQ_KAS		FRQ_DD	
Cash holdings	-0.333*** (0.0872)	-0.315*** (0.100)	-0.121*** (0.0315)	-0.0823** (0.0365)
Firm Size	-0.00631 (0.00812)	-0.00411 (0.0122)	-0.0282*** (0.00690)	-0.00814 (0.00785)
Age	-0.00351 (0.0213)	-0.0102 (0.0195)	0.0307** (0.0150)	0.0125 (0.0136)
Sales growth	0.00848 (0.00529)	0.0108** (0.00532)	0.00471*** (0.00180)	0.00669*** (0.00198)
Intangibility	-0.0268 (0.0790)	-0.0438 (0.0912)	0.0554 (0.0342)	0.000266 (0.0349)
ROA	0.221*** (0.0505)	0.146** (0.0600)	0.165*** (0.0504)	0.0313 (0.0401)
Tobin'Q	0.00385 (0.00765)	0.00800 (0.00777)	-0.00329 (0.00604)	0.00238 (0.00586)
Interest coverage	-0.00155 (0.00235)	-0.00161 (0.00237)	0.000316 (0.000491)	0.00128* (0.000736)
Constant	0.0516 (0.103)	0.0990 (0.129)	0.170** (0.0824)	0.0619 (0.0959)
Observations	399	399	332	332
R squared	0.466	0.507	0.363	0.489
Industry Fixed Effects	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes

Where FRQ\_Kas is the absolute values of the residuals obtained from Kasznik (1999) model multiplied by -1. FRQ\_DD represents the absolute values of the residuals obtained from Dichow and Dichev (2002) model multiplied by -1. Cash holdings is the ratio of cash divided by lagged total assets. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). The regressions have been carried out using ordinary least square and, year and industry fixed effects estimators with robust standard errors. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 34. Second stage instrumental variable regression

	Total Leverage				Long-term debt financing				Short-term debt financing			
Predict_FRQ_Kas	0.359*** (0.059)	0.247*** (0.063)			0.234*** (0.037)	0.131*** (0.038)			0.107*** (0.040)	0.0485 (0.0298)		
Predict_FRQ_DD			0.892*** (0.175)	0.822*** (0.263)			0.659*** (0.119)	0.501*** (0.167)			0.277*** (0.105)	0.148 (0.123)
Firm Size	-0.015* (0.009)	-0.0182* (0.011)	0.007 (0.012)	-0.014 (0.013)	0.066*** (0.006)	0.045*** (0.006)	0.092*** (0.008)	0.053*** (0.008)	0.008** (0.004)	0.006 (0.005)	0.015*** (0.006)	0.006 (0.006)
Age	0.049*** (0.019)	0.058*** (0.018)	0.026 (0.022)	0.046** (0.020)	0.017 (0.012)	0.004 (0.011)	-0.001 (0.015)	-0.001 (0.013)	0.016* (0.009)	0.0134 (0.008)	0.010 (0.011)	0.012 (0.009)
Sales growth	0.001 (0.003)	0.002 (0.003)	-0.0004 (0.003)	-0.001 (0.003)	-0.0034* (0.002)	-0.002 (0.002)	-0.005** (0.002)	-0.004** (0.002)	-0.001* (0.001)	-0.0002 (0.001)	-0.001*** (0.001)	-0.0007 (0.002)
Intangibility	-0.215*** (0.054)	-0.224*** (0.053)	-0.249*** (0.065)	-0.215*** (0.063)	-0.148*** (0.034)	-0.0927*** (0.032)	-0.199*** (0.044)	-0.102** (0.040)	-0.0268 (0.023)	0.005 (0.025)	-0.048* (0.029)	0.007 (0.029)
ROA	-0.156*** (0.055)	-0.200*** (0.052)	-0.233*** (0.067)	-0.197*** (0.060)	-0.090*** (0.035)	-0.098*** (0.032)	-0.138*** (0.046)	-0.088** (0.038)	-0.080*** (0.024)	-0.086*** (0.025)	-0.100*** (0.033)	-0.082*** (0.028)
Tobin's Q	-0.011** (0.005)	-0.010** (0.005)	-0.006 (0.006)	-0.010** (0.005)	0.004 (0.003)	0.005* (0.003)	0.008** (0.004)	0.006* (0.003)	-0.003 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.002 (0.002)
Interest coverage	-2.23e-05 (0.003)	-0.00229 (0.003)	-0.001 (0.004)	-0.003 (0.004)	0.002 (0.002)	0.002 (0.002)	0.002 (0.003)	0.001 (0.002)	-0.002* (0.001)	-0.002 (0.001)	-0.001*** (0.0004)	-0.001 (0.002)
Constant	0.613*** (0.099)	0.567*** (0.114)	0.465*** (0.118)	0.585*** (0.130)	-0.563*** (0.062)	-0.343*** (0.069)	-0.759*** (0.080)	-0.388*** (0.082)	-0.057 (0.044)	-0.046 (0.054)	-0.105* (0.056)	-0.032 (0.061)
Observations	399	399	332	332	397	397	330	330	399	399	332	332
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Where Predict\_FRQ\_Kas is the predicted values of accruals quality of Kasznik (1999) model obtained from the first stage IV estimation. Predict\_FRQ\_DD represents the predicted values of accruals quality of Dichow and Dichev (2002) obtained from the first stage IV estimation. Firm Size is computed as the natural logarithm of total assets. Age is measured by the natural logarithm of the difference between the year of observation the year of incorporation of firm i. Sales Growth is measured by the difference between the sales of two consecutive years divided by the sales of the earlier year. Intangibility is computed by the ratio of intangibles of total assets. ROA is the return on assets ratio equal to net income over total assets. Tobin's Q is the ratio of the firm's capitalization over its total assets. Interest coverage is computed by the ratio of interest paid over earnings before interests and taxes (EBIT). The regressions have been carried out using ordinary least square and, year and industry fixed effects estimators with robust standard errors. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

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Essay 3:  
The Risk-Taking Behavior of Managers and  
Employees' Pay in French SMEs

# 1. Introduction

Small businesses are recognized according to their unique structure. Despite their important contributions to preserving the financial and economic stability of countries, SMEs are deemed to be risk-taking by nature. In fact, unlike larger firms, these entities are often controlled by one individual prone to engaging in risk-taking activities (Pettit & Singer, 1985). Since small business managers generally invest their financial and physical capital in their firms, they tend to tolerate high levels of risks in order to generate significant returns (Ang, 1991). Yet, the engagement in such activities obviously has an adverse influence on the firms' well-being, as it exposes them to several negative repercussions, out of which this paper is interested in the higher probability of bankruptcy. More precisely, we consider that a firm's probability of bankruptcy increases with the manager's risk-taking behavior. However, this particular event of default is not in any case advantageous for the small businesses' employees because it results in the loss of their firm-specific human capital (Akyol & Verwijmeren, 2013). For instance, Jacobson, LaLonde, & Sullivan (1993) found evidence that employees separating from distressed firms endure on the average long-term losses of 25% of their pre-displacement earnings per year. In addition, they reported that the worker's earnings begin to decline three years prior to the separation. In line with these findings, Graham, Kim, Li, & Qiu (2019) have recently found that employees suffer from losses of 10% in their annual earnings during the year of the occurrence of bankruptcy.

Meanwhile, previous theories have highlighted the essential need to compensate the employees for the expected bankruptcy costs produced by the increase of their manager's risk-taking behavior. More specifically, Titman (1984) underlined the presence of substantial costs to the firm's stakeholders in case of bankruptcy. Berk, Stanton, & Zechner (2010) have formalized these statements and stated that firms facing a high probability of bankruptcy should compensate their employees for the expected bankruptcy losses in their human capital by increasing their wages, especially because employees are not capable of fully insuring their human capital risk. Maksimovic & Titman (1991) claimed that employees are reluctant to do business with a firm with a high probability of bankruptcy unless it increases their wages in compensation for the potential future changes in their employment terms.

Hence, our aim relies on investigating the impact of managerial risk-taking on the employees' wages in small and medium-sized enterprises. Our interest is closely connected to the literature that addresses the impact of leverage on employees' compensation. Several studies of this

abundant literature have proved that since an increase of corporate debt implies a higher probability of bankruptcy, firms compensate their employees for the expected bankruptcy costs by increasing their wages. Among others, Akyol & Verwijmeren (2013) have reported that a one standard deviation increase in market leverage leads to a rise of 2.9% of the average employee wage. In a related study, Chemmanur, Cheng, & Zhang (2013) have stated that the labor costs related to an increase in the level of leverage offset the tax benefits of debt and are large enough to limit the use of debt. More recently, Lin et al. (2019) found that firms with higher debt compensate their CEOs and low-level managers with a higher salary for the expected bankruptcy cost and for the substantial risk of their human capital.

To carry out our empirical analysis, we consider a sample composed of 1,104 firm observations of non-financial SMEs listed on the Euronext Paris stock exchange over the period 2008 to 2016. Following previous studies (Adams, Almeida, & Ferreira, 2005; Cheng, 2008; Faccio & Mura, 2011; Vo, 2016), we measure the risk-taking behavior of managers according to three different proxies related to the firm's performance. In addition, we include other firm characteristics that may influence the average employee pay while controlling for potential industry and year-specific effects. The main finding of this paper is that the average employee wage is positively associated with the risk-taking behavior of managers. More precisely, a one standard deviation in the managerial risk-taking implies an increase of 5.2% to 8.2% of the average employee wage. Hence, managers are expected to incorporate these substantial costs when determining their level of risk-taking behavior. Moreover, we extend our research to study this relationship according to country-, industry-, and firm-related characteristics. Therefore, we distinguish between four subsamples: during and after the financial crisis of 2008 (during 2008 and from 2009 to 2016); firms operating in French regions with high and low unemployment rates; technology and non-technology firms; and high-growth and low-growth firms. In addition, our findings and conclusions are robust with regard to potential endogeneity issues.

The contribution of this paper is threefold. First and most important, this paper represents the first empirical attempt to investigate the impact of managerial risk-taking on average employee pay. Second, this empirical analysis addresses an area of small and medium-sized enterprises that lacked the focus and investigation of previous researchers in comparison to the area of larger firms. Moreover, this paper provides additional evidence on this relationship regarding the country-, industry-, and firm-related characteristics by differentiating among four subsamples.

The remainder of this paper is structured as follows: The second section reviews the previous literature, discusses the theoretical background, and develops the hypothesis on which this paper is based. The third section presents the sample selection procedure and details the methodology used. The fourth section describes the summary statistics and the Pearson correlation matrix. Then it displays the empirical findings and a sensitivity analysis. Finally, the fifth section concludes the paper.

## 2. Literature review

This section reviews the previous literature on the relationship between managerial risk-taking behavior and employees' compensation. The first part presents a detailed survey on the human capital cost of bankruptcy generated by the manager's risk-taking behavior. Then, the second part investigates the previous theoretical models and develops the hypotheses on which this paper is based.

### 2.1. The human capital cost of bankruptcy

Before proceeding with the detailed literature review, we are compelled to describe the concept of "human capital" as it has been defined in prior studies. The origin of the concept of "human capital" goes back to the early 1960s. In fact, after being unable to explain the increasing economic growth in the United States for several decades through non-human capital (i.e., land, labor, and physical capital), Schultz (1961) was among the first authors to point out that the difference between the growth rates of national output and non-human capital is due to the improvement in the human capital of the country. The author stated that human capital consists of investments that enhance human capabilities in several categories, out of which he cites the following: "health facilities and services; on-the-job training; formally organized education at the elementary, secondary and higher levels; study programs for adults that are not organized by firms; and migration of individuals and families to adjust for changing job opportunities" (p.9). Ever since, this concept has been extensively investigated by researchers. For instance, in his paper, Gary S. Becker (1992) said

I am going to talk about a different kind of capital. Schooling, a computer training course, expenditures on medical care, and lectures on the virtues of punctuality and honesty are capital too in the sense that they improve health, raise earnings, or add to a person's appreciation of literature over much of his or her lifetime. (p.85)

More recently, human capital has been narrowly defined as “the stock of knowledge, habits, social and personality attributes, including creativity, embodied in the ability to produce economic value by the labors” (Lin et al., 2019, p.62). Despite the evolution of these definitions throughout the years, we clearly notice that they all emphasize the importance of human capital for employees and the vital need to preserve and improve it in the long run. Nowadays, firms are increasingly accounting for the importance of the human capital among other forms of capital (in particular financial capital) as they consider it the most crucial asset in their entity (Zingales, 2000).

Nevertheless, when firms are exposed to a negative event, the human capital of employees suffers from the risk of loss, especially their firm-specific human capital. For instance, in the particular setting of a bankruptcy, employees face a significant reduction of their non-pecuniary worker advantages (Verwijmeren & Derwall, 2010). In addition, Jacobson, LaLonde, & Sullivan (1993) reported that when high-tenure prime-age workers separate from distressed firms, they endure on average long-term losses of 25% of their pre-displacement earnings per year. They also found evidence that the workers' earnings started to decline three years prior to the separation. Furthermore, Graham et al. (2019) quantified the human capital loss of bankruptcy in terms of the employees' wage losses and empirically studied the impact of the firm's bankruptcy filing on the employees' earnings. While using a sample composed of 140 bankruptcy filings by US public firms over the period 1991 to 2005, the authors found that the deterioration of the employees' earnings starts during the year of bankruptcy.<sup>56</sup> They also reported that the present value of the losses of earnings over the six-year period after the bankruptcy is equivalent to 67% of their annual earnings before the event of bankruptcy. Not surprisingly, when they investigated the impact of bankruptcy on the employees' annual earnings conditional on the size of the firms, they found that the wage losses were more important for workers in small firms, as they lack labor mobility, in comparison to those in

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<sup>56</sup> In order to avoid any unstable work relation, the authors only considered in their sample “workers with at least two years of tenure with the bankrupt firm one year before its bankruptcy filing” (p.8).

larger firms. Therefore, bankruptcy is significantly more costly for small business workers since they endure important human capital losses.

In general, small and medium-sized enterprises suffer from higher rates of bankruptcy as compared to larger firms because of their particularly risky structure. According to Ang (1991), the unique nature of SMEs is described according to several characteristics (such as the absence or ineffectiveness of limited liability; the incompleteness of the management team; the high cost of market and institutional imperfections; more informal relationships with stockholders; etc.<sup>57</sup>). Out of these, this paper is interested in the fact that “First generation owners are entrepreneurial and prone to risk taking” (Ang, 1991, p.2). The fact that the managers of SMEs invest all their financial capital and physical and mental effort in their entity is mostly reflected in their willingness to engage in more risk-taking activities, as they are impatient to generate higher returns. Nevertheless, the engagement in such a significant level of risk-taking generally increases their firm’s probability of bankruptcy, which is one of the major reasons behind the high bankruptcy rates of SMEs in comparison to larger firms.

Thus, in a situation where risk-taking is high (in small businesses especially), one might expect firms to compensate their employees with a higher wage for the expected bankruptcy cost. This increased compensation constitutes a form of human capital cost supported by firms due to the rise in their level of risk-taking behavior.

## 2.2. Related theories and hypothesis development

This paper relies on three theories that have treated the human capital cost of bankruptcy in relation to corporate debt. After expounding upon each one of them, we will adapt them to our context (i.e., the human capital cost of bankruptcy related to managerial risk-taking behavior).

Titman (1984) developed a theoretical analysis stating that employees, suppliers, and customers of firms suffer from relatively high costs in the event of the liquidation of the firm they engage in. The author argued that since the firm’s decision to liquidate is causally related to its bankruptcy situation, the firm is impelled to control its financial choices that might increase its probability of default.<sup>58</sup> Thus, when a firm increases its risk-taking activities (in

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<sup>57</sup> For more details, see pages 2, 3, and 4.

<sup>58</sup> The author explored the impact of the firm’s choice of capital structure on its liquidation decision and stated that “firms which impose relatively large costs on their customers in the event of liquidation, and thus wish to

particular an SME), its probability of bankruptcy (among other risks) is expected to worsen. Consequently, employees tend to suffer from significant bankruptcy costs related to their firm-specific human capital.

Later, Berk, Stanton, & Zechner (2010) formalized these statements while considering in their model an economy of perfectly competitive capital and a labor market in which firms operate with risk-averse employee and risk-neutral investors. The authors proved that whenever a firm is in financial distress (i.e., incapable of meeting its debt payments), its employees suffer from a wage cut in order to ensure the repayment of its interests and debt. In addition, they claimed that if the firm is still not able to cover its payments, it will be forced to go into bankruptcy. The filing of bankruptcy is not in any way beneficial for the firm's employees, as they will face many difficulties in finding another job on the market, and they might experience long-term unemployment. Therefore, the cost of bankruptcy filing is significantly heavy for employees to carry, especially as they are not capable of fully insuring their human capital risk. Hence, the authors show that since debt increases the probability of going bankrupt, highly leveraged firms are expected to pay higher wages for their employees as a form of compensation for the expected costs they will incur in the event of bankruptcy. On the basis of this reasoning, one can also assume that when a firm engages in higher risk-taking activities, its probability of bankruptcy is expected to intensify, which predicts important bankruptcy costs to employees. Therefore, the firm should compensate its employees for the predicted human-capital costs of bankruptcy by increasing their wages.

In line with these statements, Maksimovic & Titman (1991) discussed a model in which customers, employees, and other associates are reluctant to do business with a highly leveraged firm because of its high probability of going bankrupt. In fact, they have argued in their paper that when a firm is facing a situation of financial distress, it will be able neither to honor its contracts nor to maintain its reputation on the market or the quality of its products. Applying their theoretical findings to our context, we see that a risk-taking firm facing a high probability of bankruptcy might be induced to cut its employees' wages in order to meet all of its obligations. Thus, one can assume that a rational employee might anticipate these incentives and be reluctant to engage with this firm unless it compensates him or her for the eventual

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pre-position so that they liquidate in only a few states of nature, choose low levels of debt which lead them to be bankrupt in only those few states of nature" (p.148).

occurrence of any change in the terms of employment. Hence, we expect that an increase in the risk-taking activities will imply an increase of the employees' wages.

Motivated by the above three theories that relate the risk-taking behavior of firms to the level of the employees' compensation, we can suggest our first hypothesis:

**H1:** There is a positive relationship between the manager's risk-taking behavior and the employee's compensation.

Because the period of our study includes the year of the financial crisis, we are compelled to investigate its impact on the expected positive relationship between the manager's risk-taking behavior and the employees' wages. In fact, previous studies have provided evidence that the financial crisis of 2008 increased the probability of bankruptcy of small and medium-sized enterprises in particular. For instance, Pillu & Zlotowski (2014) reported that the crisis worsened the financial situation of French SMEs and that the percentage of SME insolvencies during the crisis increased by more than 22% in comparison to their situation in 2006. Furthermore, it has been proven that the managers' risk-taking behavior substantially increased after the financial crisis (as found in Essay 1). The reasoning behind this statement is that since banks restricted access to debt financing for small businesses during the crisis, they reduced their monitoring scope after the crisis. As a result, managers of small businesses were encouraged to engage in higher-risk activities. Nonetheless, the increased risk-taking behavior of managers after the financial crisis exposed small businesses to a higher probability of bankruptcy in comparison to their situation during the crisis, which imposes inevitable expected losses in the human capital of their employees. Consequently, we expect the increase of the employees' wages in compensation for the higher risk-taking behavior to be greater after the financial crisis than during it.

**H2:** The positive relationship between the firm's risk-taking behavior and the employees' compensation is more marked after than during the financial crisis of 2008.

The rate of unemployment is also an interesting component to take into account when investigating the impact of managers' risk-taking behavior on employee compensation. The previous literature provided mixed results regarding the relationship between the unemployment rate and employees' wages. One stream of studies reported a positive relationship between these two variables. Among others, Topel (1984) used a sample that covers 76,393 observations over the period 1977 to 1980. Despite the author's distinction between permanent layoffs or discharges and temporary layoffs, usually considered less costly,

the findings report that workers in both cases demand compensation for the unemployment risks. For each additional point of the anticipated unemployment rate, the results show an increase of 0.93% in the employees' wages over the entire sample. In line with these findings, a more recent study by Akyol & Verwijmeren (2013) shows that employees are compensated for their unemployment risk. While using a sample composed of 6,990 firm observations in the US over the period 1983 to 2010, they have reported that a one-point increase in unemployment implies an expansion of employees' average wages by 3.7%. Thus, the positive relationship between wages and the rate of unemployment is due to the demand for a higher wage in compensation for the unemployment risk. However, another stream of studies reported a negative relationship. For instance, Blanchflower & Oswald (1990) conducted a study on four microeconomic datasets and provided evidence of a "wage curve" that becomes flat at moderately high levels of unemployment (between 9% and 15%). Later, Blanchflower & Oswald (1995) confirmed the presence of a downward pressure on wages from unemployment rates by stating that "A worker who is employed in an area of high unemployment earns less than an identical individual who works in a region with low joblessness" (p.157). In fact, when the unemployment rate is high in a labor market, employees have fewer outside options to shift from one job to another (Akyol & Verwijmeren, 2013). Thus, the relationship between wages and the rate of unemployment is negative, as employees are not capable of demanding an increase of their wages. These two contradictory conclusions lead us to examine whether the positive impact of the managerial risk-taking behavior on the employees' average wage is affected by the presence of a high unemployment rate.

**H3:** The positive relationship between the firm's risk-taking behavior and the employees' compensation is weakened by a higher rate of unemployment.

Another important component to consider in this study is the degree of job entrenchment. In fact, Berk et al. (2010) stressed its importance when measuring the human capital cost of bankruptcy. They showed that employees who are more entrenched suffer from substantial costs if the firm they work for files bankruptcy. As stated by (Chemmanur, Cheng, & Zhang, 2013, p.482): "different from the same term used in the literature on corporate governance, entrenchment in this context means the degree to which employees are able to insure their human capital risk (lower their ability to insure, greater the extent of entrenchment)". Following Chemmanur et al. (2013), this paper investigates the impact of the employees' job entrenchment on the relationship between the managers' risk-taking behavior and the employees' compensation by distinguishing between technology and non-technology firms.

Previous studies have shown that employees working in technology firms are in general less entrenched than those working in non-technology firms because of the lower human capital cost they will bear if the firm goes bankrupt. For example, Ittner, Lambert, & Larcker (2003) stated that new economy firms (technology firms) rank “employee retention objectives” as the most important goal of their equity grant program. In addition, Anderson, Banker, & Ravindran (2000) claimed that information technology firms are characterized by a higher turnover of talented employees, as there is a consistent demand for skilled employees in the industry they operate in.<sup>59</sup> Hence, based on the above statements, we expect that employees of non-technology firms (i.e., more entrenched employees) will demand a higher compensation for the expected bankruptcy cost of risk-taking activities.

**H4:** The positive relationship between the firm’s risk-taking behavior and the employees’ compensation is more marked for non-technology firms than for technology firms.

Following previous studies (Aivazian, Ge, & Qiu, 2005; Benkraiem, Bouattour, Miloudi, & Vigneron, 2017; Lang, Ofek, & Stulz, 1996), this paper finds it necessary to distinguish firms with high growth opportunities from those with low growth opportunities. In fact, this paper is motivated by the theory of Jensen (1986) stating that managers of firms with a surplus amount of free cash flow are more likely to over-invest even in the absence of growth opportunities. More precisely, since managers are captivated by the empire-building strategy, they tend to invest even in negative net present value projects. The author argued that this approach is not in line with creditors’ interests. Comparable to creditors, employees are generally not inclined to take risks. Therefore, a rational employee aware of this strategy will anticipate this situation and will demand higher wages in compensation for the expected bankruptcy risk when the firm has low growth opportunities. Consistent with this line of reasoning, employees of high-growth firms tend to demand lower compensation for the expected bankruptcy costs than do those of low-growth firms. The reason for this tendency is that employees of high-growth firms are willing to support the expected bankruptcy costs of engaging in risk-taking activities, as they are more tempted by the future gains from the investments that will increase their future wages.

**H5:** The positive relationship between the firm’s risk-taking behavior and the employees’ compensation is enhanced for firms with low growth opportunities.

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<sup>59</sup> Forbes reported in 2018 that in the US “the tech sector has the highest turnover rate at 13.2% out of every single business sector” <https://www.forbes.com/sites/forbesbusinessdevelopmentcouncil/2018/06/29/the-real-problem-with-tech-professionals-high-turnover/#1e8b78af4201>

### 3. Sample and methodology

This section describes the sample and methodology used in this article. The first subsection presents the sample selection procedure. Then the second subsection details the model employed as well as the measurements of dependent and independent variables.

#### 3.1. Sample selection

To estimate the impact of the managerial risk-taking behavior on employees' compensation in French publicly held SMEs over the period 2008 to 2016, this paper retrieves financial information from the Amadeus database. Published by Bureau van Dijk/Moody's Analytic, this database covers financial information on European private and public companies in 43 countries, and specifically in France. Since our aim relies on exclusively considering small and medium-sized enterprises, we follow the European Commission definition of SMEs.<sup>60</sup> It defines an SME as a firm that has fewer than 250 employees, an annual turnover not exceeding EUR 50 million, or a balance sheet total lower than EUR 43 million. This step yielded a total sample composed of 1,403 firm observations over the entire period from 2008 to 2016. Then we removed observations with missing values in the dependent or independent variables that we employed in our model. This step generated a final sample composed of 1,104 firm-observations over the entire period. Table 35 summarizes the sample selection process and reports the breakdown of our sample throughout the years of our chosen period.

As we aimed to analyze the managerial risk-taking and employees' wages relationship more profoundly (see hypotheses development above), we established four subsamples. The first one is represented by two sub-periods of during the financial crisis (i.e., during the year 2008) and after the financial crisis (i.e., from 2009 to 2016). The second one differentiates small businesses operating in French regions with high unemployment rates from those operating in regions with low unemployment rates. Thus, we retrieved the annual unemployment rate for each of the thirteen regions in France<sup>61</sup> from the INSEE statistics.<sup>62</sup> This database defines the

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<sup>60</sup> According to the Commission Recommendation of 6 May 2003 concerning the definition of micro-, small, and medium-sized enterprises.

<sup>61</sup> Following the INSEE database, the thirteen French regions are as follows: Auvergne-Rhône-Alpes, Bourgogne-Franche-Comté, Bretagne, Centre-Val de Loire, Corse, Grand Est, Hauts-de-France, Île-de-France, Normandie, Nouvelle-Aquitaine, Occitanie, Pays de la Loire, and Provence-Alpes-Côte d'Azur.

<sup>62</sup> The INSEE utilizes in its turn the following databases for the computation of the localized unemployment rate: the estimates of employment, the number of jobseekers registered at the end of each month at Pôle Emploi

unemployment rate as the ratio of the number of unemployed individuals scaled by the resident labor force in a given area. For each of our observations, we matched its corresponding regional unemployment rate and classified regions having an unemployment rate above (below) the average unemployment rate in France in a given year as high (low) unemployment rate regions. The third subsample distinguishes between high-tech small businesses and non-tech small businesses. Thus, following the Eurostat indicators of high-tech industry and knowledge-intensive services, we classified firms operating in the following NACE Rev. 2 codes: 21, 26, 59 to 63, and 72 (Eurostat, 2018) as high-tech firms, and the remaining SMEs as non-tech firms. The fourth subsample decomposes the sample between firms having high growth opportunities versus those having low growth opportunities. Following Lang et al. (1996), this paper considers the Tobin's Q ratio as a proxy for the firm's growth opportunities. Tobin's Q ratio is equal to the market capitalization of the firm scaled by the book value of its total assets. When Tobin's Q is higher than 1, this indicates that the capital markets recognize the firm's investment opportunities (Lang et al., 1996). Thus, the firm is classified as a high-growth firm. Similarly, a firm having a Tobin's Q lower than 1 is classified as a low-growth firm.

## 3.2. Methodology

### 3.2.1. Model specification

The main objective of this paper is to investigate the relationship between the employees' compensation and the managerial risk-taking behavior in small businesses. Thus, we employ the following equation:

$$AEP_{i,t} = \alpha_0 + \alpha_1 RT_{i,t} + \alpha_2 Y_{i,t} + \alpha_3 X_i + \varepsilon_{i,t} \quad (1)$$

Where (i)  $AEP_{i,t}$  is the average employee pay of firm  $i$  at time  $t$ ; (ii)  $Risk_{i,t}$  is defined as the risk-taking behavior of the manager represented by the corporate risk-taking of firm  $i$  at time  $t$ ; (iii)  $Y_{i,t}$  is a vector of firm characteristics that is related to the average employee pay that includes firm size, employment productivity, profitability, sales growth, tangibility, and worker growth.  $S_{i,t}$  (Firm Size) is measured as the logarithm of total assets of firm  $i$  at time  $t$ ;  $EP_{i,t}$

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(DEFM), and the results of the employment survey

([https://www.insee.fr/fr/statistiques/series/102760732?ZONE\\_GEO=2320658%2B2322843%2B2322825%2B2322834%2B2322822%2B2322847%2B2322832%2B2322828%2B2322818%2B2322826%2B2322839%2B2322840%2B2322833%2B2322846](https://www.insee.fr/fr/statistiques/series/102760732?ZONE_GEO=2320658%2B2322843%2B2322825%2B2322834%2B2322822%2B2322847%2B2322832%2B2322828%2B2322818%2B2322826%2B2322839%2B2322840%2B2322833%2B2322846))

(Employee Productivity) is computed as the natural logarithm of total sales divided by the number of employees of firm  $i$  at time  $t$ ;  $Pr_{j,t}$  (Profitability) is defined as the ratio of operating cash flow over total assets of firm  $i$  at time  $t$ ;  $Gh_{i,t}$  (Sales Growth) is determined as the difference between the total sales of two consecutive years divided by the total sales of the earlier year of firm  $i$  at time  $t$ ;  $Tg_{j,t}$  (Tangibility) is estimated by the ratio of property, plant, and equipment divided by the total assets of firm  $i$  at time  $t$ ; and  $WG_{i,t}$  (Worker Growth) is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year of firm  $i$  at time  $t$ ; (iv)  $X_i$  is determined as the set of dummy variables that control for year and industry effects; (v)  $\varepsilon_{i,t}$  is defined as the error term.

All the regressions (i.e., over the entire period and the four sub-samples) are carried out using the ordinary least square (OLS) and the fixed effects (FE) estimators. In the latter equation type, we include year and industry dummies to control for potential time and industry-specific variations.

### 3.2.2. Average employee pay

Following previous empirical research, the dependent variable employed in this study was measured by the natural logarithm of the total labor expenditures divided by the number of employees of each firm in our sample<sup>63</sup> (Benkraiem et al., 2017; Chemmanur et al., 2013). In the French accounting system, the total labor expenditures variable includes the employee compensation (such as the contracted wage and bonuses, etc.) as well as welfare expenses (such as social and family allowance and unemployment benefits, etc.). Thus, this variable fully supports our purpose to study the impact of managerial risk-taking on the average employee pay.

### 3.2.3. Managerial risk-taking measures

This paper considers managerial risk-taking behavior to be reflected in the SME's risk-taking activities. For robustness reasons, we employ three alternative measures of the firm's risk-taking activities following previous studies.

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<sup>63</sup> The use of the logarithm transformation in our dependent and other independent variables aims to simplify the interpretation of the findings and to lessen the impact of outliers in this study.

For instance, the first measure follows the studies established by Adams, Almeida, & Ferreira (2005) and Nguyen (2012). In these papers, managerial risk-taking is estimated as the absolute deviation from the firm's expected performance. In fact, we consider the firm's performance to be represented by the return on assets ratio (ROA), which is measured as the ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to total assets.

Thus, the firm's expected ROA is estimated as follows:

$$ROA_{i,t} = \gamma_0 + \gamma_1 \text{Financial Leverage}_{i,t} + \gamma_2 \text{Control variables}_{i,t} + \varepsilon_{i,t} \quad (2)$$

The residuals obtained from equation (2)<sup>64</sup> contain the unexpected part of the firm's performance while controlling for the firm's financial leverage and other control variables.<sup>65</sup> Therefore, the absolute value of these residuals reasonably reflects the managerial risk-taking in each of our observations. Hence, our first measure of managerial risk-taking is the following:

$$RT1_{i,t} = |\varepsilon_{i,t}|$$

Thus, higher values of RT1 indicate higher levels of managerial risk-taking.

The second measure of managerial risk-taking follows Cheng (2008), Faccio & Mura (2011), and John, Litov, & Yeung (2008). It is represented by the volatility of the industry-adjusted profitability. In fact, when firms engage in higher risk-taking activities, they expect a higher fluctuation in their returns. The industry-adjusted profitability is calculated as the difference between the firm's annual ROA and its corresponding average ROA across all firms operating in the same NACE Rev. 2 two-digit codes and in the same year. Following Faccio & Mura (2011), we then calculate the volatility of the firm's performance over five-year overlapping periods (2008–2012, 2009–2013, 2010–2014, 2011–2015, and 2012–2016). Hence, our second measure of managerial risk-taking is the following:

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<sup>64</sup> Two types of residuals have been obtained from conducting equation (2) in (1) the ordinary least square estimation and (2) the fixed effects estimation while controlling for firm and year effects. For simplifying reasons, we only include the second type of residuals in the summary statistics tables, although the first type indicates similar results. Regarding the regressions tables, we include both residuals under the same variable name (RT1).

<sup>65</sup> The financial leverage in Eq(2) is computed as the ratio of financial total debt to total assets of firms. The control variables include the Firm Size measured by the logarithm of total assets of firm *i* at time *t*; the Sales Growth computed by the difference between the net sales of two consecutive years divided by net sales of the earlier year of firm *i*; the Profitability defined as the Tobin's Q ratio of firm *i* at time *t*; the Cash holdings determined as the ratio of cash and cash equivalents over the total assets of firm *i* at time *t*; the Tangibility estimated by the fixed assets divided by the total assets of firm *i* at time *t*; the Liquidity measured by the current ratio equal to current assets divided by current liabilities and the Interest coverage ratio equal to the ratio of paid interest scaled by EBITDA.

$$RT2_{i,t} = \sigma ROA_{i,t}$$

Thus, higher values of RT2 indicate higher levels of managerial risk-taking.

The third measure of managerial risk-taking follows Vo (2016). Accordingly, we estimate the corporate risk-taking by the ratio of the industry-adjusted profitability to the standard deviation of the industry-adjusted profitability. Once again, we proxy the profitability of firms by the return on assets ratio. Hence, our third measure of managerial risk-taking is the following:

$$RT3_{i,t} = ROA_{i,t} / \sigma ROA_{i,t}$$

Thus, higher values of RT3 indicate lower levels of managerial risk-taking.

#### 3.2.4. Other control variables

Following previous studies, our model includes several control variables that have an influence on the employees' compensation. First, we controlled for the *firm size*, defined as the natural logarithm of total assets. Previous studies have stated that larger firms tend to pay higher salaries as compared to smaller firms. Thus, we predicted a positive relationship between the employee average wage and the firm size (Akyol & Verwijmeren, 2013; Benkraiem et al., 2017; Brown & Medoff, 1989; Chemmanur et al., 2013; Lin et al., 2019). In addition, we controlled for the *employees' productivity*, which is computed as the natural logarithm of total sales divided by the number of the firm's employees. It has been proven that firms are more likely to pay higher wages for productive employees; hence, we predicted a positive relationship between these two variables (Akyol & Verwijmeren, 2013). On the other hand, previous studies have claimed a negative impact of the *firm's profitability* on the wage it offers to its employees (Seo, Kim, & Ryu, 2019). In fact, since a higher profitability reduces the firm's probability of going bankrupt, employees of profitable firms are willing to accept lower wages (Akyol & Verwijmeren, 2013). Thus, we expected a negative relationship between these two variables. Likewise, the *sales growth* variable represented by the difference between the total sales of two consecutive years divided by the total sales of the earlier year is negatively correlated with the employees' average wage. In fact, employees of growth firms tend to accept lower wages in order to generate the cash flow needed for investments, as they anticipate that the future returns will increase their wages (Akyol & Verwijmeren, 2013). Furthermore, we controlled for investments in *tangibility*, which is estimated as the ratio of property, plant, and

equipment divided by the total assets of firm. Since firms with high tangible assets tend to concentrate on generating profits using their tangible assets, they compensate their employees with lower wages (Seo et al., 2019). Thus, we predicted a negative relationship between average employee pay and tangibility. In addition, we controlled for the *employee growth* rate, which is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year. We expected that an increase in the number of employees will reduce their wages on average (Seo et al., 2019).

## 4. Descriptive statistics and empirical results

This section details the summary statistics and the empirical results of our regressions. The first part provides evidence on the statistics of our sample over the entire period, the two sub-periods of during and after the financial crisis, and the subsample of high-tech and non-tech firms. The second part describes the empirical findings of our regressions over the entire period and the four subsamples. The third part presents the sensitivity analysis.

### 4.1. Descriptive statistics

Table 36 provides the summary statistics of our sample over the entire period, the two sub-periods of during and after the financial crisis (i.e., 2008 and from 2009 to 2016, respectively), and the tech-firms and non-tech firms in Panels A, B, and C. As seen in Panel A, the average employee wage of the firms in our sample is equal to 69,966 euros. This average entails a significant increase after the financial crisis from 67,837 euros during the year 2008 to 70,182 euros on average over the period 2009 to 2016. In addition, Panel C shows that the employees of high-tech firms are better paid on average than those of non-tech firms (73,152 euros versus 68,252 euros, respectively). In fact, employees of high-tech firms are generally more specialized than those of non-tech firms, which explains this gap in wages. Our second variable of interest is the risk-taking behavior of corporate managers as measured by the three corporate risk-taking proxies (the absolute values of residuals, the standard deviation of ROA, and the ratio of ROA over the standard deviation of ROA). The first two risk-taking proxies display

higher averages after than during the financial crisis.<sup>66</sup> This indicates that managers of SMEs increased their risk-taking behavior on average after the financial crisis. Not surprisingly, these variables report higher averages for high-tech firms than for non-tech firms. This indicates that managers of high-tech firms engage in higher risk-taking activities than those of non-tech firms. As for the other control variables, we notice that the size of firms is slightly higher after than during the crisis and for tech-firms than for non-tech firms. On the other hand, employee productivity displays averages of 5,204 and 5,118 during and after the crisis, respectively, and it is shown that non-tech employees are on average more productive than those of high-tech firms, with averages of 4,640 and 5,387, respectively. This is consistent with the findings of Chemmanur et al. (2013). The profitability of firms provides mixed results, as firms were on average more profitable during than after the crisis (0.016 versus -0.004, respectively). In addition, it displays that non-tech firms are more profitable than high-tech firms (0.022 versus -0.047, respectively). The sales growth of the firms in our sample greatly increases after the financial crisis, averaging of 0.189 and 0.714 during and after the crisis, respectively. At the same time, this variable displays averages of 0.496 and 0.981 for non-tech and high-tech firms, respectively. The tangibility of small businesses remains the same on average during and after the financial crisis, yet higher averages for non-tech firms than for high-tech firms (0.142 versus 0.072, respectively) are reported. Consistent with Chemmanur et al. (2013), this shows that non-tech small businesses invest more in tangible fixed assets than do high-tech firms. The worker growth reports lower averages after than during the financial crisis (0.135 versus 0.152, respectively). This variable also shows that the employee's growth rate is higher for non-tech firms than for high-tech firms, as it reports averages of 0.149 and 0.114, respectively.

Table 37 provides the number of firms and the average unemployment rates in each of the thirteen French regions. It can be seen that the Hauts-de-France region reports an average unemployment rate of 11.84%, which is ranked as the highest rate of unemployment among all the regions over the entire period. The Bretagne region accounts for the lowest rate of unemployment (7.96%). Overall, the average unemployment rate in France was around 9.17% over the period 2008 to 2016. Table 3 also shows that 54% of our sample, which represents most of the observations, operate in the Île-de-France region. The Auvergne-Rhône-Alpes region is ranked in the second position, with 15% of the firm observations in our sample. Figure 12 reports the average unemployment rate in France over time. The solid line shows that the

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<sup>66</sup> The third proxy reports higher averages during than after the financial crisis. This may be due to a lower profitability after the financial crisis (i.e., lower ROA).

unemployment rate marked a significant increase of 1.6 points after the financial crisis (from 7.1% in 2008 to 8.7% in 2009) and reached its peak in 2015 with 10.05%.

Table 38 presents the Pearson correlation matrix between the independent variables of our statistical model. As expected, the three corporate risk-taking measures show positive correlation with the average employee wages, indicating that a higher level of corporate risk-taking is associated with a higher employee wage on average. Regarding the correlations between the independent variables, the results show that they are not high enough to induce multicollinearity issues.

## 4.2. Empirical results

Table 39 reports the results obtained from estimating equation (1) over the entire period (i.e., from 2008 to 2016). Meanwhile, Tables 40 to 43 report the results obtained from estimating equation (1) for the following four sub-samples: during and after the financial crisis; high and low unemployment rates; technology and non-tech firms; and high and low-growth firms, respectively. The first column of each of these tables presents the estimated coefficients using the ordinary least square estimation with robust standard errors. The second column presents the estimated coefficients using the fixed effects estimation while controlling for the unobserved year and industry effects with standard errors clustered at the firm level and robust to heteroskedasticity.

According to table 39, the relation between the average employee wage and corporate risk-taking is positive and statistically significant at the 1% level for the three proxies of risk-taking (except for the coefficient of the third proxy, which is significant at the 5% level). This confirms our hypothesis H1, which indicates that higher managerial risk-taking activities induce on average an increase in the compensation of employees. More precisely, the OLS risk-taking coefficients range from 0.004 to 1.121, while the FE coefficients vary from 0.006 to 1.108. Regarding the economic magnitude of the increase, the standard deviation of the three proxies of risk-taking are as follows: 0.113 for RT1, 0.074 for RT2, and 11.178 for RT3. Thus, a one standard deviation increase in managerial risk-taking engagement implies an increase in the average wage of employees of 5.2% ( $0.113 \times 0.461$ ) according to RT1, 8.2% ( $0.074 \times 1.108$ ) according to RT2, and 6.7% ( $11.178 \times 0.006$ ) according to RT3. Hence, these increases are considered to be costs borne by firms for engaging in higher risk-taking activities. In line with

the findings of Akyol & Verwijmeren (2013), the authors also reported that a one standard deviation increase in the market leverage induces an increase of the average employee wage by 2.9%. Regarding our control variables, the results show that over the entire period, firm size is positively related to the employee wage, yet not statistically significant in all regressions. However, this positive relationship, when significant, is in line with previous studies stating that employees of larger firms earn more on average (Benkraiem et al., 2017; Brown & Medoff, 1989; Chemmanur et al., 2013; Lin et al., 2019). As expected, the coefficients of the employee productivity variable are positive and statistically significant at the 1% level for all the regressions. Consistent with previous studies, this indicates that productive employees earn more on average (Akyol & Verwijmeren, 2013; Chemmanur et al., 2013). On the other hand, the profitability variable presents negative and significant correlations with the average employee wage. This indicates that profitable firms pay, on average, lower wages, as they are less exposed to the probability of bankruptcy as compared to non-profitable firms (Akyol & Verwijmeren, 2013). Neither the sales growth variable nor the worker growth variable shows a significant impact on the employee wage. Meanwhile, tangibility provides negative but more significant results for the OLS regressions than for FE regressions. This may be related to the inclusion of the year and industry effects. In addition, the negative correlation found in our model between these two variables is explained by the fact that these firms are more likely to focus on generating profits using their tangible assets and thus compensate their employees with lower wages (Lin et al., 2019; Seo et al., 2019).

As stated above, we intend to investigate more profoundly the relationship between managerial risk-taking and employee wages. Thus, we will display the findings obtained from re-running equation (1) on each of the four sub-samples.

Regarding the impact of the financial crisis of 2008 on the risk-taking–wage relationship, the results in table 40 show that the positive correlation between these two variables strongly prevails after the financial crisis year. In fact, during the crisis (i.e., during 2008), the coefficients are positive, yet mostly insignificant (except for the coefficient of RT3, which is slightly significant at the 10% level). Nevertheless, the coefficients of the three risk-taking proxies are positive and extremely significant over the period of after the financial crisis (i.e., from 2009 to 2016). These coefficients range from 0.004 to 1.130 and from 0.006 to 1.114 for the OLS and FE regressions, respectively. Interestingly, the coefficients of the period after the crisis exceed those of over the entire period (reported in table 39). This implies that the impact of managerial risk-taking is more marked after the financial crisis. These findings support our

second hypothesis, H2. The reason for this result may be that as creditors restrained SMEs' access to financing during the financial crisis, they lowered their monitoring activities after the crisis. This encouraged managers to engage in more risk-taking activities, as they were less monitored by creditors, which has increased their probability of bankruptcy. Thus, employees are compensated for the expansion in the expected bankruptcy cost by an increase in their wages on average. As for other control variables, the results are similar to the ones reported in table 39. More precisely, the coefficient of firm size remains positive but is more significant during than after the crisis. Over the two sub-period, employee productivity shows positive and significant coefficients, while tangibility shows negative coefficients. Profitability is negative and more significant after the crisis than during it.

Table 41 provides evidence on the distinction between firms operating in French regions with high unemployment rates versus those operating in French regions with low unemployment rates. We notice that when the unemployment rate is high, firms are less likely to compensate their employees for the expected bankruptcy cost related to managerial risk-taking in comparison to when the unemployment rate is low. More precisely, when the unemployment rate is high, the coefficients of managerial risk-taking remain positive yet are only statistically significant for the second proxy, RT2 (0.846) for the FE estimation. Nevertheless, when the unemployment rate is low, these coefficients are positive and statistically significant for all the risk-taking proxies when employing the OLS and FE estimations (except for the RT1 coefficient in the FE estimation). Thus, a one standard deviation in the managerial risk-taking behavior is reflected into a wage increase of 8.4% ( $0.074 \times 1.138$ ) for RT2 and 11.2% ( $11.178 \times 0.010$ ) for RT3 during low unemployment. In addition, we can clearly observe that even when the coefficient of RT2 is significant for high unemployment rates (0.846), it remains lower than during low unemployment periods (1.138). This confirms our hypothesis H3 stating that the positive relationship between the manager's risk-taking behavior and the employees' compensation is weakened by a higher rate of unemployment. Incompatible with the findings of Akyol & Verwijmeren (2013) for the US sample, our French sample is more consistent with the statement that the power to negotiate higher wages for the expected bankruptcy cost of risk-taking is lowered when outside options for workers are reduced rather than the statement that workers are more compensated when they are exposed to a higher unemployment risk. Regarding other control variables, results show that firm size is significantly positive and sales growth is significantly negative for firms operating in regions with high unemployment rates. On the other hand, employee productivity is significantly positive, and profitability is

significantly negative for firms operating in regions with low unemployment rates. Workers' growth and tangibility yield negative and statistically significant coefficients for the two subsamples.

Afterwards, we investigated the impact of managerial risk-taking on average employee wage in technology versus non-tech small businesses. The results demonstrated in table 42 indicate that the manager's risk-taking behavior has a greater impact on employees' compensation for non-technology firms. In fact, the coefficients of the three proxies of risk-taking for high-tech firms are either slightly significant or not significant at all. However, the coefficients' statistical significance is remarkably high for non-tech firms. More precisely, the risk-taking coefficients range from 0.003 to 1.295 and from 0.005 to 1.171 for OLS and FE estimations, respectively. This implies that a one standard deviation in the risk-taking behavior leads to an increase in the non-tech employees' average wage of 5.03% ( $0.113 \times 0.446$ ) for RT1, 8.7% ( $0.074 \times 1.171$ ) for RT2, and 5.6% ( $11.178 \times 0.005$ ) for RT3. This confirms hypothesis H4 stating that the positive relationship between the manager's risk-taking behavior and the employees' compensation is more marked for non-technology firms than for technology firms. In line with Chemmanur et al. (2013), this is explained by the entrenchment degree of the employees. In fact, since employees of non-tech firms are more entrenched than those of technology firms, they are more affected by the increase of the probability of bankruptcy. Thus, they demand a higher wage in compensation for the risk-taking activities. As for the other control variables, firm size has a more significant impact on the average employee wage for non-tech firms. Thus, larger non-tech firms compensate their employees with a higher wage on average. Although employee productivity is positive and statistically significant for both types of firms, yet we notice that it has a higher impact on the average pay for technology firms. However, sales growth is not significant for technology and non-tech firms. Tangibility maintains its negative and significant impact on average employee pay for both firm types. Yet, its impact is more pronounced for high-tech firms. Thus, the employee average wage in high-tech firms is more sensitive to fixed assets investment. In spite of the insignificance of worker growth coefficients for high-tech firms, there is a negative and statistically significant relationship between worker growth and employee average wage for non-tech firms.

Moreover, table 43 demonstrates the results of the regressions obtained from the distinction between firms with high growth opportunities versus those with low growth opportunities. The coefficients of the three proxies of risk-taking provide mixed results regarding the two subsamples. For instance, the coefficients of the first proxy of risk-taking, RT1, are more

significant for high-growth firms than for low-growth firms, while the opposite is true for the second proxy of risk-taking, RT2. The third proxy of risk-taking reports positive and statistically significant coefficients for both low-growth and high-growth firms. Nevertheless, despite these mixed findings, we can notice that the relationship between managerial risk-taking and the employee average wage remains positive in all regressions. In addition, this distinction does not enable us to accept or refute hypothesis H5 stating that the positive relationship between the firm's risk-taking behavior and the employees' compensation is enhanced for firms with low growth opportunities. In fact, it is only acceptable for the second risk-taking proxy. Regarding other control variables, firm size has a positive and statistically significant impact on employee wages only for high-growth firms. Employee productivity significantly increases the employee average wage for both firm types. On the other hand, profitability reports negative and statistically significant coefficients for high-growth and low-growth firms. Tangibility has a negative influence on the employee average wage only for high-growth firms.

### 4.3. Sensitivity analysis

Despite the fact that we controlled for the impact of potential variations in the industry, year, and firm effects in our findings through the fixed effects model, our concern regarding the endogeneity bias remains in our study. More precisely, we acknowledge that the possible presence of unmeasured effects can lead to the correlation of the risk-taking behavior of managers with the residuals in equation 1. We take this bias into account by performing the two stages least squares regressions (2SLS). The first step of these regressions relies on choosing a valid instrumental variable (hereinafter IV) that is only consistent if it acts in accordance with the two conditions, as follows: The IV should be correlated with the managerial risk-taking proxies, yet it should not be correlated with the residuals of the average employee equation (equation 1) (Chemmanur et al., 2013). This paper considers the volatility of cash flows as a valid instrumental variable. It is computed as the standard deviation of the ratio of cash flow over total assets over five years. In their study, Rountree, Weston, & Allayannis (2008) have shown that the volatility of cash flow is negatively correlated with the value of the firm.<sup>67</sup> This induces the firms' shareholders to request lower managerial risk-taking

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<sup>67</sup> The authors have found that a 1% increase in the volatility of cash flow implies a 0.15% reduction in firm value.

behavior, which is not in the interest of the small business manager. Therefore, one can assume that managers will anticipate this situation and will increase their risk-taking behavior. Hence, we expect a positive relationship between the volatility of cash flow and the manager's risk-taking behavior. To the best of our knowledge, there is no previous empirical or theoretical study that investigates the impact of the volatility of cash flow on the average employee pay.

In the first stage, the risk-taking proxies are regressed respectively on the IV and other control variables. Then, the second stage consists of regressing the average employee pay on the predicted values of managerial risk-taking obtained from the first-stage regression and on the other control variables. Table 44 reports the results of the first and second stage regressions in Panel A and B, respectively. As shown in Panel A, the volatility of cash flows is positively and significantly correlated with the risk-taking behavior of managers. Panel B reveals that the coefficients of the three predicted values of the risk-taking measures are positive and highly significant. This indicates that the positive relationship between the employees' average compensation and the managerial risk-taking holds when controlling for potential endogeneity biases. As for other control variables, the results are similar to those reported in previous tables. For instance, firm size and productivity display positive coefficients, while profitability, sales growth, tangibility, and worker growth expose negative coefficients.

## 5. Conclusion

Despite the significant level of managerial risk-taking that dominates the structure of small businesses, previous literature reveals a lack of investigation of its influence on the human capital of the employees. This paper endeavors to fill this gap by running an empirical analysis on the extent to which managerial risk-taking affects the human capital of employees represented by the employees' average wage.

While using a sample composed of 1,104 firm observations of non-financial French small businesses listed on the Euronext Paris stock exchange over the period 2008 to 2016, our findings report a positive impact of the manager's risk-taking behavior on the employees' average wage. In fact, when small businesses engage in high risk-taking activities, they are exposed to numerous risks, such as a higher probability of bankruptcy, which imposes significant costs on employees. Thus, these firms compensate their employees for the expected human capital costs. Furthermore, we deepen our analysis by distinguishing between four

subsamples. Our results report evidence that the relationship between managerial risk-taking and employees' compensation is more marked after the financial crisis, during which managers engaged in more risky activities. In addition, this relationship is more significant for the firms operating in regions with a low unemployment rate, as their employees are more able to negotiate a higher compensation for the risk-taking activities than when the unemployment rate is high. Furthermore, we found that since employees are more entrenched in non-technology firms, they demand a higher compensation for the risk-taking behavior of managers. Nevertheless, the presence or absence of growth opportunities does not affect this relationship. In addition, these results hold when we control for potential endogeneity issues.

The findings of this paper demonstrate that the bankruptcy costs related to the employees' human capital represent an essential factor in determining the level of risk-taking behavior in a small business. Thus, this study can be beneficial for the decision-making process of both managers and employees. From the manager's perspective, the utility of this paper can be reflected in his or her choice of the optimal level of engagement in risky activities while taking into account the human capital costs of bankruptcy that will be borne by the firm. From the employee's perspective, the importance of this paper is reflected into two actions. First, this study enlightens the employee on the importance of taking into account the firm's behavior towards risky activities and the potential risks of his human capital. Second, it strengthens employees' ability to negotiate an increase of their wages in compensation for the expected bankruptcy costs in their human capital.

Overall, the results obtained in this paper support the previous theoretical and empirical studies. In addition, since outside stakeholders constitute fundamental actors of an organization, this study encourages future researches to investigate the eventual influence of managerial risk-taking on the well-being of outside stakeholders (such as suppliers and customers). This path is especially interesting with regard to small businesses, as they depend greatly on outsiders.

## 6. Tables

Table 35. Sample

<b>Panel A: Sample selection</b>	
Non-financial SMEs from 2008 to 2016	1403
SMEs with Missing data	-299
Final sample	1104

<b>Panel B: Time distribution</b>	
2016	135
2015	138
2014	146
2013	129
2012	116
2011	120
2010	108
2009	110
2008	102
Final sample	1104

Table 36. Summary Statistics

Panel A. Over the entire sample

	N	Mean	Standard deviation	p25	p50	p75
Wage per employee	1104	69.966	49.615	47.420	61.475	78.490
RT1	1104	0.095	0.113	0.013	0.065	0.129
RT2	858	0.076	0.074	0.023	0.051	0.101
RT3	851	2.272	11.178	-0.782	0.480	2.383
Firm Size	1104	9.778	1.171	9.059	9.783	10.470
Employee Productivity	1104	5.126	1.174	4.589	5.095	5.682
Profitability	1104	-0.002	0.209	-0.070	0.020	0.110
Sales Growth	1104	0.666	6.275	-0.075	0.046	0.204
Tangibility	1104	0.117	0.182	0.016	0.040	0.129
Worker Growth	1104	0.137	1.124	-0.044	0.019	0.136

Where Wage per employee is measured as the total labor expenses divided by the number of employees. RT1 is the absolute value of the residuals retrieved from the fixed effects regression of ROA on firm characteristics. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA ( $ROA/\sigma$  (ROA)). Firm size is measured as the natural logarithm of totals assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year.

Panel B. During versus After the Financial Crisis of 2008

	During the Financial Crisis (i.e. 2008)						After the Financial Crisis (i.e. from 2009 to 2016)					
	N	Mean	Standard deviation	p25	p50	p75	N	Mean	Standard deviation	p25	p50	p75
Wage per employee	102	67.837	75.269	41.190	55.215	65.580	1002	70.182	46.264	48.100	62.120	78.870
RT1	102	0.090	0.118	0.000	0.061	0.119	1002	0.095	0.113	0.015	0.065	0.130
RT2	95	0.072	0.063	0.029	0.056	0.098	763	0.076	0.076	0.022	0.051	0.103
RT3	92	1.071	3.092	-0.462	0.577	2.060	759	2.417	11.780	-0.783	0.470	2.390
Firm Size	102	9.762	1.314	9.066	9.851	10.627	1002	9.780	1.157	9.056	9.777	10.450
Employee Productivity	102	5.204	0.993	4.729	5.085	5.618	1002	5.118	1.191	4.577	5.095	5.685
Profitability	102	0.016	0.199	-0.030	0.040	0.110	1002	-0.004	0.210	-0.080	0.020	0.110
Sales Growth	102	0.189	0.529	-0.045	0.060	0.234	1002	0.714	6.583	-0.077	0.043	0.200
Tangibility	102	0.117	0.183	0.017	0.045	0.120	1002	0.117	0.182	0.016	0.039	0.130
Worker Growth	102	0.152	0.423	0.000	0.066	0.232	1002	0.135	1.172	-0.050	0.014	0.130

Where Wage per employee is measured as the total labor expenses divided by the number of employees. RT1 is the absolute value of the residuals retrieved from the fixed effects regression of ROA on firm characteristics. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA ( $ROA/\sigma$  (ROA)). Firm size is measured as the natural logarithm of total assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year.

Panel C. High-technology versus Non Technology firms.

	High-Tech Firms						Non Tech Firms					
	N	Mean	Standard deviation	p25	p50	p75	N	Mean	Standard deviation	p25	p50	p75
Wage per employee	386	73.152	52.503	51.620	63.375	83.550	718	68.253	47.941	44.180	59.980	75.000
RT1	386	0.102	0.118	0.012	0.070	0.150	718	0.091	0.111	0.013	0.064	0.123
RT2	307	0.089	0.078	0.034	0.066	0.122	551	0.069	0.072	0.019	0.045	0.090
RT3	307	0.594	4.697	-1.147	0.086	1.712	544	3.219	13.441	-0.512	0.753	2.877
Firm Size	386	9.852	1.102	9.180	9.969	10.592	718	9.738	1.206	8.954	9.645	10.392
Employee Productivity	386	4.640	1.207	4.331	4.898	5.292	718	5.387	1.070	4.759	5.224	5.899
Profitability	386	-0.047	0.234	-0.170	0.000	0.110	718	0.022	0.190	-0.040	0.030	0.110
Sales Growth	386	0.981	6.927	-0.085	0.083	0.259	718	0.496	5.892	-0.072	0.038	0.183
Tangibility	386	0.072	0.092	0.016	0.032	0.101	718	0.142	0.212	0.017	0.045	0.151
Worker Growth	386	0.114	0.376	-0.038	0.045	0.188	718	0.149	1.366	-0.045	0.000	0.111

Where Wage per employee is measured as the total labor expenses divided by the number of employees. RT1 is the absolute value of the residuals retrieved from the fixed effects regression of ROA on firm characteristics. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA ( $ROA/\sigma$  (ROA)). Firm size is measured as the natural logarithm of totals assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year.

Table 37. Unemployment rates according to the French regions.

Region	Number of observations	Percentage of observations (%)	Average rate of unemployment (%)
Île-de-France	595	54	8.13
Centre-Val de Loire	0	0	8.61
Bourgogne-Franche-Comté	24	2	8.56
Normandie	11	1	9.53
Hauts-de-France	23	2	11.84
Grand Est	24	2	9.30
Pays de la Loire	16	1	8.01
Bretagne	16	1	7.96
Nouvelle-Aquitaine	51	5	8.85
Occitanie	63	6	10.93
Auvergne-Rhône-Alpes	171	15	8.20
Provence-Alpes-Côte d'Azur	97	9	10.63
Corse	0	0	9.55
DROM <sup>68</sup>	13	1	N/A
Total	1104	100	9.17

<sup>68</sup> DROM (Départements & Régions d'Outre-Mer) consists of French-administrated territories located outside the European continent. The overseas regions and departments include the Guadeloupe, French Guiana, Martinique, La Réunion, and Mayotte (according to the article 73 of the Constitution 'dit d'identité législative').

Table 38. Pearson Correlation Matrix

	RT1	RT2	RT3	Firm Size	Employee Productivity	Profitability	Sales Growth	Tangibility	Worker Growth
RT1	1								
RT2	0.435***	1							
RT3	-0.0790*	-0.210***	1						
Firm Size	0.006	-0.059	-0.010	1					
Employee Productivity	-0.0636*	-0.137***	0.116***	0.166***	1				
Profitability	-0.421***	-0.399***	0.149***	-0.024	0.213***	1			
Sales Growth	0.044	0.016	-0.029	0.024	-0.0784**	-0.037	1		
Tangibility	-0.0696*	-0.0944**	0.041	0.162***	0.047	0.107***	-0.034	1	
Worker Growth	0.000	-0.022	-0.002	0.014	-0.033	0.021	0.342***	-0.007	1

Where RT1 is the absolute value of the residuals retrieved from the fixed effects regression of ROA on firm characteristics. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA ( $ROA/\sigma$  (ROA)). Firm size is measured as the natural logarithm of total assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year.

Table 39. Regression of average employee wage on the risk-taking behavior of managers.

	Ln (Wage per employee)					
RT1	0.567*** (-0.143)	0.461*** (-0.175)				
RT2			1.121*** (-0.243)	1.108*** (-0.317)		
RT3					-0.004*** (-0.001)	-0.006** (-0.002)
Firm Size	0.046** (-0.022)	0.043 (-0.045)	0.038* (-0.022)	0.037 (-0.049)	0.033 (-0.023)	0.032 (-0.049)
Employee Productivity	0.192*** (-0.034)	0.225*** (-0.067)	0.218*** (-0.034)	0.264*** (-0.079)	0.219*** (-0.035)	0.272*** (-0.081)
Profitability	-0.646*** (-0.101)	-0.636*** (-0.173)	-0.564*** (-0.109)	-0.525*** (-0.171)	-0.702*** (-0.110)	-0.643*** (-0.191)
Sales Growth	-0.006 (-0.006)	-0.006 (-0.007)	-0.007 (-0.008)	-0.007 (-0.009)	-0.007 (-0.008)	-0.008 (-0.009)
Tangibility	-0.323*** (-0.080)	-0.362* (-0.218)	-0.294*** (-0.087)	-0.358 (-0.249)	-0.308*** (-0.091)	-0.284 (-0.261)
Worker Growth	-0.014 (-0.016)	-0.015 (-0.017)	-0.009 (-0.018)	-0.011 (-0.019)	-0.010 (-0.018)	-0.012 (-0.019)
Constant	2.639*** (-0.162)	2.503*** (-0.348)	2.544*** (-0.167)	2.093*** (-0.326)	2.682*** (-0.166)	2.204*** (-0.270)
Observations	1,104	1,104	858	858	851	851
R-squared	0.195	0.223	0.229	0.271	0.218	0.265
Industry Fixed Effects	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes

Where Wage per employee is measured as the total labor expenses divided by the number of employees. RT1 is the absolute value of the residuals retrieved from the ordinary least square and fixed effects regression of ROA on firm characteristics, respectively. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA (ROA/ $\sigma$  (ROA)). Firm size is measured as the natural logarithm of totals assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year. The regressions have been carried out using ordinary least square with robust standard errors and, year and industry fixed effects estimators with standard errors clustered at the firm level. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 40. Regression of average employee wage on the risk-taking behavior of managers during versus after the Financial Crisis of 2008.

	Ln (Wage per employee)											
	During the Financial Crisis (i.e. 2008)						After the Financial Crisis (i.e. from 2008 to 2016)					
RT1	0.416 (-0.349)	0.278 (-0.345)					0.593*** (-0.152)	0.497*** (-0.180)				
RT2			0.882 (-0.843)	1.278 (-0.994)					1.130*** (-0.247)	1.114*** (-0.328)		
RT3					-0.0202* (-0.011)	-0.0248* (-0.013)					-0.004*** (-0.001)	-0.006** (-0.002)
Firm Size	0.0915** (-0.040)	0.0777* (-0.043)	0.110** (-0.043)	0.0854* (-0.046)	0.110** (-0.044)	0.0796* (-0.046)	0.0397* (-0.024)	0.039 (-0.047)	0.026 (-0.025)	0.030 (-0.052)	0.021 (-0.025)	0.024 (-0.052)
Employee Productivity	0.277*** (-0.071)	0.323*** (-0.079)	0.238*** (-0.064)	0.296*** (-0.060)	0.239*** (-0.066)	0.299*** (-0.061)	0.185*** (-0.036)	0.218*** (-0.069)	0.215*** (-0.037)	0.260*** (-0.084)	0.216*** (-0.038)	0.268*** (-0.085)
Profitability	-0.354 (-0.290)	-0.473 (-0.313)	-0.258 (-0.349)	-0.237 (-0.358)	-0.349 (-0.305)	-0.345 (-0.303)	-0.658*** (-0.107)	-0.643*** (-0.181)	-0.591*** (-0.116)	-0.555*** (-0.181)	-0.722*** (-0.120)	-0.669*** (-0.203)
Sales Growth	0.073 (-0.093)	-0.034 (-0.119)	0.071 (-0.094)	-0.023 (-0.112)	0.076 (-0.089)	-0.011 (-0.101)	-0.006 (-0.006)	-0.006 (-0.007)	-0.008 (-0.009)	-0.007 (-0.010)	-0.008 (-0.009)	-0.008 (-0.010)
Tangibility	-0.588*** (-0.207)	-0.348 (-0.400)	-0.529** (-0.208)	-0.376 (-0.413)	-0.601** (-0.229)	-0.389 (-0.411)	-0.295*** (-0.085)	-0.359 (-0.223)	-0.269*** (-0.095)	-0.356 (-0.257)	-0.281*** (-0.097)	-0.277 (-0.272)
Worker Growth	-0.149 (-0.144)	-0.120 (-0.126)	-0.171 (-0.139)	-0.161 (-0.111)	-0.147 (-0.135)	-0.142 (-0.104)	-0.012 (-0.016)	-0.013 (-0.017)	-0.007 (-0.017)	-0.009 (-0.019)	-0.008 (-0.018)	-0.010 (-0.019)
Constant	1.722*** (-0.417)	1.579*** (-0.430)	1.710*** (-0.451)	1.364*** (-0.466)	1.794*** (-0.446)	1.481*** (-0.448)	2.735*** (-0.173)	2.305*** (-0.363)	2.675*** (-0.176)	2.247*** (-0.370)	2.823*** (-0.175)	2.280*** (-0.273)
Observations	102	102	95	95	92	92	1,002	1,002	763	763	759	759
R-squared	0.451	0.514	0.462	0.532	0.467	0.535	0.182	0.208	0.215	0.254	0.204	0.249
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Where Wage per employee is measured as the total labor expenses divided by the number of employees. RT1 is the absolute value of the residuals retrieved from the ordinary least square and fixed effects regression of ROA on firm characteristics, respectively. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA (ROA/ $\sigma$  (ROA)). Firm size is measured as the natural logarithm of totals assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year. The regressions have been carried out using ordinary least square with robust standard errors and, year and industry fixed effects estimators with standard errors clustered at the firm level. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 41. Regression of average employee wage on the risk-taking behavior of managers in low unemployment rate regions versus high unemployment rate regions.

	Ln (Wage per employee)											
	Low unemployment rate						High unemployment rate					
RT1	0.469*** (0.166)	0.340 (0.206)					0.844*** (-0.305)	0.567 (-0.345)				
RT2			1.221*** (0.281)	1.138*** (0.393)					0.463 (-0.356)	0.846** (-0.352)		
RT3					-0.007*** (0.002)	-0.010*** (0.003)					-0.002*** (0.0004)	-0.001 (-0.001)
Firm Size	0.0251 (0.0244)	0.00972 (0.0544)	4.69e-05 (0.0266)	-0.00981 (0.0579)	-0.00650 (0.0269)	-0.0169 (0.0588)	0.109** (-0.051)	0.105 (-0.076)	0.157*** (-0.025)	0.149** (-0.056)	0.156*** (-0.025)	0.148** (-0.056)
Employee Productivity	0.228*** (0.0383)	0.268*** (0.0776)	0.269*** (0.0396)	0.321*** (0.0939)	0.273*** (0.0402)	0.335*** (0.0965)	0.054 (-0.063)	0.120 (-0.097)	0.023 (-0.034)	0.0970* (-0.048)	0.022 (-0.035)	0.0908* (-0.047)
Profitability	-0.770*** (0.118)	-0.775*** (0.211)	-0.627*** (0.127)	-0.612*** (0.202)	-0.758*** (0.130)	-0.693*** (0.228)	-0.195 (-0.171)	-0.321 (-0.217)	-0.391* (-0.212)	-0.400 (-0.247)	-0.448** (-0.214)	-0.542** (-0.261)
Sales Growth	0.00141 (0.00257)	0.00202 (0.00252)	0.00182 (0.00339)	0.00382 (0.00316)	0.00168 (0.00411)	0.00320 (0.00363)	-0.0434*** (-0.003)	-0.0442*** (-0.002)	-0.044*** (-0.003)	-0.0448*** (-0.003)	-0.044*** (-0.003)	-0.045*** (-0.003)
Tangibility	-0.286*** (0.109)	-0.325 (0.247)	-0.252** (0.120)	-0.351 (0.296)	-0.256** (0.125)	-0.275 (0.309)	-0.324*** (-0.087)	-0.885*** (-0.284)	-0.276*** (-0.101)	-0.673** (-0.284)	-0.299*** (-0.100)	-0.699** (-0.297)
Worker Growth	-0.0230** (0.00938)	-0.0278*** (0.00995)	-0.0224** (0.00997)	-0.034*** (0.0119)	-0.0231** (0.0106)	-0.034*** (0.0123)	-0.058 (-0.086)	-0.114 (-0.080)	-0.104*** (-0.036)	-0.144*** (-0.047)	-0.112*** (-0.034)	-0.151*** (-0.044)
Constant	2.678*** (0.186)	2.249*** (0.384)	2.648*** (0.186)	3.442*** (0.348)	2.806*** (0.185)	3.434*** (0.364)	2.686*** (-0.271)	1.533*** (-0.557)	2.438*** (-0.270)	1.267** (-0.587)	2.491*** (-0.278)	2.586*** (-0.589)
Observations	878	878	681	681	676	676	213	213	168	168	167	167
R-squared	0.230	0.269	0.271	0.325	0.262	0.327	0.257	0.333	0.507	0.643	0.506	0.634
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Where Wage per employee is measured as the total labor expenses divided by the number of employees. RT1 is the absolute value of the residuals retrieved from the ordinary least square and fixed effects regression of ROA on firm characteristics, respectively. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA (ROA/ $\sigma$  (ROA)). Firm size is measured as the natural logarithm of totals assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year. The regressions have been carried out using ordinary least square with robust standard errors and, year and industry fixed effects estimators with standard errors clustered at the firm level. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 42. Regression of average employee wage on the risk-taking behavior of managers of High-Technology firms versus Non-Technology Firms.

	Ln (Wage per employee)											
	High Tech firms						Non-Tech firms					
RT1	0.611*	0.489					0.553***	0.446***				
	(-0.317)	(-0.301)					(-0.134)	(-0.167)				
RT2			0.631	0.675					1.295***	1.171***		
			(-0.551)	(-0.641)					(-0.229)	(-0.298)		
RT3					-0.0169**	-0.0185*					-0.003***	-0.005***
					(-0.007)	(-0.010)					(-0.001)	(-0.002)
Firm Size	0.025	0.001	0.033	-0.002	0.039	0.004	0.0568***	0.0584**	0.0539***	0.0537*	0.0447***	0.0462*
	(-0.043)	(-0.079)	(-0.042)	(-0.090)	(-0.041)	(-0.088)	(-0.016)	(-0.028)	(-0.017)	(-0.028)	(-0.017)	(-0.027)
Employee Productivity	0.234***	0.268**	0.291***	0.350**	0.301***	0.363**	0.172***	0.197***	0.181***	0.211***	0.180***	0.214***
	(-0.077)	(-0.124)	(-0.082)	(-0.158)	(-0.082)	(-0.160)	(-0.021)	(-0.036)	(-0.023)	(-0.036)	(-0.024)	(-0.037)
Profitability	-1.140***	-0.994**	-1.133***	-0.888**	-1.095***	-0.835*	-0.284***	(-0.297**	-0.164*	-0.163	-0.307***	-0.278**
	(-0.275)	(-0.484)	(-0.290)	(-0.439)	(-0.276)	(-0.420)	(-0.086)	(-0.119)	(-0.099)	(-0.118)	(-0.107)	(-0.133)
Sales Growth	-0.017	-0.020	-0.021	-0.025	-0.020	-0.024	0.001	0.002	0.000	0.002	0.000	0.001
	(-0.014)	(-0.014)	(-0.017)	(-0.018)	(-0.017)	(-0.019)	(-0.003)	(-0.002)	(-0.001)	(-0.001)	(-0.002)	(-0.001)
Tangibility	-1.342***	-1.542**	-1.359***	-1.640*	-1.357***	-1.643*	-0.233***	-0.127	-0.219**	-0.129	-0.227**	-0.041
	(-0.400)	(-0.652)	(-0.478)	(-0.893)	(-0.465)	(-0.877)	(-0.081)	(-0.225)	(-0.090)	(-0.242)	(-0.095)	(-0.263)
Worker Growth	0.152	0.178	0.011	0.056	0.000	0.046	-0.0269***	-0.0309***	-0.0209**	-0.0274***	-0.0209**	-0.0273***
	(-0.205)	(-0.248)	(-0.182)	(-0.233)	(-0.183)	(-0.231)	(-0.010)	(-0.009)	(-0.009)	(-0.008)	(-0.009)	(-0.009)
Constant	2.704***	2.803***	2.363***	2.397***	2.328***	2.376***	2.610***	2.267***	2.543***	2.276***	2.745***	2.355***
	(-0.446)	(-0.550)	(-0.452)	(-0.592)	(-0.449)	(-0.587)	(-0.169)	(-0.333)	(-0.183)	(-0.335)	(-0.183)	(-0.279)
Observations	386	386	307	307	307	307	718	718	551	551	544	544
R-squared	0.213	0.223	0.268	0.294	0.273	0.300	0.261	0.353	0.288	0.399	0.255	0.385
Industry Fixed Effects	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Where Wage per employee is measured as the total labor expenses divided by the number of employees. RT1 is the absolute value of the residuals retrieved from the ordinary least square and fixed effects regression of ROA on firm characteristics, respectively. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA (ROA/ $\sigma$  (ROA)). Firm size is measured as the natural logarithm of totals assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year. The regressions have been carried out using ordinary least square with robust standard errors and, year and industry fixed effects estimators with standard errors clustered at the firm level. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 43. Regression of average employee wage on the risk-taking behavior of managers of Low-Growth firms versus High-Growth Firms.

	Ln (Wage per employee)											
	Low-Growth opportunities						High-Growth opportunities					
RT1	0.366*	0.150					0.604***	0.808***				
	(-0.197)	(-0.219)					(-0.211)	(-0.267)				
RT2			1.281***	1.306***					0.857*	1.056		
			(-0.234)	(-0.310)					(-0.504)	(-0.648)		
RT3					-0.003***	-0.004**					-0.01**	-0.0101**
					(-0.001)	(-0.002)					(-0.004)	(-0.005)
Firm Size	-0.002	-0.004	0.006	0.002	0.002	-0.001	0.117***	0.113*	0.117***	0.117*	0.113***	0.105
	(-0.026)	(-0.051)	(-0.028)	(-0.049)	(-0.028)	(-0.050)	(-0.039)	(-0.059)	(-0.038)	(-0.068)	(-0.038)	(-0.069)
Employee Productivity	0.259***	0.289***	0.250***	0.277***	0.246***	0.280***	0.179***	0.199***	0.257***	0.304***	0.267***	0.312***
	(-0.042)	(-0.086)	(-0.045)	(-0.086)	(-0.045)	(-0.087)	(-0.053)	(-0.073)	(-0.057)	(-0.093)	(-0.059)	(-0.095)
Profitability	-0.449***	-0.500**	-0.256*	-0.270	-0.428***	-0.441*	-0.701***	-0.559***	-0.802***	-0.713**	-0.825***	-0.726***
	(-0.138)	(-0.236)	(-0.132)	(-0.204)	(-0.143)	(-0.243)	(-0.146)	(-0.205)	(-0.188)	(-0.275)	(-0.171)	(-0.270)
Sales Growth	0.001	0.001	0.002	0.003	0.001	0.002	-0.014	-0.015	-0.0263*	-0.0296**	-0.0256*	-0.0291**
	(-0.002)	(-0.002)	(-0.003)	(-0.003)	(-0.003)	(-0.003)	(-0.011)	(-0.011)	(-0.015)	(-0.013)	(-0.015)	(-0.014)
Tangibility	-0.142	-0.211	-0.111	-0.210	-0.105	-0.105	-0.551***	-0.731**	-0.617***	-0.569	-0.706***	-0.608
	(-0.099)	(-0.256)	(-0.099)	(-0.256)	(-0.109)	(-0.294)	(-0.139)	(-0.366)	(-0.170)	(-0.449)	(-0.177)	(-0.464)
Worker Growth	-0.039	-0.038	-0.040	-0.044	-0.045	-0.050	0.006	0.018	0.031	0.047	0.028	0.044
	(-0.039)	(-0.045)	(-0.044)	(-0.047)	(-0.044)	(-0.050)	(-0.026)	(-0.025)	(-0.030)	(-0.028)	(-0.032)	(-0.030)
Constant	2.688***	2.644***	2.594***	2.490***	2.757***	2.465***	2.118***	1.775***	1.741***	1.066**	1.828***	1.792***
	(-0.182)	(-0.379)	(-0.197)	(-0.378)	(-0.195)	(-0.433)	(-0.373)	(-0.448)	(-0.356)	(-0.492)	(-0.355)	(-0.483)
Observations	672	672	546	546	540	540	432	432	312	312	311	311
R-squared	0.263	0.293	0.281	0.317	0.259	0.300	0.187	0.227	0.266	0.330	0.269	0.330
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Where Wage per employee is measured as the total labor expenses divided by the number of employees. RT1 is the absolute value of the residuals retrieved from the ordinary least square and fixed effects regression of ROA on firm characteristics, respectively. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA (ROA/ $\sigma$  (ROA)). Firm size is measured as the natural logarithm of totals assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year. The regressions have been carried out using ordinary least square with robust standard errors and, year and industry fixed effects estimators with standard errors clustered at the firm level. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Table 44. Sensitivity analysis

Panel A. First stage regression of the risk-taking behavior of managers on the variability of cash flow.

	Risk-Taking Proxies					
	RT1		RT2		RT3	
Volatility of Cash Flow	0.415*** (0.074)	0.414*** (0.087)	0.766*** (0.067)	0.750*** (0.114)	-16.18*** (3.828)	-18.31*** (5.049)
Firm Size	0.002 (0.003)	0.001 (0.005)	-0.002 (0.002)	-0.002 (0.003)	-0.233 (0.294)	-0.058 (0.348)
Employee Productivity	0.006* (0.003)	0.009 (0.006)	0.003** (0.001)	0.003 (0.002)	1.036*** (0.239)	1.296*** (0.362)
Profitability	-0.179*** (0.030)	-0.189*** (0.036)	-0.056*** (0.018)	-0.062*** (0.023)	4.860*** (1.157)	7.087*** (1.398)
Sales Growth	1.80e-05 (0.001)	-0.0001 (0.001)	4.06e-05 (0.0001)	1.30e-06 (0.0002)	-0.033* (0.018)	-0.050*** (0.013)
Tangibility	0.008 (0.017)	-0.006 (0.034)	0.002 (0.006)	0.031* (0.016)	1.136 (3.608)	6.405 (6.610)
Worker Growth	0.002 (0.002)	0.002 (0.002)	0.001 (0.001)	0.001 (0.001)	0.007 (0.091)	0.075 (0.068)
Constant	0.018 (0.031)	-0.047 (0.063)	0.026 (0.016)	-0.014 (0.031)	0.151 (2.636)	-8.160* (4.833)
Observations	831	831	831	831	824	824
R-squared	0.224	0.268	0.760	0.773	0.049	0.108
Industry Fixed Effects	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes

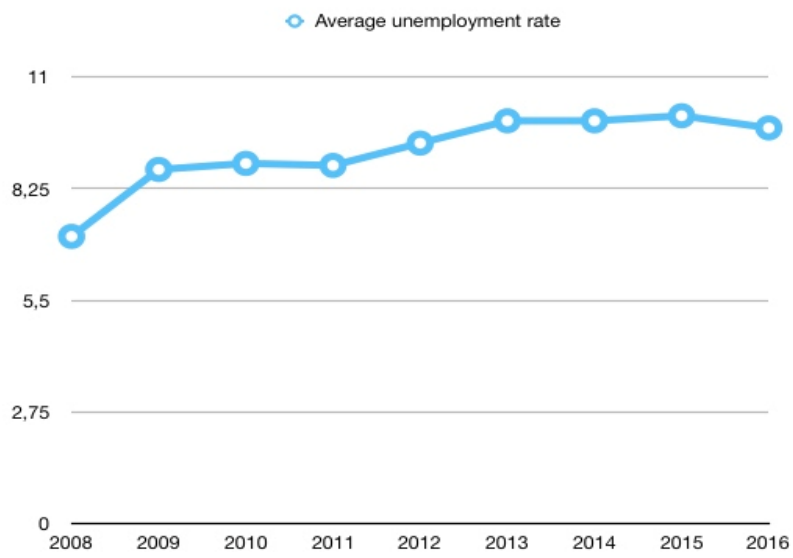
Where Wage per employee is measured as the total labor expenses divided by the number of employees. RT1 is the absolute value of the residuals retrieved from the ordinary least square regression and fixed effects of ROA on firm characteristics, respectively. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA ( $ROA/\sigma$  (ROA)). Volatility of Cash Flow is measured by the standard deviation of the firm's Cash flow. Firm size is measured as the natural logarithm of totals assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year. The regressions have been carried out using ordinary least square with robust standard errors and, year and industry fixed effects estimators with standard errors clustered at the firm level. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Panel B. Second stage regression of wage per employee on the predicted values of the risk-taking behavior of corporate managers (FIT RT).

	Ln (Wage per employee)					
FIT RT1	2.966*** (0.551)	2.861*** (0.901)				
FIT RT2			1.608*** (0.299)	1.580*** (0.497)		
FIT RT3					-0.0761*** (0.0141)	-0.0648*** (0.0204)
Firm Size	0.0292 (0.0221)	0.0332 (0.0464)	0.0381* (0.0216)	0.0391 (0.0453)	0.0170 (0.0229)	0.0319 (0.0467)
Employee Productivity	0.184*** (0.0339)	0.221*** (0.0707)	0.198*** (0.0346)	0.242*** (0.0752)	0.281*** (0.0422)	0.331*** (0.0966)
Profitability	-0.0516 (0.150)	0.000330 (0.189)	-0.491*** (0.100)	-0.443*** (0.142)	-0.212* (0.128)	-0.0822 (0.173)
Sales Growth	-0.00741 (0.00861)	-0.00697 (0.00962)	-0.00742 (0.00861)	-0.00727 (0.00962)	-0.00985 (0.00865)	-0.0105 (0.00969)
Tangibility	-0.267*** (0.0837)	-0.240 (0.229)	-0.248*** (0.0840)	-0.305 (0.235)	-0.158* (0.0872)	0.159 (0.231)
Worker Growth	-0.0153 (0.0184)	-0.0145 (0.0198)	-0.00912 (0.0184)	-0.0107 (0.0199)	-0.00784 (0.0185)	-0.00505 (0.0202)
Constant	2.596*** (0.162)	2.412*** (0.365)	2.606*** (0.162)	2.298*** (0.352)	2.660*** (0.160)	1.738*** (0.347)
Observations	831	831	831	831	831	831
R-squared	0.213	0.268	0.213	0.268	0.213	0.268
Industry Fixed Effects	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes

Where Wage per employee is measured as the total labor expenses divided by the number of employees. FIT RT is a prediction of the risk-taking behavior of corporate managers. RT1 is the absolute value of the residuals retrieved from the ordinary least square and fixed effects regression of ROA on firm characteristics, respectively. RT2 is the standard deviation of the firm's industry-adjusted ROA ( $\sigma$  (ROA)). RT3 is the ratio of the firm's ROA over the standard deviation of the firm's industry-adjusted ROA (ROA/ $\sigma$  (ROA)). Firm size is measured as the natural logarithm of totals assets. Employee productivity is computed as the natural logarithm of total sales divided by the number of employees. Profitability is calculated as the ratio of operating cash flow over total assets. Sales growth is the difference between the total sales of two consecutive years divided by the total sales of the earlier year. Tangibility is computed as the property, plant and equipment divided by total assets. Worker growth is measured as the difference between the number of employees of two consecutive years divided by the number of employees of the earlier year. The regressions have been carried out using ordinary least square with robust standard errors and, year and industry fixed effects estimators with standard errors clustered at the firm level. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5% and 1%, respectively.

Figure 12. Average unemployment rate in France over the entire period (in %)



Source: statistics from the localized unemployment rate in France, INSEE.<sup>69</sup>

<sup>69</sup>[https://www.insee.fr/fr/statistiques/series/102760732?ZONE\\_GEO=2320658%2B2322843%2B2322825%2B2322834%2B2322822%2B2322847%2B2322832%2B2322828%2B2322818%2B2322826%2B2322839%2B2322840%2B2322833%2B2322846](https://www.insee.fr/fr/statistiques/series/102760732?ZONE_GEO=2320658%2B2322843%2B2322825%2B2322834%2B2322822%2B2322847%2B2322832%2B2322828%2B2322818%2B2322826%2B2322839%2B2322840%2B2322833%2B2322846)

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## **Part 3: General Conclusion**

# 1. Concluding summary

Small and medium-sized enterprises have succeeded in marking their presence among large companies in France. Although these firms constitute an important source of job creation, contribute to the value added of the country, and engage in innovative activities and foreign trade, the previous body of financial studies has concentrated on large enterprises (Pettit and Singer, 1985; Ang, 1991). Thus, the study of small and medium-sized enterprises requires further attention, especially when it comes to examining their managers' risk-taking behavior.

SMEs' managers are responsible for the majority of their firms' tasks and are therefore considered key actors in ensuring an efficient functioning of their firms (Filion, 2007). Among many characteristics that describe SMEs' managers, their attitude toward risk has been identified in the literature as one of the most common and important features of managers in small businesses (Duchéneau, 1996).

Thus, the majority of the previous literature on the managers' risk-taking behavior in SMEs has focused on determining the reasons and understanding the motivations behind this behavior (Sullivan, 1997; Filion, 2007). Surprisingly, a limited number of studies have focused on the consequences of this behavior in SMEs despite their importance (Hoskisson et al., 2017). In these studies, researchers have examined the consequences of managerial risk-taking behavior exclusively from the perspective of managers and their SMEs.

While SMEs depend on several internal and external stakeholders, one wonders whether these actors will tolerate this risky behavior. Nonetheless, to the best of our knowledge, there have been no studies carried out on other stakeholders' reactions toward this behavior. Therefore, we are compelled to examine the consequences of managers' risk-taking behavior from the stakeholders' perspectives in SMEs. By doing so, this thesis aims to fill this gap in the financial literature on small businesses.

This thesis considers three important stakeholders of small businesses among many others: shareholders, banks, and employees. The presence of these actors is vital for the firm, and thus their exposure to the risk-taking behavior of managers might not be in their interest. Therefore, each essay of the thesis focuses on the (direct or indirect) relationship between managerial risk-taking behavior and the reaction of these stakeholders.

Since these three essays consist of an empirical analysis, the construction of a unique sample was essential. In order to achieve this step, we gathered the financial information from the Amadeus database. This database, published by Bureau van Dijk, enabled us to collect information regarding the balance sheets, profit and loss accounts, standard ratios, and other valuable financial information of each firm in the sample. While following the definition of SMEs implemented by the European Commission of 6 May 2003, we exclusively considered firms having less than 250 employees and an annual turnover not exceeding EUR 50 million, or an annual balance sheet total lower than EUR 43 million. Furthermore, for accuracy and availability reasons, our sample was composed of French SMEs listed on the Euronext Paris stock exchange. As a result, the final sample considered in this thesis was composed of 1,403 firm-observations of French SMEs listed on the Euronext Paris stock exchange over the period 2008 to 2016. Given that our period of study includes the financial crisis year of 2008, we had the opportunity to examine the periods during and after the financial crisis. Thus, in each essay, our sample was segregated into two subsamples (i.e., 2008 and from 2009 to 2016). This enabled us to discover the impact of the crisis in each of these studies.

The first essay of the thesis examines the relationship between the manager's risk-taking behavior and the firm's shareholders. As argued in the agency theory, the relationship between managers and shareholders suffers from the divergence of interest problem (Jensen and Meckling, 1976). In fact, when free cash flow is available in the firm, managers tend to invest it in negative present value projects rather than distributing it to shareholders (Jensen, 1986). Obviously, this risky behavior is not in the interest of shareholders, who prefer to receive free cash flow in form of dividends or to benefit from share-repurchase programs. This divergence in interests results in a situation where shareholders implement mechanisms in order to eliminate this specific behavior. Previous literature suggested that the issuance of debt is an effective disciplining mechanism that reduces managerial risk-taking behavior (Jensen, 1986). Thus, the first essay of the thesis addresses this problem by examining the impact of financial debt on the managers' risky behavior in small businesses. The empirical findings of this essay indicate that financial debt is positively and significantly correlated with managerial risk-taking, especially after the financial crisis of 2008. This result suggests that debt enhances the risk-taking behavior of corporate managers rather than alleviating it. Interestingly, the use of debt as a disciplining mechanism for managerial risk-taking behavior is not efficient, especially during the post-crisis period. In fact, as banks suffered from illiquidity problems due to the financial crisis, they were more likely to impose restrictions and ration credit to small vulnerable

firms. By doing so, they reduced their monitoring scope after the crisis on these firms. As managers were less monitored by banks, they had more incentives to engage in risky activities. Overall,

**Debt enhanced the managers' risk-taking behavior in small businesses after the financial crisis of 2008. Thus, in contrast to the predictions of the Free Cash Flow theory, debt is not perceived as a disciplining mechanism that reduces the agency conflicts between shareholders and managers in our sample.**

The second essay of the thesis examines the relationship between managers' risk-taking behavior and banks. The credit granting process generally requires a gathering of accurate information on the potential borrower. This information is then used by banks in order to assess the borrower's riskiness and future revenues. Nevertheless, due to the risk-taking behavior of managers in small businesses, banks encounter difficulties when gathering information on these borrowers. This phenomenon is represented by the "asymmetrical information" concept (Akerlof, 1970). In this framework, small businesses are more informed about their financial situation than are banks. Due to this imbalance of information between actors in the same transaction, credit institutions are not able to accurately estimate the riskiness and future revenues of these small businesses. This leaves SMEs with restrained access to financing and a toughening of lending conditions (Stiglitz and Weiss, 1981). In order to address this problem, previous literature has suggested the use of a lending tool suitable for small transparent borrowers (i.e., small listed businesses), which is financial statement lending (Berger and Udell, 2006). Under this lending technique, banks use the information available on the borrower's financial statements in their process of credit granting. Therefore, the quality of their financial statements is vital (i.e., the higher the quality, the more accurate the information) as it attenuates the information asymmetry problems (García-Teruel, Martínez-Solano, and Sánchez-Ballesta, 2014). Thus, the second essay of this thesis examines the impact of the financial reporting quality (FRQ) of SMEs on their access to financing. The empirical findings show that FRQ has a positive and significant impact on SMEs' level of debt financing. This indicates that higher quality in reporting of financial statements mitigates information asymmetry problems between

SMEs and banks. This enables banks to better assess the riskiness and future revenues of small risky businesses, which facilitates the SMEs' access to debt financing. To sum up,

**Financial reporting quality enhances SMEs' access to debt financing by mitigating the information asymmetry problems with lenders induced by the managers' risk-taking behavior.**

The third essay of the thesis examines the relationship between the manager's risk-taking behavior and employees. When managers engage in risky activities, they inevitably expose their firms to several risks. These risks might start with financial and economic difficulties, such as the inability to meet their engagements and the incapacity to cover their expenses with their incomes, but can soon transform into a legal difficulty demonstrated by an official bankruptcy (Kherrazi and Ahsina, 2016). In fact, previous literature has shown that managers' risk-taking behavior influences the probability of their firms' bankruptcy by increasing it (Mazzarol and Reboud, 2017). Obviously, this framework threatens the employees' situation. As employees are the most undiversified stakeholders of the firm, they are vulnerable to the loss of their jobs, the loss of their wages, non-pecuniary advantages, and long-term unemployment (Jacobson, LaLonde, and Sullivan, 1993; Graham et al., 2019). Thus, an increase in the managers' risky behavior is not favorable for them, which induces conflicts between these two actors. Previous studies have suggested that firms should compensate their employees for their expected human capital losses by increasing their wages (Titman, 1984; Maksimovic and Titman, 1991; Berk, Stanton, and Zechner, 2010). Thus, the third essay of the thesis investigates the impact of managers' risk-taking behavior on the average employees' wages in small businesses. The empirical findings illustrate a positive and significant correlation between managerial risk-taking behavior and the average employees' wages. This indicates that when managers engage in risky activities, implying an increase in their firms' probability of bankruptcy, they compensate their employees for their expected human capital loss. To conclude:

**Managers compensate employees by increasing their wages to offset the rise of their firms' probability of bankruptcy caused by their risky behavior.**

## 2. Contributions

The field of corporate finance represents one of the major departments in finance. Not surprisingly, this division has been largely discussed in the previous literature. In fact, researchers have been interested in developing theories related to the financial activities of companies regarding their investment strategies, sources of financing (i.e., debt and equity financing), and many other issues (e.g., maximization of the firm's value, etc.). Consequently, contributions in the area of corporate finance are indeed challenging to achieve. However, this thesis strives to extend this earlier literature through several channels.

In the first essay of this thesis, we construct an empirical model that examines the relationship between the risk-taking behavior of managers and financial leverage in SMEs. Our analysis relies on financial theories by Myers (1977) and Jensen (1986), which predict a negative impact of debt on the risk-taking behavior of managers. These theories have been extensively referred to in the previous literature, particularly when it comes to finding a remedy for agency conflicts between managers and shareholders. Although the theory of Jensen (1986) considers debt to be a disciplining mechanism that reduces the risk-taking behavior of managers, yet to the best of our knowledge, there are no empirical studies that capture these two variables. Thus, our study represents the first empirical attempt to investigate whether debt attenuates the risky behavior of managers in small businesses, especially after the financial crisis of 2008.

The second essay of the thesis offers an analysis that combines the fields of accounting and finance. In fact, the empirical model on which we rely in our second study examines the impact of the financial reporting quality on the firms' access to financial debt. This research question has been extensively investigated in the previous literature. Nevertheless, it has been tested either on privately held SMEs or on publicly held large firms. Interestingly, in their article, Berger and Udell (2006) argued that this financing method is suitable for informationally transparent small borrowers, by which they meant publicly held small businesses. Despite this

argument, there is surprisingly no previous study that examines the impact of FRQ on the “informationally transparent” SMEs’ access to financing. Thus, our second essay provides the first empirical attempt to cover this issue in the context of listed small businesses.

In the third article, we propose an empirical model that examines the impact of managerial risk-taking behavior on the average wage of employees. This idea is derived from an extensive literature that has explored the impact of leverage on the average wage of employees. These previous studies found that since the level of debt increases the firm’s probability of bankruptcy, employees are compensated with an increase of their average wages for their expected human capital losses. Given that this stream of literature considers the level of debt to have a direct impact on the probability of bankruptcy, we believe in our study that managerial risk-taking behavior also increases this probability. By doing so, we contribute to this literature by extending its analysis toward a new stream that has not been discovered before.

As our three empirical essays build on previous theoretical and empirical literature, the contributions achieved obviously extend these studies but also offer grounds for future research in the field of corporate finance.

#### ➤ **Toward a deeper analysis of publicly held SMEs**

On the basis of the prior work on SMEs, we have noticed that most of the financial studies have focused their attention on examining the area of privately held SMEs. This can be explained by the substantial presence of these firms in comparison to publicly held SMEs, particularly in France. Nevertheless, the context of listed SMEs has received little attention from researchers despite their growing presence on stock markets, which leaves this framework unexplored and requiring more attention. Therefore, since this thesis aims to examine this specific type of SMEs, it provides a contribution to the previous studies on SMEs by extending their analyses to an uncharted area in terms of the sample used in the three empirical studies. In other words, by shedding light on listed SMEs, we not only acknowledge their important presence in the market but also confirm their need to be investigated more as they might yield unexpected results. For instance, our empirical findings in the first essay (i.e., debt is not considered a monitoring tool for agency conflicts between managers and shareholders in listed SMEs, which is not in line with the predictions of the Free Cash Flow theory) offer a conclusion that could differ depending on the type of firms. As a consequence, our thesis encourages future studies to devote more attention to the examination of publicly held SMEs. In fact, it would be

interesting to carry out some analyses of the previous body of financial literature on publicly held SMEs in order to discover their reactions towards financial concepts and perhaps compare them with those of privately held SMEs and/or large firms.

➤ **Toward a more inclusive decision-making process**

This thesis involves four major actors of SMEs among several others, namely managers, shareholders, banks, and employees. Although the main focus of our study is concentrated on the behavior of managers and its consequences for other firm stakeholders, this thesis nevertheless provides insights for all these stakeholders regarding their decision-making process. On the one hand, it assists managers in determining their level of engagement in risky activities given their relationships with shareholders, banks, and employees. More specifically, this thesis supports the idea that the risk-taking behavior of managers is not in line with the expectations of the other three actors, which encourages them to implement actions to attenuate this behavior. For instance, it shows that shareholders are expected to establish a disciplining mechanism other than debt, that banks are supposed to use the financial statement lending (through FRQ) to assess the riskiness of small transparent borrowers, and that employees are expected to receive a failure risk compensation for their expected human capital losses. Thus, this thesis extends the previous literature on managerial behavior in SMEs by arguing that managers need to incorporate these internal and external costs (i.e., reaction of shareholders, banks, and employees) when choosing their optimal level of risk-taking behavior. Similarly, this thesis underlines for stakeholders (other than managers) the importance of taking into account the managers' risk-taking behavior in their decision-making process as well. In fact, it shows that managerial risk-taking behavior can seriously harm the relationships with other stakeholders and suggests the implementation of certain tools and actions in order to limit the managers' risky behavior. Overall, this thesis encourages future researchers to contribute to the decision-making process of stakeholders by discovering new elements that should be taken into consideration when making an informative and transparent decision.

### 3. Limitations

Although this thesis offers several contributions to the previous literature on small businesses, it nevertheless presents some limitations that deserve to be elaborated and investigated in future research.

This thesis examines the risk-taking behavior of managers, a topic of major concern in small businesses. As mentioned above, the managers' risk-taking behavior has been estimated quantitatively via the risk-taking behavior of their SMEs. Thus, the behavioral aspect of managers has not been addressed in this thesis, which represents a limitation. In fact, this has not been possible because the analyses of this thesis are based on empirical studies using quantitative data, while behavioral studies require specific gathering of data that is not available in this thesis. Nevertheless, a large body of literature has been interested in treating this aspect of managerial risk-taking behavior and has proposed several behavioral theories that explain it. Thus, it would be interesting to explore these theories in depth in the context of French listed SMEs after the financial crisis of 2008. By doing so, it would be interesting to shed the light on the managers' characteristics in small businesses after the crisis. Is there a typical profile (percentage of shares owned in the company, age, tenure, etc.) of small business managers that explains their risk-taking behavior? If so, did this profile change after the crisis? It would be interesting to discover these aspects in future research through a survey addressed to SME managers in France.

Another limitation is related to the extent to which the sample considered in this thesis is capable of representing all French SMEs in general. As sketched above, this thesis employs a unique sample exclusively composed of small and medium-sized enterprises listed on the Euronext Paris stock exchange. Clearly, this enables us to carry out different analyses due to the availability and accuracy of information provided. Although listed SMEs are very important to the economy as small firms are always encouraged to enter the stock market, one cannot deny that their presence is relatively weak in comparison to that of privately held SMEs in France. Indeed, a significant number of small businesses remain privately held. Thus, we wonder whether the findings obtained in this thesis are also appropriate for privately held SMEs. Therefore, it would be interesting to carry out these analyses on private small businesses in order to provide a comparison between these two types of firms. What are the consequences of managerial risk-taking behavior in privately held SMEs from the stakeholders' perspectives? Is

there a difference between private and listed small businesses? What is the impact of the financial crisis of 2008 on privately held SMEs?

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## **Part 4: Thesis Summary in French**

# 1. Introduction et contexte de la recherche

## 1.1. L'importance des PME dans l'économie française

Les petites et moyennes entreprises (PME) sont le moteur du tissu économique français. Ces entreprises sont définies par la recommandation de la commission européenne du 6 mai 2003 selon des critères spécifiques, comme suit (Commission Européenne, 2003):

- « La catégorie des micro, petites et moyennes entreprises (PME) est constituée des entreprises qui occupent moins de 250 personnes et dont le chiffre d'affaires annuel n'excède pas 50 millions d'euros ou dont le total du bilan annuel n'excède pas 43 millions d'euros.
- Dans la catégorie des PME, une petite entreprise est définie comme une entreprise qui occupe moins de 50 personnes et dont le chiffre d'affaires annuel ou le total du bilan annuel n'excède pas 10 millions d'euros.
- Dans la catégorie des PME, une microentreprise est définie comme une entreprise qui occupe moins de 10 personnes et dont le chiffre d'affaires annuel ou le total du bilan annuel n'excède pas 2 millions d'euros. »

Figure 13. Définition d'une PME

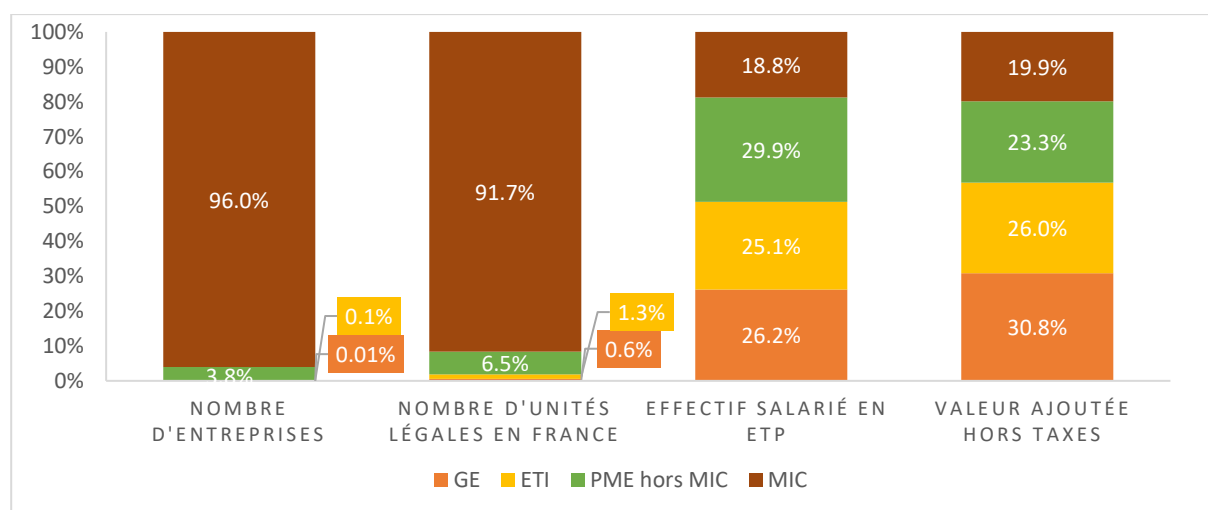
Enterprise category	Headcount: annual work unit (AWU)	Annual turnover	or	Annual balance sheet total
Medium-sized	< 250	≤ EUR 50 million	or	≤ EUR 43 million
Small	< 50	≤ EUR 10 million	or	≤ EUR 10 million
Micro	< 10	≤ EUR 2 million	or	≤ EUR 2 million

Source: extraite de «User guide to the SME Definition», European Commission, 2017, p.11.

L'importance des PME au sein de l'économie française se manifeste à travers plusieurs vecteurs. Tout d'abord, de part de leur démographie, ces petites structures représentent la quasi-totalité des entreprises en France. En 2017, la France comptait environ 3,8 millions de PME<sup>70</sup>, soit 99.8% du total des entreprises françaises (cf. figure 14).

De plus, les PME françaises contribuent fortement à la croissance économique du pays. En effet, elles ont réalisé en 2017, 43% de la valeur ajoutée (cf. figure 14). En outre, ces entreprises constituent une source importante de création d'emplois en France. En 2017, les PME ont assuré 6,3 millions d'emplois à temps plein dans le secteur des services marchands non financiers et non agricoles. Ce chiffre équivaut à 48.7 % (près de la moitié) de la main d'œuvre en France (cf. figure 14).

Figure 14. Caractéristiques des entreprises par taille d'entreprise en 2017



Champ : France, entreprises des secteurs marchands non agricoles et non financiers hors régime fiscal de la micro-entreprise et micro-entrepreneurs.

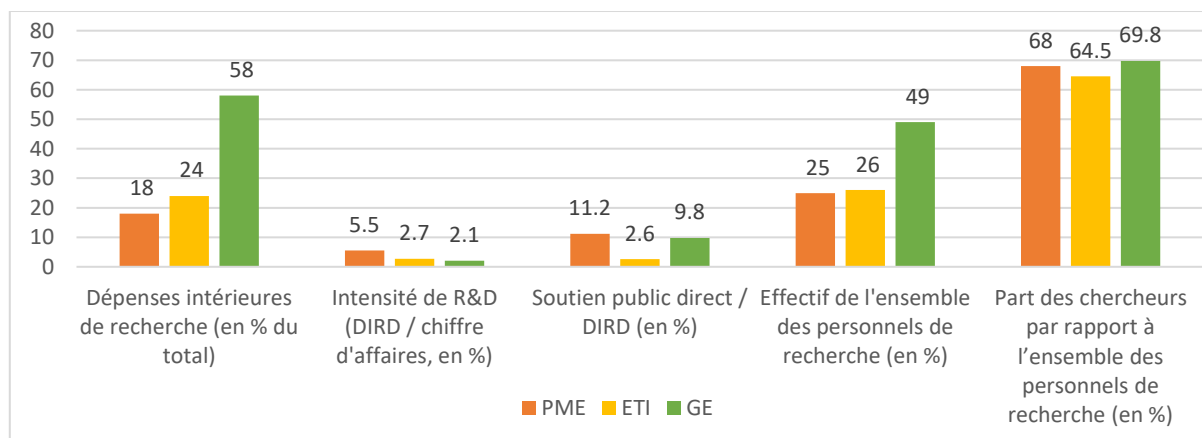
Source: statistiques extraites de « Les entreprises en France », INSEE, Edition 2019, p.107.

Les PME françaises ont également contribué à l'innovation du pays en réalisant 18% des dépenses intérieures de R&D des entreprises (DIRDE) en 2017, contre 58% pour les grandes entreprises (cf. figure 15). Si ce pourcentage peut sembler refléter un engagement modéré de la part des PME, il faut rappeler que leur part des dépenses de R&D représente 5.5% de leur chiffre

<sup>70</sup> Secteur des services marchands non financiers et non agricoles.

d'affaires, devançant ainsi largement les grandes entreprises qui ne consacrent que 2.1% de leur chiffre d'affaires à ces activités.

Figure 15. Activités de R&D par taille d'entreprise en 2017



Source: statistiques extraites de « la R&D dans les PME, les ETI et les grandes entreprises », 'Ministère de l'enseignement supérieur, de la recherche et de l'innovation'.<sup>71</sup>

Un autre élément clé qui souligne l'importance des PME françaises pour l'économie du pays est lié à leur implication dans le commerce extérieur (cf. tableau 45). En 2017, 97.9% des entreprises exportatrices en France appartiennent à la catégorie de PME. D'ailleurs, les PME exportatrices (hors microentreprises) représentent 31,5 % du total des petites entreprises en France et réalisent 12.3% du chiffre d'affaires total à l'exportation du pays. Les microentreprises exportatrices représentent quant à elles 7 % du total des microentreprises françaises et réalisent 2.6% du chiffre d'affaires total à l'exportation du pays.

<sup>71</sup> [https://publication.enseignementsup-recherche.gouv.fr/eesr/FR/T093/la\\_r\\_d\\_dans\\_les\\_pme\\_les\\_eti\\_et\\_les\\_grandes\\_entreprises/#ILL\\_EESR12\\_R\\_42\\_03](https://publication.enseignementsup-recherche.gouv.fr/eesr/FR/T093/la_r_d_dans_les_pme_les_eti_et_les_grandes_entreprises/#ILL_EESR12_R_42_03)

Tableau 45. Entreprises exportatrices par taille d'entreprise en 2017

Catégorie d'entreprise	Nombre d'entreprises	Part des entreprises exportatrices (en %)	Chiffre d'affaires à l'export (en milliards d'euros)	Taux d'exportation moyen (en %) (1)
GE + ETI	4,057	71.9	611	28.3
PME, hors microentreprises	43,700	31.5	88	21.5
Microentreprises	149,334	7.0	19	24.1

(1) : taux d'exportation des entreprises exportatrices.

Champ : France, entreprises exportatrices, hors micro-entrepreneurs et micro-entreprises au sens fiscal.

Source: extrait de « Entreprises exportatrices selon la taille de l'entreprise », INSEE, 2017.<sup>72</sup>

Pour résumer, les PME constituent un levier déterminant du dynamisme français, tant sur le plan interne en renforçant la croissance économique et le taux d'emploi, mais également sur le plan international, à travers le développement du commerce extérieur et de l'innovation, qui contribuent à accroître la compétitivité du pays.

## 1.2. Une des spécificités des PME : la prise de risque des dirigeants

Après avoir exposé les principales caractéristiques des PME françaises qui constituent notre échantillon, cette deuxième section se concentre sur la dimension centrale de cette thèse ; la prise de risque des dirigeants de PME.

Avant de présenter la perspective d'étude que nous avons choisie, revenons dans un premier temps sur les différentes perspectives du comportement risqué des dirigeants abordées dans la littérature. Pour ce faire, cette section s'articule autour de quatre parties. Nous explorons tout d'abord le caractère unique des PME (1), nous verrons ensuite la nature du rôle des dirigeants des PME (2). La troisième partie sera dédiée aux raisons qui incitent le comportement de prise de risque des dirigeants (3), et nous finirons par analyser les conséquences de ce dernier sur les entreprises (4); une thématique à laquelle cette thèse s'intéresse particulièrement.

<sup>72</sup> <https://www.insee.fr/fr/statistiques/2120836>

## ➤ Le caractère unique des PME

Alors que la plupart des études théoriques et de nombreuses études empiriques se sont penchées sur l'étude des grandes entreprises, les petites entreprises ont longtemps été ignorées. Pourtant, leur importance au sein de l'économie des pays, notamment en France comme nous l'avons vu plus haut, nous incite fortement à cibler ce type d'entreprises dans notre étude.

Pettit & Singer (1985) et Ang (1991) ont été parmi les premiers auteurs à reconnaître le caractère unique des PME, et à suggérer la nécessité d'une adaptation des théories financières qui étaient autrefois conçues pour les grandes entreprises. Par exemple, Pettit & Singer (1985) ont déclaré :

*« Notre objectif dans cet article est de fournir une base pour le développement de la recherche dans le domaine du financement des petites entreprises. L'approche mettra l'accent sur le fait que les différences prévues entre les petites et les grandes entreprises doivent être développées à partir du même corps de théorie financière. Cependant, cette théorie doit être suffisamment générale pour tenir compte de la possibilité que les petites entreprises agissent différemment ou soient affectées différemment des types d'entreprises qui sont habituellement considérés dans la littérature sur la finance d'entreprise ».*<sup>73</sup> (p.47) (Traduction en Français).

Conformément à ces déclarations, Ang (1991) a suggéré que :

*« Ces caractéristiques uniques des petites entreprises pourraient générer un ensemble différent de problèmes financiers, ou amener les petites entreprises à envisager le même ensemble de problèmes financiers d'une manière différente. En conséquence, différentes décisions financières, différents types d'arrangements financiers, d'institutions et de pratiques peuvent évoluer ».*<sup>74</sup> (p.1) (Traduction en Français).

Ainsi, il est important de reconnaître qu'une PME n'est pas une « miniature » d'une grande entreprise (OSEO, 2005) et qu'elle doit être traitée individuellement et différemment. La littérature évoque alors un « effet transformateur » des PME dans lequel « *les règles ne sont pas les mêmes que dans des structures plus grandes ; certaines données ou certains événements*

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<sup>73</sup> Passage original en Anglais : "Our objective in this article is to provide a foundation for the development of research in the area of small business finance. The approach will emphasize that predicted differences between small and large firms should be developed from the same body of financial theory. Yet this theory must be general enough to allow for the possibility of small firms acting differently or being affected differently from the types of firms that are ordinarily considered in corporation finance literature." (Pettit & Singer, 1985, p.47).

<sup>74</sup> Passage original en Anglais : "These unique characteristics of small businesses could generate a different set of financial problems, or cause small businesses to look at the same set of financial problems in a different manner. As a consequence, different financial decisions, types of financial arrangements, institutions, and practices may evolve" (Ang, 1991, p.1).

*sont grossis ou amplifiés, d'autres réduits ou minimisés, d'autres encore déformés, changeant de nature ou d'intensité* » (OSEO, 2005, p.39). Néanmoins, le fait de reconnaître la spécificité des petites entreprises n'implique pas le rejet de toutes les connaissances issues des études sur les grandes entreprises (de Oliveira, Escrivão, Nagano, Ferraudo, & Rosim, 2015). Par conséquent, il ne faut pas seulement envisager d'adapter les théories financières autrefois conçues pour les grandes entreprises, mais aussi s'attendre à des réactions potentiellement différentes de la part des PME.

Alors que les déclarations ci-dessus étaient principalement destinées aux PME non cotées, cette thèse se focalise sur des PME cotées en bourse. Cette caractéristique particulière, de par la présence timide des petites entreprises sur les marchés financiers par rapport aux entreprises de plus grande taille, renforce le caractère novateur de notre étude pour plusieurs raisons.

Tout d'abord, les PME cotées n'ont pas reçu d'attention de la part des chercheurs malgré leur présence croissante sur les marchés publics. Ensuite, leur nature est très particulière et distinctive. En effet, bien que les PME cotées en bourse présentent certaines similitudes avec les PME non cotées en termes de composition et de fonctionnement, leur ressemblance avec les grandes entreprises cotées ne peut être contestée. En fait, une petite entreprise cotée en bourse est une entreprise qui s'efforce de se développer et d'atteindre une taille optimale, qui est exposée à de nouveaux investisseurs, qui offre une plus grande transparence à ses clients et fournisseurs, qui cherche à augmenter ses fonds propres et, par la suite, améliorer son accès au financement par l'emprunt et au financement supplémentaire par fonds propres.

En partant de ces constats, cette thèse a pour objectif de s'appuyer sur l'ensemble des théories financières conçues pour les grandes entreprises afin d'étudier les conséquences ou réactions potentiellement différentes auprès des PME cotées. Plus précisément, nous pouvons envisager que les réactions des PME cotées en bourse étudiées vis-à-vis d'un concept financier peuvent être amplifiées ou atténuées par rapport aux réactions des grandes entreprises et/ou de leurs homologues non cotées. Il est donc important de garder à l'esprit cette caractéristique spécifique des PME cotées en bourse tout au long de notre étude.

## ➤ Les dirigeants des PME

Une PME est dirigée, dans la plupart des cas, par une seule personne qui est également le propriétaire de la société (connue dans la littérature sous le nom de propriétaire-dirigeant) (Filion, 2007). Dans leur article, Carland, Hoy, Boulton, & Carland (1984) définissent le propriétaire-dirigeant d'une PME comme :

*« (...) un individu qui crée et gère une entreprise dans le but principal de faire progresser ses objectifs personnels. L'entreprise doit être la principale source de revenus et consommera la majorité du temps et des ressources d'une personne. Le propriétaire perçoit l'entreprise comme une extension de sa personnalité, étroitement liée aux besoins et aux désirs de la famille ».*<sup>75</sup> (p.358) (Traduction en Français).

Les dirigeants des PME se caractérisent par une attitude de multifonctionnalité qui traite à la fois de la supervision et de la gestion de leur entité (Filion, 2007). Dans leur livre, Filion (2007) distingue ces fonctions en précisant que *« la direction d'une entreprise réfère à sa conduite, au fait de mener, diriger, de commander, de gouverner, de guider, de fournir les orientations stratégiques et de prendre les décisions à portée stratégique »* (p.6), et que *« la gestion d'une entreprise réfère surtout au fait d'y administrer des activités. Elle concerne les opérations et s'applique en général aux fonctions et aux activités relatives au marketing, à la finance, à la comptabilité, aux ressources humaines, aux TIC, à la production, et, enfin à toutes les tâches de l'entreprise. »* (p.7).

Les responsabilités des dirigeants diffèrent considérablement entre les petites et les grandes entreprises en raison de la diversité de leurs systèmes opérationnels. Plus précisément, alors que les petites entreprises reposent sur une proximité interactive qui favorise un contact direct entre les dirigeants et les employés, les interactions dans les grandes entreprises ont tendance à être distantes et plus hiérarchiques (Chabaud, 2013). Cette divergence a été soulignée par Fuller-Love (2006) qui a déclaré que *« dans les grandes entreprises, les décisions sont prises par le chef d'entreprise et exécutées par d'autres, et le rôle du chef d'entreprise est de contrôler si elles sont exécutées efficacement. Dans une petite entreprise, le chef d'entreprise est en contact direct avec les employés et a généralement une meilleure connaissance de ce qui se passe, et*

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<sup>75</sup> Passage original en Anglais: "(...) an individual who establishes and manages a business for the principal purpose of furthering personal goals. The business must be the primary source of income and will consume the majority of one's time and resources. The owner perceives the business as an extension of his or her personality, intricately bound with family needs and desires." (Carland, Hoy, Boulton, & Carland, 1984, p.358)

*ne voit souvent pas la nécessité de mettre en place des procédures pour contrôler les performances »<sup>76</sup> (p.177) (Traduction en Français).*

Les dirigeants de PME s'efforçant d'atteindre les objectifs de leurs entreprises, mettent à la disposition de ces dernières tous les outils nécessaires afin d'assurer leurs prospérités et leurs évolutions dans le temps. Ainsi, les dirigeants ne se contentent pas de consacrer leur capital financier à l'entreprise, mais consacrent également beaucoup de temps et d'efforts à la réalisation des objectifs de ces dernières ; leur implication dans l'entreprise prend ainsi des formes multiples : physique, intellectuelle et financière. Même si ces différents investissements sont essentiels pour l'entreprise, ils rendent les dirigeants impatients de générer des profits, ce qui les incite à s'engager dans des activités à haut risque (Ang, 1991).

En effet, des études antérieures ont souligné cette spécificité commune aux dirigeants de PME en affirmant que leur « aptitude à la prise de risque » est très importante et constitue l'une des principales caractéristiques distinctive (OSEO, 2005, p.41). D'ailleurs, dans son ouvrage sur les caractéristiques et les rôles des dirigeants au sein des PME françaises, Duchéneau (1996) a mis en évidence cette caractéristique parmi trois autres, comme suit :

*« le « patronat réel » étant défini par trois critères essentiels (majorité du capital, **prise de risques personnels**, « gestion directe » de l'entreprise), on peut considérer que ces trois caractéristiques définissent assez bien la population des dirigeants de PME » (p.130).*

L'auteur a également ajouté que « *pour la majorité des dirigeants de PME, prendre des risques pour l'entreprise, c'est en prendre pour soi (ou pour sa famille et ses amis) ...* » (p.131).

Bien que ces études aient été destinées aux PME en général (à l'exception de l'étude (Ang, 1991) qui visait les PME non cotées), on peut affirmer que le comportement de prise de risque des dirigeants est également présent dans le contexte des PME cotées.

Dans cette thèse, nous étudions le comportement risqué des dirigeants via la prise de risque de leurs entreprises. À la lumière des études antérieures, cette estimation empirique est la mesure la plus fiable qui puisse refléter quantitativement la prise de risque des dirigeants.

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<sup>76</sup> Passage original en Anglais: "in large firms, decisions are made by the chief executive and carried out by others, and the role of the chief executive is to monitor whether they are carried out effectively. In a small company, the owner manager is in direct contact with the employees and usually has a greater awareness of what is going on, and often does not see the need for procedures to monitor performance." (Fuller-Love, 2006, p.177)

Dans cette perspective, la prise de risque des PME est définie comme étant : « *la volonté d'une organisation de décider et d'agir sans avoir une connaissance précise des revenus possibles et éventuellement de spéculer sur les risques personnels, financiers et commerciaux* ». <sup>77</sup> (Games & Rendi, 2019, p.4). (Traduction en Français)

### ➤ Les raisons de la prise de risque des dirigeants

Plusieurs préoccupations ont été soulevées quant au comportement de prise de risque des dirigeants dans le contexte des PME. Leur appétit vis-à-vis du risque a fait l'objet de diverses études et a été abordé sous des approches théoriques différentes (Hoskisson et al., 2017).

Par exemple, Duchéneaut (1996) a affirmé que « *plus des deux tiers (70%) des dirigeants de PME donnent une part « importante » ou « très importante » à l'intuition dans une prise de décision* » (p.235). Conformément à ces déclarations, Filion (2007) ont constaté que les dirigeants de PME opèrent sur un horizon temporel relativement court avec moins de ressources disponibles que les grandes entreprises, ce qui les incite à adopter une vision stratégique flexible. Par conséquent, leur processus de décision est souvent guidé par leur intuition plutôt que par une étude approfondie des différents projets. Ce processus, caractérisé par le schéma « *intuition-décision-action* » (Filion, 2007, p.28), met en évidence la particularité de la prise de risque des dirigeants au sein des PME (Mazzarol & Reboud, 2017).

D'autres études ont associé la tendance des dirigeants à prendre des risques en fonction de leur perception des situations financières (Sullivan, 1997). Par exemple, Simon, Houghton, & Savelli (2003) ont montré que lorsque les dirigeants sont moins satisfaits des performances de leur entreprise, ils ont tendance à prendre des risques en lançant de nouveaux produits risqués, soit des produits qui nécessitent plus de ressources et qui sont introduits sur des marchés moins familiers.

D'autres chercheurs ont associé le comportement de prise de risque des dirigeants à leurs traits personnels. Par exemple, lors d'une enquête menée auprès de 673 dirigeants/propriétaires de PME (dont 517 hommes et 156 femmes), Watson & Newby (2005) ont conclu que les dirigeants sont plus enclins à prendre des risques que les dirigeantes des petites entreprises. En outre, grâce à une série d'entretiens avec 40 dirigeants/propriétaires de PME au Royaume-Uni, Gilmore,

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<sup>77</sup> Passage original en Anglais : “*the willingness of an organization to decide and act without a definite knowledge of possible income and possibly speculate in personal risk, financial and business*”. (Games & Rendi, 2019, p.4)

Carson, & O'Donnell (2004) ont trouvé que l'âge a une influence sur le comportement de prise de risque des dirigeants. Plus précisément, ils ont découvert que les dirigeants sont plus susceptibles de prendre des risques au début de leur carrière.

### ➤ Conséquences de la prise de risque des dirigeants

Sur la base de ces premiers travaux, seulement quelques recherches se sont penchées sur les conséquences de la prise de risque des dirigeants au sein des PME malgré leur importance (Hoskisson, Chirico, Zyung, & Gambeta, 2017).

A titre d'exemple, Laforet & Tann (2006) ont montré que l'attitude des PME face aux risques leur permet de s'adapter plus facilement aux nouveaux changements, notamment aux nouvelles méthodes de travail. Dans cette même perspective, Blumentritt (2004) a constaté que les petites entreprises qui s'engagent dans des degrés de risque et d'agressivité concurrentielle plus élevés sont les plus innovantes.

Plus tard, une littérature abondante s'est concentrée sur l'influence positive de la prise de risque managériale sur la performance des entreprises (Pratono, 2018), et sur les résultats de l'innovation au sein des petites et moyennes entreprises (Games, 2019; Games & Rendi, 2019). Entre autre, Mathews et al. (2018) ont trouvé que lorsque les dirigeants prennent des risques, ils favorisent une augmentation de l'allocation des ressources consacrées à la technologie, ce qui influence positivement la performance de l'entreprise. D'autre part, García-Granero, Llopis, Fernández-Mesa, & Alegre (2015) ont montré que l'impact de la prise de risque managériale sur l'innovation est plutôt indirect puisqu'elle est influencée par le climat de prise de risque de l'entreprise.

Comme le montrent ces différentes illustrations empiriques, la majorité des études menées jusqu'ici ont traité les conséquences de la prise de risque des dirigeants au sein des PME du point de vue des dirigeants et de leurs entreprises. Notre thèse propose ainsi d'aborder une autre perspective comme nous l'indiquons dans la prochaine section.

### 1.3. Les questions de recherche générales

Afin de compléter les études antérieures, cette thèse propose d'examiner les conséquences de la prise de risque des dirigeants des PME cotées en bourse, sous un angle qui demeure peu documenté, soit du point de vue des parties prenantes.

Ce raisonnement s'appuie sur l'idée que le fonctionnement des PME dépend de plusieurs acteurs internes et externes, il nous semble alors particulièrement pertinent de nous interroger sur la perception de ces derniers quant au comportement risqué du dirigeant. En général, la perception d'une situation risquée diffère sensiblement d'une personne à une autre. Cela est d'autant plus complexe dans une entreprise où le comportement potentiellement risqué d'un acteur, et notamment du dirigeant en charge du processus décisionnel de l'entreprise, peut affecter considérablement les autres parties prenantes de l'entreprise.

Par conséquent, cette thèse aborde les relations entre les dirigeants et les autres parties prenantes des PME qui découlent directement ou indirectement du comportement de prise de risque des dirigeants. Parmi les nombreuses parties prenantes de l'entreprise, cette thèse retient trois acteurs à la fois internes et externes, choisies pour leur influence décisive envers les PME: les actionnaires, les banques et les employés.

Ainsi, ce travail de recherche vise à combler les lacunes dans la littérature existante quant aux conséquences de la prise de risque managériale au sein des PME cotées en bourse. Pour traiter cette thématique, nous avons choisi de formuler une question de recherche générale autour de laquelle s'articule notre thèse :

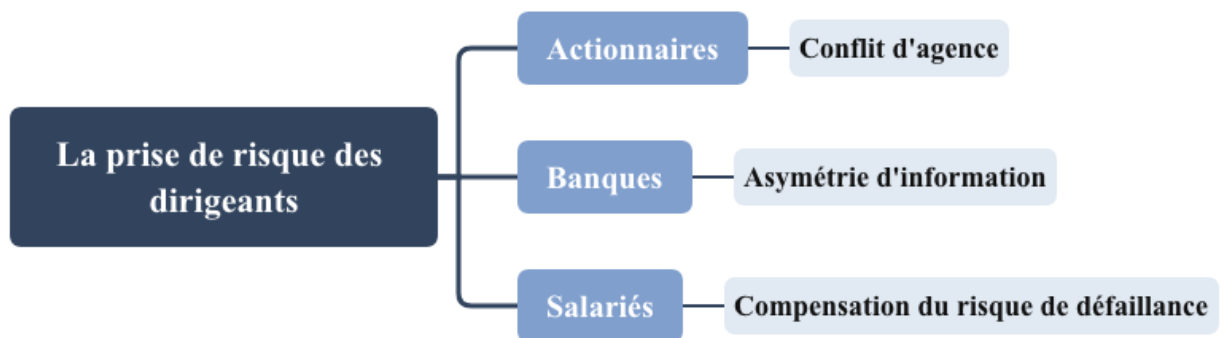
- ❖ **Comment la prise de risque managériale influence-t-elle les relations de la PME avec les autres parties prenantes de l'entreprise (c'est-à-dire les actionnaires, les banques et les salariés) ?**

De plus, étant donné que la période de notre échantillon inclut l'année de la crise financière de 2008, cette thèse s'intéresse à découvrir l'impact de cette crise sur ces trois relations.

Afin de traiter cette question générale, la thèse est constituée de trois articles empiriques qui visent à étudier la relation (directe ou indirecte) entre le comportement risqué des dirigeants et

(1) les actionnaires, (2) les banques et (3) les employés, respectivement. Ainsi, la relation entre ces acteurs se manifeste à travers trois dimensions, respectivement : (1) les conflits d'agences, (2) les problèmes d'asymétrie d'information, et (3) la compensation du risque de défaillance.

Figure 16. Conséquences de la prise de risque des dirigeants au sein des PME



Source : l'auteur.

## 1.4. Structure de la thèse

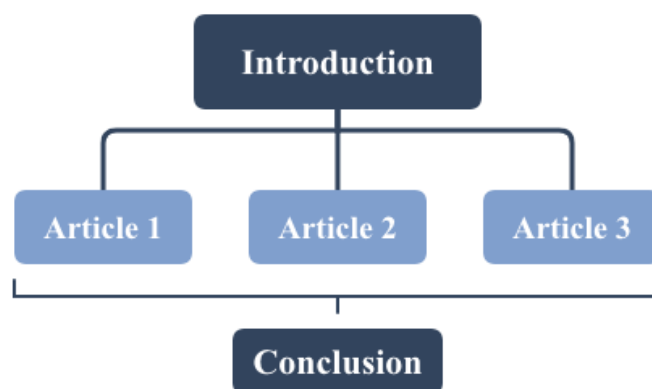
La thèse se compose de trois parties. Dans la première partie, nous introduisons le sujet général de la thèse en mettant en évidence l'intérêt de cette recherche, ensuite nous présentons les perspectives de la recherche en se basant sur des travaux antérieurs, ce qui nous permet d'identifier les lacunes dans la littérature existante et de justifier ainsi les choix théoriques et empiriques qui ont été suivis dans ce travail.

Dans la deuxième partie, nous exposons les articles empiriques qui sont à leur tour constitué de cinq sections, comme suit : introduction, cadre théorique, cadre empirique (description de l'échantillon et de la méthodologie), résultats empiriques et conclusion.

Le premier article de la thèse est intitulé " Leverage financing and the risk-taking behavior of small business managers: What happened after the crisis ". Dans ce dernier, nous examinons l'impact de la dette bancaire sur le comportement risqué des dirigeants. Ensuite, le deuxième article de la thèse, intitulé " The impact of Financial Reporting Quality on the firms' access to leverage financing: the case of French listed SMEs ", examine l'impact de la qualité des rapports financiers sur le niveau d'endettement des petites entreprises. Le troisième article de la thèse, intitulé " The risk-taking behavior of managers and employees' pay in French SMEs ", étudie l'impact de la prise de risque des dirigeants sur la rémunération des salariés au sein des PME.

Finalement, la troisième et dernière partie de la thèse est consacrée à la conclusion générale. Cette partie nous permet de synthétiser les résultats de la recherche, de mettre en évidence leur importance dans le monde universitaire et industriel, et de fournir des pistes pour de futures recherches sur ce sujet.

Figure 17. Structure de la thèse



Source : l'auteur

## 1.5. Aperçu de l'échantillon

Les trois articles de cette thèse reposent sur l'utilisation d'un échantillon unique. Cette section permet de justifier ce choix et de présenter les caractéristiques de notre échantillon.

Le choix d'utiliser le même échantillon pour les trois articles est motivé par plusieurs raisons. Tout d'abord, puisque les trois articles traitent (directement ou indirectement) le même sujet concernant le comportement de prise de risque des dirigeants de PME, un échantillon unique assure le maximum de cohérence entre les différents articles. De plus, l'utilisation du même échantillon élimine tout effet induit par la modification de l'échantillon qui pourrait influencer l'interprétation globale de nos conclusions. Troisièmement, la période de l'échantillon nous permet de mettre en évidence l'impact de la crise financière de 2008 dans les résultats de la thèse. Quatrièmement, ce choix est justifié par des raisons techniques et de faisabilité. Plus précisément, comme cette recherche se déroule dans le cadre d'un projet de thèse de trois ans, elle est soumise à des contraintes de temps et de qualité, ce qui limite la possibilité de diversifier l'échantillon.

Afin de construire notre échantillon, nous avons utilisé la base de données Amadeus. Cette dernière, publiée par le Bureau van Dijk, contient des informations économiques et financières sur environ 21 millions d'entreprises en Europe. Cela nous a permis de construire notre échantillon et de récolter toutes les informations concernant les bilans, les comptes de résultats, les ratios et autres informations financières de nos entreprises.

Suivant la définition des PME de la Commission européenne du 6 mai 2003, nous avons retenu les entreprises : ayant moins de 250 salariés et un chiffre d'affaires annuel n'excédant pas 50 millions d'euros, et/ou un total de bilan annuel inférieur à 43 millions d'euros. Ensuite, nous avons exclu toutes les institutions financières représentées par les banques, les sociétés de valeurs mobilières, les assurances ainsi que les holdings (codes NACE Rév. 2 : 64-66, 69, 70 et 99) en raison de leur nature différente.

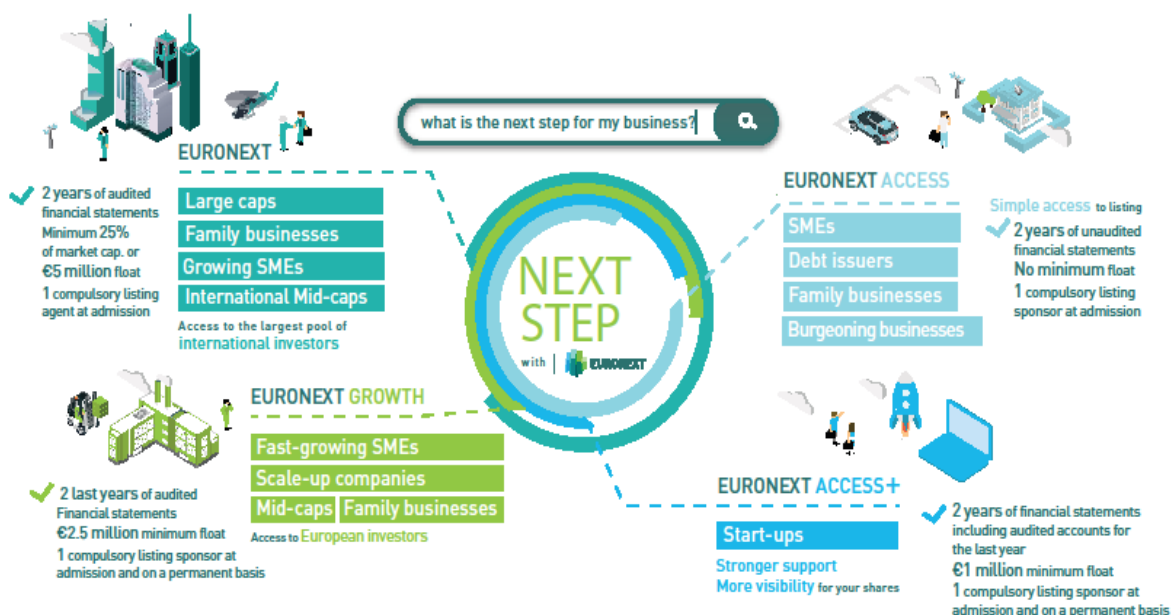
De plus, les PME retenues dans notre étude sont cotées à la bourse d'Euronext Paris pour plusieurs raisons. Premièrement, Euronext se caractérise comme le premier marché boursier paneuropéen avec la plus importante capitalisation boursière en Europe<sup>78</sup>. Ensuite, cette bourse a mis en place des marchés boursiers juniors spécialement adaptés aux besoins des PME.

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<sup>78</sup> En décembre 2019, la capitalisation boursière d'Euronext a atteint 4,701 milliards de dollars, contre 4,182 milliards de dollars pour le London Stock Exchange (LSE) (WFE, 2020).

Comme le montre la figure 18, les PME cotées sur les marchés Euronext Growth et Euronext Access bénéficient d'exigences initiales et continues plus souples que celles cotées sur les principaux marchés réglementés.

Figure 18. Marchés Euronext.



Source: extraite de « Registration document », Euronext, 2017, p.24.

Troisièmement, Euronext Growth a été officiellement enregistré comme "marché de croissance des PME" de l'UE dans le cadre de la MiFID II le 29 octobre 2019. Cette désignation permet aux PME cotées sur ce marché de bénéficier (Euronext, 2019, p.1):

- « de l'utilisation de prospectus allégés tant lors de l'admission initiale que lors des admissions ultérieures (le prospectus EU Growth et le prospectus simplifié dans le cadre du régime d'information simplifiée pour les émissions secondaires), ce qui réduira la charge de travail et facilitera la capacité des émetteurs à lever des fonds sur les marchés de capitaux ;<sup>79</sup> (Traduction en Français)

<sup>79</sup> Passage original en Anglais: "the use of lighter prospectuses at both initial and subsequent admissions (the EU Growth prospectus and the simplified prospectus under the simplified disclosure regime for secondary issuance), which will reduce workloads and facilitate issuers' capacity to raise funds on capital markets" (Euronext, 2019, p.1)

- *Exemptions d'obligations spécifiques dans le cadre du régime relatif aux abus de marché : les émetteurs cotés sur un marché de croissance des PME bénéficient d'un régime allégé de divulgation des listes d'initiés* ». <sup>80</sup> (Traduction en Français)

Avec toutes ces initiatives et mesures mentionnées ci-dessus, il nous a semblé pertinent de se concentrer sur la bourse d'Euronext dans le cadre de notre recherche sur les PME cotées en France.

La durée de l'échantillon couvre la période 2008-2016, ce qui représente huit années consécutives. Cette période inclut l'année de la crise financière de 2008, ce qui nous permet d'examiner de manière approfondie l'impact de la crise sur nos différentes relations étudiées. Ainsi, dans chaque article, notre échantillon sera divisé en deux sous-échantillons : l'année de la crise financière (c'est-à-dire 2008) et les années post-crise (c'est-à-dire de 2009 à 2016).

Enfin, l'échantillon de cette thèse se compose de 1,403 observations de PME françaises cotées à la bourse d'Euronext Paris sur la période 2008 à 2016. Il est important de noter que dans les articles 2 et 3, cet échantillon connaît une diminution du nombre d'observations d'entreprises. Ceci est dû à la non-disponibilité des valeurs quantitatives de variables dépendantes et/ou indépendantes sur lesquelles les modèles empiriques sont basés.

Dans la suite de cette section, nous fournirons la description de l'échantillon en fonction de plusieurs caractéristiques.

Tout d'abord, le tableau 46 présente la composition de notre échantillon en fonction de la taille de l'entreprise. Comme indiqué, 6,4% des entreprises observées appartiennent à la catégorie des microentreprises, qui comptent moins de 10 employés et dont le chiffre d'affaires annuel ne dépasse pas 2 millions d'euros. Les petites entreprises représentent quant à elles 29 % des entreprises observées dans l'échantillon. Ces entreprises emploient moins de 50 salariés et ont un chiffre d'affaires annuel ne dépassant pas 10 millions d'euros. La majorité de nos PME cotées en bourse sont, comme on pouvait s'y attendre, composées d'entreprises de taille moyenne, soit 65 % de l'échantillon.

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<sup>80</sup> Passage original en Anglais : "Exemptions from specific obligations under the Market Abuse Regime: issuers listed on an SME Growth Market benefit from a lighter insider list disclosure regime." (Euronext, 2019, p.1)

Tableau 46. Composition de l'échantillon par taille des entreprises.

Taille de l'entreprise	Nombre d'observation	Pourcentage (%)
Microentreprises	90	6.41
Petite entreprises	405	28.87
Entreprises de taille moyenne	908	64.72
Total	1403	100

Source: l'auteur.

Le tableau 47 montre l'évolution du nombre d'observations au cours des années couvertes par l'étude. En effet, la variation du nombre d'observations des entreprises sur l'ensemble de la période est dû à :

- 1) la défaillance d'une entreprise, qui implique sa sortie de l'échantillon ;
- 2) la cotation d'une nouvelle PME, ce qui implique son ajout à l'échantillon ;
- 3) l'augmentation du nombre de salariés (plus de 250 travailleurs) ou l'augmentation du chiffre d'affaires (plus de 50 millions d'euros) ou du bilan d'une entreprise (plus de 43 millions d'euros) d'une ancienne PME, ce qui implique son élimination de l'échantillon car elle ne fait plus partie de la catégorie des PME.

Tableau 47. Composition de l'échantillon par année

Année	Nombre d'observations	Pourcentage (%)
2008	136	9.69
2009	147	10.48
2010	138	9.84
2011	146	10.41
2012	150	10.69
2013	169	12.05
2014	185	13.19
2015	164	11.69
2016	168	11.97
Total	1403	100

Source: l'auteur.

Quant à l'âge, nos observations révèlent une maturité intéressante nous permettant de mieux adapter les concepts théoriques et empiriques. Comme le montre le tableau 48, la plupart des entreprises de notre échantillon ont une ancienneté de 10 à 20 ans. La moyenne (médiane) de l'échantillon selon l'âge est de 20 (16) ans. Autrement dit, si l'entreprise est en activité depuis 16 ans en 2016, elle a été créée en 2000.

Tableau 48. Composition de l'échantillon par âge

Année d'exercice	Nombre d'observations	Pourcentage (%)
<10	302	21.53
[10;20[	553	39.42
[20;30[	317	22.59
30 +	231	16.46
Total	1403	100

Source: l'auteur.

Au total, l'échantillon considéré dans cette thèse est composé de 1 403 observations de PME françaises cotées à la bourse d'Euronext Paris sur la période 2008 à 2016, dont la plupart appartiennent à des entreprises de taille moyenne et opèrent depuis plus de dix ans.

## 2. Applications empiriques

Dans cette section, nous résumons les trois articles empiriques qui composent cette thèse. Dans cette perspective, nous commençons par esquisser l'idée générale et la question de recherche spécifique. Ensuite, nous décrivons le cadre empirique et les résultats obtenus pour les apports de nos travaux.

### 2.1. Article 1: Leverage financing and the risk-taking behavior of corporate managers: what happened after the crisis?

Les dirigeants des PME, particulièrement intéressés à saisir les nouvelles opportunités et développer leur entreprise, sont enclins à prendre des risques élevés. Ce comportement découle de la stratégie de « construction d'empire » qui s'inscrit dans une perspective de renforcement de leur pouvoir au sein de l'entreprise, d'une amélioration de leur réputation sur le marché et d'une augmentation de leur rémunération (O. Hope & Thomas, 2008; Jensen, 1986).

D'autre part, les PME dépendent fortement du financement bancaire du fait qu'elle ne disposent pas de ressources suffisantes pour autofinancer leurs projets, et qu'elles souffrent de coûts de transaction élevés et d'une entrée limitée sur les marchés financiers (A. N. Berger, Klapper, & Udell, 2001).

Malgré l'importance de l'endettement bancaire et du comportement de prise de risque des dirigeants pour la survie et la croissance des PME, il existe peu d'études empiriques sur la relation entre ces deux composantes.

Plusieurs travaux théoriques existants ont fourni des preuves quant à l'effet de l'endettement bancaire des entreprises sur le comportement de prise de risque des dirigeants. Cet article est fondé sur trois de ces théories : la théorie du flux de trésorerie libre (Jensen, 1986), la théorie de la dette et la structure optimale du capital (Myers, 1977), la théorie de la structure du capital (Maksimovic & Titman, 1991). Jensen (1986) et Myers (1977) ont présenté des modèles théoriques qui mettent l'accent sur le conflit d'intérêts entre dirigeants et actionnaires et sur le rôle de la dette quant à la résolution de ces conflits. Ils montrent que l'endettement joue un rôle disciplinant en empêchant les dirigeants d'accroître leurs comportements de prise de risque. Maksimovic & Titman (1991) ont quant à eux démontré que l'endettement des entreprises augmente le comportement de prise de risque des gestionnaires.

Néanmoins, les études empiriques sur cette relation restent rares et fournissent des résultats mitigés. Par exemple, certains auteurs ont affirmé que l'endettement atténue le comportement de prise de risque des dirigeants (Adams, Almeida, & Ferreira, 2005; Faccio, Marchica, & Mura, 2016; Nguyen, 2012), tandis que d'autres ont déclaré qu'il l'amplifie (Boubakri, Cosset, & Saffar, 2013; Faccio & Mura, 2011; Vo, 2016). D'un autre côté, Cheng (2008) et Nguyen (2011) ont indiqué que l'endettement n'a pas d'influence significative sur la prise de risque des dirigeants. Tous ces résultats empiriques s'inscrivent dans le cadre des études qui ont analysé d'autres relations. Par conséquent, il n'existe pas, à notre connaissance, d'étude empirique entièrement consacrée à l'analyse de la relation entre l'endettement et la prise de risque des dirigeants. Cet article tente donc de répondre à ce manque en étudiant empiriquement l'impact de l'endettement des entreprises sur le comportement de prise de risque des dirigeants de PME pendant et après la crise financière de 2008.

Afin de répondre à ce problème, nous retenons un échantillon composé de 1,403 observations de petites et moyennes entreprises françaises cotées à la bourse d'Euronext Paris sur la période 2008 à 2016. Nous mettons en évidence l'impact de la crise financière de 2008 sur le comportement de prise de risque des dirigeants d'entreprises. Ainsi, les régressions seront effectuées sur l'ensemble de la période et sur les deux sous-périodes (c'est-à-dire en 2008 et de 2009 à 2016). Selon Adams, Almeida, & Ferreira (2005), nous mesurons le comportement de prise de risque du gestionnaire en utilisant l'écart absolu par rapport aux bénéfices attendus de l'entreprise. Les régressions incluent également d'autres variables de contrôle telles que la taille, la croissance des ventes, la tangibilité, la liquidité et le ratio de couverture des intérêts. En outre, nous examinons la robustesse de nos résultats en utilisant l'approche des variables instrumentales qui contrôle l'endogénéité.

Les résultats indiquent que, sur l'ensemble de la période, l'endettement renforce le comportement de prise de risque des dirigeants de PME. Ce rôle est d'autant plus important après la crise financière de 2008. Le raisonnement qui sous-tend cette déclaration est le suivant : la crise financière de 2008 a eu de nombreuses répercussions sur le secteur bancaire, ce qui a eu un impact sur les petites entreprises vulnérables. Afin de renforcer la stabilité financière, plusieurs gouvernements ont imposé de nouvelles normes bancaires, telles que les réformes de Bâle II et III. Ces réformes se sont traduites par un niveau plus élevé de restrictions et de rationnement du crédit, notamment en ce qui concerne les prêts aux petites entreprises risquées. Comme les banques ont amplifié le rationnement du crédit sur le financement des PME pendant la crise, elles ont réduit leurs activités de surveillance après celle-ci. Ainsi, en augmentant les

restrictions imposées au financement bancaire des petites entreprises et en réduisant la disponibilité du crédit au détriment d'activités de surveillance plus importantes, les dirigeants ont tendance à s'engager dans des activités à plus haut risque.

En outre, la corrélation positive entre le comportement de prise de risque des dirigeants et l'endettement des entreprises est susceptible d'avoir des implications sur le processus de décision des actionnaires et des créanciers. D'une part, comme les actionnaires utilisaient normalement la dette comme un outil de discipline pour diminuer la prise de risque des dirigeants, ils seront incités à mettre en œuvre de nouveaux outils de discipline. D'autre part, les banques sont censées utiliser des outils très fiables afin de réduire les problèmes de sélection adverse lors de l'attribution de la dette aux entreprises suite à la réduction de leur champ de surveillance après la crise.

## 2.2. Article 2: The impact of Financial Reporting Quality on the firms' access to leverage financing: the case of French listed SMEs

Depuis l'introduction de la théorie de l'information asymétrique dans les années 1970 (Akerlof, 1970), les chercheurs ont mis en évidence sa prédominance dans la plupart des relations d'entreprise, plus particulièrement dans la relation prêteur-emprunteur. Ce problème, caractérisé par un déséquilibre de l'information relative à l'entreprise entre ces deux parties, a conduit à plusieurs problèmes telles que la sélection adverse et l'aléa moral. Dans ces cadres asymétriques, le prêteur qui cherche à recueillir des informations sur la situation financière et les risques de l'entreprise est généralement moins bien informé que l'emprunteur. En conséquence, les établissements de crédit ont tendance (1) à imposer des conditions strictes au financement par l'emprunt des entreprises, ce qui se traduit par un coût de la dette plus élevé, des échéances plus courtes et des exigences plus strictes en matière de garanties ; (2) à réduire l'accès des entreprises au financement ; (3) dans une certaine mesure, à rationner le crédit des entreprises (Stiglitz & Weiss, 1981). Ces restrictions sont davantage associées aux petites et moyennes entreprises (PME) par rapport aux grandes entreprises étant donné qu'elles se caractérisent par une traçabilité historique moindre et une visibilité financière réduite qui rendent leur structure plus opaque et plus risquée (A. Berger & Udell, 1998).

Parmi de nombreuses solutions à ces problèmes, des études antérieures ont souligné le rôle efficace de la qualité des rapports financiers (ci-après FRQ) lorsqu'il s'agit d'atténuer les

problèmes d'asymétrie d'information entre prêteurs et emprunteurs (Healy & Palepu, 2001). Comme la FRQ assure une meilleure visibilité de la situation financière de l'emprunteur, les établissements de crédit sont davantage capables d'évaluer les revenus futurs et le degré de risque des entreprises (De Meyere, Vander Bauwhede, & Van Cauwenberge, 2018). Plus récemment, plusieurs études ont démontré les avantages économiques d'une meilleure qualité des rapports concernant la contraction de la dette des PME non cotées. Elles ont prouvé que la FRQ joue un rôle efficace dans le renforcement du niveau d'endettement des PME non cotées (Van Caneghem & Van Campenhout, 2012); la réduction de leurs coûts de la dette (Vander Bauwhede, De Meyere, & Van Cauwenberge, 2015); l'amélioration de leurs accès au financement bancaire et au financement des fournisseurs (García-Teruel, Martínez-Solano, & Sánchez-Ballesta, 2014). En outre, De Meyere et al. (2018) ont montré que la FRQ est positivement corrélée à la proportion de dettes de l'entreprise et à la probabilité d'avoir des dettes à long terme.

Au-delà de son utilité pour les entreprises non cotées, Berger & Udell (2006) ont précisé que la technique de prêt des états financiers se concentre davantage sur les emprunteurs transparents, d'où l'importance de la FRQ pour les PME cotées. En effet, selon l'« hypothèse de la demande », les entreprises cotées sont tenues de présenter leurs états financiers avec une qualité supérieure à celle des entreprises non cotées car elles sont caractérisées par une dispersion de la propriété et une séparation du contrôle qui amplifient les problèmes d'asymétrie de l'information avec les créanciers (O. K. Hope, Thomas, & Vyas, 2013). Pourtant, à notre connaissance, l'étude du rôle de la FRQ quant à l'accès des PME cotées au financement bancaire demeure inexploré.

Afin de conduire notre analyse, ce document retient un échantillon de 603 observations d'entreprises sur la période 2008 à 2016. La qualité de l'information financière est mesurée selon deux modèles basés sur la méthode de la comptabilité d'exercice, proposés par Dechow & Dichev (2002) et Kasznik (1999) et largement utilisés dans la littérature. De plus, cet article emploie trois mesures de financement par emprunt : la dette totale de l'entreprise, la dette financière à long terme et la dette financière à court terme. Après avoir effectué les régressions dans lesquelles nous contrôlons les effets de l'industrie et de l'année, nos résultats empiriques indiquent que la FRQ améliore l'accès des PME au financement par emprunt en atténuant les problèmes d'asymétrie de l'information. Cet impact est plus prononcé pour le financement par emprunt à long terme, alors qu'il est moins important pour le financement par emprunt à court terme. L'interprétation de ces résultats nous laisse penser que, puisque la dette bancaire à long

terme s'inscrit dans un horizon plus long que la dette bancaire à court terme, elle nécessite des informations plus précises du point de vue du prêteur. Ainsi, la FRQ joue un rôle efficace plus important dans le premier cas. En outre, nous étendons notre étude pour tester l'impact de la période de crise financière sur la relation entre la FRQ et le financement par l'emprunt. Après avoir distingué les périodes de pendant et d'après la crise financière, nos résultats montrent que les mesures de la FRQ sont positivement corrélées avec l'endettement total et le financement bancaire à long terme après la période de crise, alors qu'elles sont corrélées négativement et de manière insignifiante pendant la période de crise. Cela implique que, bien que les entreprises aient présenté leurs états financiers avec une grande qualité pendant la crise car elles étaient très surveillées par les établissements de crédit, cela n'a pas atténué les problèmes d'asymétrie d'information entre les deux parties en raison des risques élevés rencontrés pendant la période de ralentissement économique. En outre, nous avons examiné si l'existence de possibilités de croissance influence le rôle du FRQ lorsqu'il s'agit d'améliorer l'accès des entreprises au financement. Nous avons ainsi construit deux sous-échantillons distinguant les entreprises ayant des possibilités élevées et faibles de croissance. Nos résultats révèlent un impact positif et plus frappant de la FRQ sur l'accès au financement pour les petites entreprises à forte croissance exclusivement. En effet, les entreprises à forte croissance étant plus exposées au conflit d'intérêts entre leurs dirigeants et leurs actionnaires, les créanciers utilisent davantage leurs états financiers pour leur accorder des crédits. Ainsi, une meilleure qualité des rapports sur les états financiers améliore l'accès de ces entreprises à l'endettement, en particulier à l'endettement à long terme.

Dans l'ensemble, les résultats de cette étude empirique fournissent des indications utiles aux gestionnaires et aux établissements de crédit sur leur processus de prise de décision dans leurs domaines respectifs. D'une part, ce document encourage les gestionnaires à présenter leurs états financiers avec une grande qualité afin d'accéder au montant de dette souhaité. D'autre part, il souligne pour les créanciers l'importance de l'examen des états financiers avant d'accorder un crédit.

### 2.3. Article 3: The risk-taking behavior of managers and employees' pay in French SMEs

Les petites entreprises sont reconnues pour leur tendance à prendre des risques. Contrairement aux grandes entreprises, ces entités sont souvent contrôlées par un seul individu enclin à prendre des risques (Pettit & Singer, 1985). Comme les dirigeants de petites entreprises investissent généralement leur capital financier et physique dans leur entreprise, ils ont tendance à tolérer des niveaux de risque élevés afin de générer des rendements importants (Ang, 1991). Néanmoins, la prise de risques a évidemment une influence négative sur le bien-être de l'entreprise, car elle l'expose à plusieurs répercussions négatives. Parmi celles-ci, cet article s'intéresse à la probabilité plus élevée de faillite. Plus précisément, nous considérons que la probabilité de faillite de l'entreprise augmente avec le comportement de prise de risque du dirigeant.

Ce cas particulier de défaillance est particulièrement dangereux pour les employés des PME car il entraîne la perte de leur capital humain spécifique à l'entreprise (Akyol & Verwijmeren, 2013). Par exemple, Jacobson, LaLonde, & Sullivan (1993) ont trouvé que les employés qui se séparent d'une entreprise en difficulté subissent en moyenne des pertes à long terme de 25 % par an de leurs revenus avant séparation. En outre, ils ont signalé que les revenus des employés commencent à diminuer à partir de trois ans avant la séparation. En accord avec ces conclusions, Graham, Kim, Li, & Qiu (2019) ont récemment constaté que les employés subissent des pertes de 10 % de leurs revenus annuels au cours de l'année où la faillite survient.

Parallèlement, des théories antérieures ont mis en évidence la nécessité de dédommager les employés pour les coûts de la faillite prévus. Plus précisément, Titman (1984) a révélé que la faillite entraîne des coûts substantiels pour les parties prenantes de l'entreprise. Berk, Stanton, & Zechner (2010) ont formalisé ces déclarations et ont affirmé que les entreprises confrontées à une forte probabilité de faillite doivent indemniser leurs employés pour les pertes attendues de leur capital humain en augmentant leurs salaires. Maksimovic & Titman (1991) ont affirmé que les employés sont réticents à travailler pour une entreprise présentant une forte probabilité de faillite à moins que celle-ci n'augmente leurs salaires en compensation des changements potentiels de leurs conditions d'emploi.

L'objectif de ce troisième article consiste alors à étudier l'impact du comportement risqué des dirigeants sur les salaires des employés dans les petites et moyennes entreprises. Notre intérêt

est étroitement lié à la littérature qui traite de l'impact de l'endettement sur la rémunération des employés. Plusieurs études de cette abondante littérature ont prouvé que, puisqu'une augmentation de l'endettement des entreprises implique une plus grande probabilité de faillite, les entreprises compensent les coûts de faillite attendus par leurs employés en augmentant leurs salaires (Akyol & Verwijmeren, 2013; Chemmanur, Cheng, & Zhang, 2013; Lin, Liang, Chiu, & Chen, 2019).

Dans le cadre de notre analyse empirique, nous utilisons un échantillon composé de 1 104 observations de PME non financières cotées à la bourse d'Euronext Paris sur la période 2008 à 2016. Conformément aux études précédentes (Adams et al., 2005; Cheng, 2008; Faccio & Mura, 2011; Vo, 2016), nous mesurons le comportement de prise de risque des dirigeants selon trois indicateurs différents liés à la performance de l'entreprise. En outre, nous incluons d'autres caractéristiques de l'entreprise qui peuvent influencer le salaire moyen des employés tout en contrôlant les effets potentiels liés au secteur et à l'année.

Nos résultats empiriques montrent que le salaire moyen des employés est positivement associé au comportement de prise de risque des dirigeants. Plus précisément, un seul écart-type de la prise de risque des cadres implique une augmentation de 5,2 % à 8,2 % du salaire moyen des employés. De plus, nous étendons nos recherches pour étudier cette relation en fonction de plusieurs caractéristiques. Ainsi, nous constatons que, la relation positive entre la prise de risque des dirigeants et le niveau moyen des salaires est plus significative pour les entreprises opérant dans des régions à faible taux de chômage que celles opérant dans des régions à fort taux de chômage. En effet, les employés sont plus aptes à négocier une compensation plus élevée en cas de prise de risque lorsque le taux de chômage est faible plutôt qu'élevé. Par ailleurs, nous avons trouvé que, les employés des entreprises non technologiques, moins capables de couvrir leur capital humain en cas de faillite, exigent une compensation plus élevée pour le comportement à risque des dirigeants que ceux des entreprises technologiques. Néanmoins, l'existence ou l'absence d'opportunités de croissance n'affecte pas cette relation.

Les conclusions de cette troisième étude démontrent que les coûts de la faillite liés au capital humain des employés représentent un facteur essentiel pour déterminer le niveau de prise de risque d'une PME. Ainsi, cette étude peut être intéressante au regard du processus de prise de décision des dirigeants, notamment vis-à-vis de leur choix du niveau optimal d'engagement dans des activités risquées tout en tenant compte des coûts du capital humain de la faillite.

### 3. Conclusion

Notre travail de recherche part du constat que la majorité des études antérieures sur le comportement de prise de risque des dirigeants de PME se sont concentrées sur la détermination des raisons de ce comportement (Filion, 2007; Sullivan, 1997). Cependant, peu d'études ont porté leur attention sur les conséquences de ce comportement dans les PME malgré leur importance sur le fonctionnement de l'entreprise (Hoskisson et al., 2017). De plus, dans les rares études menées sur les conséquences du comportement de prise de risque des dirigeants, celles-ci se concentrent exclusivement sur les points de vue des dirigeants et de leurs PME.

Cependant, nous avons pu noter que les PME dépendent de plusieurs acteurs internes et externes, il nous a semblé alors particulièrement pertinent de nous interroger sur la réaction de ces acteurs vis-à-vis de ce comportement à risque. Cet intérêt a été renforcé par le fait qu'à notre connaissance, aucune étude n'a été réalisée sur les perceptions des autres parties prenantes face au comportement risqué des dirigeants de PME. Par ces questionnements, cette thèse vise à contribuer à la littérature financière sur les PME en apportant un éclairage nouveau ciblé sur les réactions de trois parties prenantes importantes des PME, qui sont les actionnaires, les banques et les employés.

Dans le premier article de la thèse, nous examinons la relation entre le comportement de prise de risque du dirigeant et les actionnaires de l'entreprise. Etant donné que la prise de risque des dirigeants n'est pas dans l'intérêt des actionnaires, la littérature précédente a suggéré que l'émission de dette est un mécanisme de discipline à ce comportement (Jensen, 1986). Ainsi, le premier article examine l'impact de l'endettement financier sur le comportement risqué des gestionnaires dans les petites entreprises. Les résultats empiriques indiquent que la dette financière est positivement et significativement corrélée à la prise de risque managériale, surtout après la crise financière de 2008. Ce résultat suggère que la dette renforce le comportement de prise de risque des dirigeants de PME. Par conséquent, **la dette n'est pas un remède aux conflits de l'agence entre les actionnaires et les dirigeants.**

Le deuxième article de la thèse examine la relation entre le comportement de prise de risque du dirigeant et les banques. En raison du comportement de prise de risque des dirigeants de PME, les banques rencontrent des difficultés lorsqu'elles collectent des informations sur ces emprunteurs. Ce cadre d'asymétrie d'information entraîne une restriction de l'accès au financement et un durcissement des conditions de prêt accordés aux PME (Stiglitz & Weiss,

1981). Ainsi, le deuxième article de cette thèse examine l'impact de la qualité de l'information financière (FRQ) des PME sur leur accès au financement. Les résultats empiriques montrent que la FRQ a un impact positif et significatif sur le niveau de la dette des PME. Cela indique qu'**une meilleure qualité des rapports financiers (meilleure FRQ) réduit les problèmes d'asymétrie d'information entre les PME et les banques**. Ainsi, les banques peuvent mieux évaluer le degré de risque et les revenus futurs des petites entreprises à risque, ce qui facilite l'accès des PME au financement par l'emprunt.

Le troisième article de la thèse examine la relation entre le comportement de prise de risque du manager et les employés. Lorsque les managers s'engagent dans des activités à risque, ils exposent inévitablement leur entreprise à plusieurs risques, comme une probabilité plus élevée de faillite (Mazzarol & Reboud, 2017). Bien évidemment, ce cadre menace la situation des employés. Comme les salariés sont les parties prenantes les moins diversifiées de l'entreprise, ils sont vulnérables à la perte de leur emploi, à la perte de leurs salaires et de leurs avantages non pécuniaires, ainsi qu'au chômage de longue durée (Graham et al., 2019; Jacobson et al., 1993). Par conséquent, le troisième article de la thèse examine l'impact du comportement des dirigeants en matière de prise de risque sur le salaire moyen des salariés dans les petites entreprises. Les résultats empiriques montrent une corrélation positive et significative entre le comportement de prise de risque des dirigeants et le salaire moyen des employés. Cela indique que, **lorsque les dirigeants s'engagent dans des activités à risque, impliquant une augmentation de la probabilité de faillite de leur entreprise, ils compensent leurs employés pour la perte de capital humain attendue**.

### 3.1. Contributions

La finance d'entreprise représente l'une des thématiques principales de la recherche en finance. Ce domaine a été largement investigué par les chercheurs à travers le développement de théories liées entre autres aux activités financières des entreprises concernant leurs stratégies d'investissement, leurs sources de financement (c'est-à-dire le financement par emprunt et/ou par fonds propres), etc. Par conséquent, les contributions dans le domaine de la finance d'entreprise sont effectivement difficiles à réaliser, cependant, cette thèse vise à prolonger la littérature antérieure à travers plusieurs dimensions.

Dans le premier essai de cette thèse, nous proposons un modèle empirique qui examine la relation entre le comportement de prise de risque des dirigeants et leur endettement au sein des PME. Notre analyse s'appuie sur les théories financières de Jensen (1986) et Myers (1977), qui prévoient un impact négatif de l'endettement sur le comportement de prise de risque des dirigeants. Ces théories ont été largement évoquées dans la littérature, en particulier lorsqu'il s'agit de trouver un remède aux conflits d'agence entre les dirigeants et les actionnaires. Bien que la théorie de Jensen (1986) considère que la dette est un mécanisme disciplinaire qui réduit le comportement de prise de risque des dirigeants, il n'existe pas, à notre connaissance, d'études empiriques qui tiennent compte de ces deux variables. Ainsi, notre étude représente la première tentative empirique visant à déterminer si l'endettement atténue le comportement risqué des dirigeants de petites entreprises, en particulier après la crise financière de 2008.

Le deuxième essai de la thèse présente une analyse qui combine les domaines de la comptabilité et de la finance. En effet, le modèle empirique sur lequel nous nous appuyons dans notre deuxième étude examine l'impact de la qualité de l'information financière (FRQ) sur l'accès des entreprises à la dette financière. Bien que cette question de recherche ait été largement étudiée dans la littérature, elle a été principalement testée sur des PME privées ou bien sur des grandes entreprises cotées en bourse. Par ailleurs, dans leur article, Berger and Udell (2006) affirment que cette méthode de financement convient aux emprunteurs de petite taille "transparents", c'est-à-dire aux PME cotées en bourse. Malgré cet argument, il n'existe pas d'étude antérieure qui examine l'impact du FRQ sur l'accès au financement des PME "transparentes". Notre deuxième essai permet ainsi de répondre à cette lacune, en étudiant cette question dans le contexte des petites entreprises cotées en bourse.

Enfin, dans le troisième article nous proposons un modèle empirique qui examine l'impact du comportement risqué des dirigeants sur le salaire moyen des employés. Cette idée découle d'une littérature abondante concernant l'impact de l'endettement sur le salaire moyen des employés. Ces études ont montré que, étant donné que le niveau d'endettement augmente la probabilité de faillite de l'entreprise, les employés sont dédommagés par une augmentation de leur salaire moyen pour leurs pertes attendues en capital humain. Étant donné que ce courant de littérature considère que le niveau d'endettement a un impact direct sur la probabilité de faillite, nous considérons dans notre étude que le comportement risqué des dirigeants augmente également cette probabilité. Ainsi, nous contribuons à cette littérature en prolongeant leur analyse vers un nouveau courant encore inexploité.

Les diverses contributions de nos trois essais empiriques permettent à la fois de prolonger les apports de la littérature théorique et empirique existante, mais constituent également des bases pour de futures recherches dans le domaine de la finance d'entreprise.

#### ➤ **Vers une analyse plus approfondie des PME cotées**

À la lumière des travaux antérieurs sur les PME, nous avons remarqué que la plupart des études financières se sont intéressées principalement aux PME privées. En effet, cela peut s'expliquer par la présence importante de ces entreprises par rapport aux PME cotées, notamment en France. Néanmoins, le contexte des PME cotées en bourse a peu retenu l'attention des chercheurs, malgré la présence croissante de ces entreprises sur les marchés boursiers ; un contexte inexploré qui nécessite selon nous une attention accrue. En d'autres termes, en apportant un éclairage sur les PME cotées en bourse, nous soulignons non seulement leur présence importante sur le marché, mais également la nécessité de les étudier davantage car elles pourraient donner des résultats inattendus. En effet, nos résultats empiriques dans le premier essai (induisant que la dette n'est pas considérée comme un outil de surveillance pour les conflits d'agence entre les dirigeants et les actionnaires des PME cotées, ce qui n'est pas conforme aux prévisions de la théorie du Free Cash Flow), offrent une conclusion qui pourrait différer selon le type d'entreprises. En conséquence, notre thèse encourage les études futures à consacrer plus d'attention à l'examen des PME cotées en bourse. Il pourrait être par exemple intéressant de procéder à des analyses de la littérature financière sur les PME cotées en bourse afin de découvrir leurs réactions face aux concepts financiers et peut-être même les comparer avec celles des PME privées et/ou des grandes entreprises.

### ➤ **Vers un processus décisionnel plus inclusif**

Bien que notre travail de recherche se concentre principalement sur le comportement des dirigeants, il étudie ses conséquences par rapport à trois acteurs majeurs des PME, à savoir : les dirigeants, les actionnaires, les banques et les employés. De cette façon, notre thèse apporte un éclairage nouveau sur le processus de décision des dirigeants, en tenant compte des perceptions de ces derniers. Plus spécifiquement, cette thèse soutient l'idée que le comportement risqué des dirigeants n'est pas conforme aux attentes des trois autres acteurs, ce qui les encourage à mettre en œuvre des actions pour atténuer ce comportement. Nous avons premièrement montré que les actionnaires sont censés mettre en place un mécanisme disciplinaire autre que la dette, deuxièmement que les banques sont censées utiliser le prêt d'états financiers (par le biais du FRQ) pour évaluer le degré de risque des petits emprunteurs transparents, et enfin que les employés sont censés recevoir une compensation pour les pertes de capital humain attendues. Par ces résultats, cette thèse prolonge la littérature sur le comportement des dirigeants de PME en soutenant que les dirigeants doivent intégrer ces coûts internes et externes (c'est-à-dire la réaction des actionnaires, des banques et des employés) lorsqu'ils choisissent leur niveau optimal de comportement risqué. Aussi, cette thèse souligne l'importance pour les autres parties prenantes de prendre en compte le comportement risqué des dirigeants dans leur processus de décision. En effet, nous avons souligné que le comportement risqué des dirigeants peut nuire aux relations avec les autres parties prenantes et suggère la mise en œuvre de certains outils et pratiques afin de limiter le comportement à risque des dirigeants. De façon générale, cette thèse encourage les chercheurs à investiguer davantage le processus de décision des parties prenantes, en découvrant de nouveaux éléments qui devraient être pris en considération lors de la prise d'une décision transparente.

### 3.2. Limites

Bien que cette thèse offre plusieurs contributions à la littérature précédente sur les petites entreprises, elle présente néanmoins certaines limites qui méritent d'être identifiées et étudiées dans le cadre de recherches futures.

Cette thèse examine le comportement de prise de risque des dirigeants, un sujet de préoccupation majeure dans les petites entreprises. Comme mentionné ci-dessus, le comportement de prise de risque des dirigeants a été estimé de manière quantitative par le biais

du comportement de prise de risque de leurs PME. Ainsi, l'aspect comportemental des dirigeants n'a pas été abordé dans cette thèse. Ce choix, bien que limitant, découle du type des données quantitatives mobilisées dans nos travaux, alors que les études comportementales nécessitent une collecte spécifique de données. Nous sommes toutefois conscients qu'une grande partie de la littérature s'est intéressée à cet aspect du comportement risqué des dirigeants, et a proposé plusieurs théories comportementales qui l'expliquent. Il serait ainsi intéressant d'approfondir ces théories dans le contexte des PME françaises cotées en bourse après la crise financière de 2008. Il pourrait également être envisageable d'apporter un éclairage nouveau en s'appuyant sur les caractéristiques des dirigeants de PME après la crise : existe-t-il un profil type (pourcentage d'actions détenues dans l'entreprise, âge, ancienneté, etc.) des dirigeants de PME qui explique leur comportement de prise de risque ? Si oui, ce profil a-t-il changé après la crise ?

Une autre limite de notre travail est liée à la mesure dans laquelle l'échantillon considéré dans cette thèse est capable de représenter l'ensemble des PME françaises. Comme indiqué ci-dessus, cette thèse utilise un échantillon unique composé exclusivement de petites et moyennes entreprises cotées à la bourse d'Euronext Paris. Bien que les PME cotées en bourse soient très importantes pour l'économie, on ne peut pas nier que leur présence est relativement faible par rapport aux PME non cotées en France. Il pourrait alors être intéressant de s'interroger sur la généralisation de nos résultats aux PME non cotées. Cette étude permet donc de poser les questions suivantes : quelles sont les conséquences de la prise de risque managériale dans les PME privées du point de vue des parties prenantes ? existe-t-il une différence entre les petites entreprises non cotées et les petites entreprises cotées en bourse ? Quel est l'impact de la crise financière de 2008 sur les PME françaises non cotées ?

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## Academic presentations

- **37th International Conference of the French Finance Association (AFFI)**

Title: The impact of Financial Reporting Quality on the firms' access to leverage financing: the case of French listed SMEs.

*Date: postponed to 26-28 May 2021, location: Nantes, France*

Title: The risk-taking behavior of managers and employees' pay in French small businesses.

*Date: postponed to 26-28 May 2021, location: Nantes, France*

- **4<sup>th</sup> PANORisk conference**

Title: The impact of Financial Reporting Quality on the firms' access to leverage financing: the case of French listed SMEs.

*Date: 12 and 13 December 2019, location: Angers, France*

- **PANORisk Summer School (presentation + poster)**

Title: The impact of Financial Reporting Quality on the firms' access to debt: the case of French listed SMEs.

*Date: 11-14 June 2019, location: Nantes, France*

- **Worskhop école doctorale (EDGE)**

Title: Financial Reporting Quality and SMEs' financing.

*Date: 29 March 2019, location: Rennes, France.*

- **3<sup>rd</sup> PANORisk conference**

Title: Leverage Financing and the Risk-Taking Behavior of Small Business Managers: What Happened after the Crisis?, with Ramzi Benkraiem and Catherine Deffains-Crapsky.

*Date: 29 and 30 November 2018, location: Nantes, France*

- **3<sup>rd</sup> workshop on small business economics**

Title: Leverage financing and the risk-taking behavior of small business managers: What happened after the crisis?, with Ramzi Benkraiem and Catherine Deffains-Crapsky.

*Date: 16 November 2018, location: Lyon, France*

**Titre:** Analyse de la perception de trois parties prenantes vis-à-vis de la prise de risque managériale au sein des PME françaises cotées : trois études empiriques.

**Mots clés:** Petites et moyennes entreprises (PME), prise de risque managérial, crise financière, conflits d'agence, asymétrie d'information, compensation du risque de défaillance.

**Résumé:** Les petites et moyennes entreprises (PME) qui jouent un rôle central reconnu dans le développement économique ont fait l'objet d'une attention croissante de la part des chercheurs au cours des dernières années. Ces travaux se sont notamment intéressés à la thématique de la prise de risque des dirigeants, en se concentrant sur les raisons et les conséquences de ce comportement, du point de vue de l'entreprise et du dirigeant. Au regard du caractère particulier des PME, notre thèse vise à élargir ces travaux, en prenant en compte les perceptions d'autres parties prenantes vis-à-vis de la prise de risque des dirigeants pendant et après la crise financière de 2008. Nos trois analyses empiriques s'appuient sur un échantillon de PME cotées en France et concentrent ainsi leur attention sur trois parties prenantes majeures: les actionnaires, les banques et les employés.

Le premier article montre que la dette n'est pas considérée comme un mécanisme disciplinaire puisqu'elle favorise la prise de risque des dirigeants. Le deuxième article révèle que les problèmes d'asymétrie d'information avec les banques, induits par la prise de risque des dirigeants, sont atténués par la qualité des rapports financiers de l'entreprise. Le troisième article démontre que, étant donné que leur comportement risqué accroît la probabilité de faillite de l'entreprise, les dirigeants indemnisent leurs employés pour les pertes de capital humain attendues. Enfin de manière générale, cette thèse souligne l'importance de la prise de risque des dirigeants de PME, notamment vis-à-vis des parties prenantes.

**Title:** A multi-stakeholder's perspective of managerial risk-taking in French listed SMEs: three empirical essays.

**Keywords:** Small and medium-sized enterprises (SMEs), managerial risk-taking behavior, financial crisis, agency conflict, information asymmetry, failure risk compensation.

**Abstract:** Small and medium-sized enterprises (SMEs) have received rising attention from researchers because of their important role in economic growth. Among these studies, the attention has been directed toward the risk-taking behavior of SMEs' managers while focusing on the reasons for and consequences of this behavior, from the company's and the manager's perspectives. However, since other stakeholders are also considered key actors for SMEs, this thesis aims to extend the previous literature by studying the consequences of managers' risk-taking behavior from their perspectives during and after the financial crisis of 2008. Our choice relies on three major stakeholders among several others: shareholders, banks, and employees.

In order to conduct our three empirical analyses, we employ a sample composed of publicly held SMEs in France. The findings of the first essay suggest that financial debt is not considered a disciplining mechanism since it enhances the risk-taking behavior of managers. Then, the second essay reveals that information asymmetry problems with banks, induced by the managers' risk-taking behavior, are mitigated by the quality of the firm's financial reporting. The third essay demonstrates that since the risky behavior of its managers increases the firm's probability of bankruptcy, managers compensate their employees for their expected human capital losses. Overall, this thesis shows that managerial risk-taking behavior is a vital component that should be taken into consideration in the context of SMEs, especially toward other stakeholders.