Risk Taking, Rule Taking and the Zero-Leverage Puzzle

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ABSTRACT

In this paper, we take a novel theoretical approach to understand the puzzling phenomenon of zero-leverage firms. First, we delve into different theories of finance, management, economics and entrepreneurship seeking to arrive at a more integrative model of a firm’s financial behavior. This effort culminates in the presentation of a novel construct called rule taking, which reflects the degree which a manager has their discretionary power constrained. We, then, outline two hypotheses concerning how the interplay of governance and innovation can affect a firm’s financial outcomes in apparently surprising ways. Firstly, we hypothesize that corporate risk taking is positively associated with zero leverage. Second, we hypothesize that our novel construct of rule taking is negatively associated with zero leverage. Using a panel regression with a sample of 24,484 firms, our results corroborate our hypothesis. By taking a detailed look at subtle determinants of managerial and corporate behavior, we can provide a novel alternative explanation to a phenomenon that have puzzled researchers for decades.

Keywords: Zero leverage, Debt financing, Financing decisions, Managerial discretion, Capital structure

1. INTRODUCTION

Traditional capital structure theories (e.g., Graham, 2000; Miller, 1977; Modigliani & Miller, 1958) predict an optimal balance between a firm’s level of debt and equity. Notwithstanding, it is a stylized fact that some firms carry substantially less debt than expected (Dang, 2013). Furthermore, a significant number of firms in many countries displays an extreme version of this behavior, carrying no debt at all: the zero-leverage firms (see Bessler, 2013; Strebulaev & Yang, 2013).

The zero-leverage phenomenon is a subset of the so-called low-leverage “puzzle”, whose study is informed by different literature strands, mostly regarding to capital structure theories (Modigliani & Miller, 1958), agency theory (Jansen & Meckling, 1976) and theories based on asymmetries of information (e.g., Leland & Pyle, 1977). Based on these different strands, several potential explanations for a firm’s financial behavior were advanced.

The trade-off theory (see Kraus & Litzenberger, 1973; Myers, 1984) predicts the use of debt is incentivized by tax benefits and dis incentivized by the risk of bankruptcy; therefore, a firm should seek an equilibrium of debt and equity that is marginally optimum and thus maximizes firm value. The free cash flow theory (Jensen & Meckling, 1976; Jensen, 1986) advocates the use of debt because it reduces the resources that could be captured by managers for perquisites or sub-optimal investments. The signaling theory (Ross, 1977) postulates that managers, who possess inside information, can influence the market’s perceived stream of returns for the firm by changing its financial structure; i.e., by taking debt. Finally, the pecking order theory (Myers & Majluf, 1984) also builds upon the concept of asymmetric
information but in a different manner: since the market cannot certain about key aspects of the firm (e.g., its risk and value), it will demand a premium for its external finance. The theory postulates that a natural pecking order of corporate financing will arise: from cash holdings—
the least costly regarding asymmetric information costs—to equity issuance—the costliest—, with debt as an intermediate alternative.

All the above theories have in common the prediction that a firm should take some amount of debt. Nonetheless, empirical knowledge has shown that firms carry a surprisingly low amount of debt. In addition, and more disturbingly, an exceeding number of firms carry no debt at all. Thereby, given this contradiction, it is not surprising that no theory alone has been able to explain why so many firms worldwide follow a zero-leverage policy.

Despite the fact that the zero-leverage phenomenon is a clear violation of the traditional finance predictions, it was only recently that scholars began to adopt more explicitly agency-theoretic or managerial perspectives to understand the determinants of a firm’s capital structure (Hart, 1996). Yet, the utilization of the managerial discretion perspective to understand capital structure and its “anomalies” is still scanty.

We argue that explanations for the zero-leverage behavior should not preclude the use of the so-called “management” theories, which take into consideration the how the firm leaders can impact the firm’s outcomes (cf. Mayers, 1984). Managers are responsible for the implementation of strategic actions in the firm. When traditional financial approaches choose to preclude this important variable, they are likely to miss or overlook a range of relevant effects on the firm outcomes.

In this paper, we take a novel perspective on the problem integrating three different strands of literature that address common issues but are seldom articulated with one another: the managerial discretion literature typically associated with corporate governance (e.g., Hambrick & Finkelstein, 1987; Hart, 1996; Wangrow, Schepker & Barker, 2015); the economic theories of profit and entrepreneurship centered on risk and uncertainty bearing (Kirzner, 1979; Mises, 1952; Schumpeter, 1936; Knight, 1921); and the theory of creativity as the generation of novel ideas without prior knowledge about whether or not they will actually work (Simonton, 2016; Mednick, 1962). This literature provides the basis for two potential predictors that exist at the interface between corporate governance and managerial discretion—firm risk taking and managerial rule taking—and guides the investigation on their role in generating the “anomalous” financial outcome of zero leverage.

Risk taking is commonly associated with the behavior of seeking higher potential returns and with investments of higher financial risk. At the same time, it should not be neglected that according to scholars of the “entrepreneurship strand” (e.g., Schumpeter, Baumol, Kirzner), risk taking is a vital element for both (economical) profit-making and the long-term survival of the firm, being a powerful source of competitive advantage. An innovation, however, is not realized without the undertaking of risks (Kirzner, 1979; Mises, 1952; Schumpeter, 1936).

Risk estimates are, nevertheless, based on subjective perceptions and on knowledge that is not easy communicated or transferred (Makowski & Ostroy, 2001; Kirzner, 1997), which creates a wedge between the quality of information of insiders and outsiders. Insiders (typically managers) will envision a potential lucrative project for the firm based on their often-tacit knowledge and on their subjective interpretation of current prices in the market. In case their perception is fact “better than the market” (cf. Keynes, 1936), the project will succeed, with gains for different parties in the firm, including both managers (agents) and shareholders (principals).

However, asymmetry of information, agency costs, the risk of moral hazard and other frictions create a mismatch between how insiders and other important parties (e.g. shareholders, creditors and potential investors) assess the potential of a project; i.e. its
financial value. This creates another wedge: that between the costs of internal and external finance. Because of their disadvantaged information position and by healthily “doubting” (cf. the agency conflict) the subjective estimates of managers, external financers—creditors and potential investors—will place a premium on their funds. In this case, the firm may face a situation of financial restriction due to costly external finance. Thus, such avoidance of external finance, which can be partial (low leverage) or complete (zero leverage) will not occur due to managerial misbehavior or risk aversion, it will be a deliberate strategy to increase firm value, thus in perfect consonance with shareholder’s interests.

The second variable studied is managerial rule taking, a novel construct we introduce in this work that reflects the degree which a manager has their discretionary power constrained. The managerial discretion literature posits that when the top manager’s ability to influence decisions is high, his or her effect on firm-level outcomes is greater (Wangrow, Schepker & Barker, 2015). However, in some situations, because of the firm’s environment, structure or internal organization, the firm will rather constrain managerial discretion (and creativity) in order to safeguard firm’s resources from exploitation by a self-serving manager (see also Jensen & Meckling, 1976; Jensen, 1986; Guest, 1962; Thompson, 1967; Wangrow, Schepker & Barker, 2015). When powerful parties in the firm enact governance structures and a system of checks and balances that are too strict, the manager becomes less enfranchised to pursue projects based on his or her subjective perception and valuation. The manager will rather be forced upon to carry out strategies that are easier to communicate—i.e., with smaller information transaction costs—and thus be supported by shareholders and other powerful parties. As pointed out, this situation is much less conducive for actions that are seen as more polemic or surprising (the latter a crucial component of creativity; Simonton, 2011). The rule-taking manager will thus be more likely to follow strategies that are aligned with consensus of the market. Given that the vast majority of traditional approaches regarding the optimal capital structure of the firm (e.g., the trade-off theory, agency theory and signaling theory) predict—and recommend—the utilization of some amount of debt, and given that the rule taking manager will follow the strategies sponsored by shareholders, the board of directors and corporate governance activists, it is expected that rule-taking managers will be unlikely to adopt the radical capital structure configuration of the zero-leverage firm.

Risk taking was operationalized according to Nakano & Nguyen (2012). In their model, corporate risk taking can be gauged through measuring the absolute deviation from the firm’s expected performance. For our novel variable—rule taking—we conducted a factor analysis of six variables related to the degree of managerial discretion: Board Ownership (reversed); ownership of the largest shareholder (reversed); CEO ownership; CEO duality; CEO age; and the number of committees the CEO participates. After the principal component analysis, we utilized a varimax rotation and we extracted the first factor as the rule taking variable.

By utilizing an initial sample of 24,484 companies from the ORBIS - Bureau Van Dijk database, we found that both our hypotheses were supported. This paper then offers a quite novel contribution in the interplay of governance studies, finance and economics. Our results shed new light on how apparently puzzling financial outcomes such as the zero-leverage behavior can be partially explained by variables at the interface of corporate governance, managerial discretion and traditional corporate finance.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Zero-Leverage Studies
Scholars have claimed that by studying the zero-leverage phenomenon, it is possible to gain useful insight into some of the most puzzling phenomenon of the capital structure theory; that is, why so many firms are underlevered. In one of the first empirical papers in this line, Agrawal and Nagarajan (1990) compared the financial, managerial, and ownership characteristics of zero-leverage firms with those of a control sample of levered firms. They found that zero-leverage firms exhibit greater equity ownership by top managers, more extensive family involvement and greater liquidity positions when compared with the control group. The authors suggested that the zero leverage found on these type of firms corroborates the agency theory hypothesis. That is, risk aversion arises because the owner’s capital is largely undiversifiable and intimately tied to the firm. However, the traditional entrenchment and agency theory hypotheses have been the target of many important challenges in the last years.

Most recent studies on zero leverage have in common the rejection that the agency-theoretic approach is sufficient to explain the zero-leverage phenomenon (see Devos et al., 2012; Caban, 2018). Instead, they generally utilize a combination of the “financial constraints” and the “reserve borrowing capacity” hypotheses to explain their results. For instance, Dang (2013) poses that different firms may have different motives for eschewing debt. Some firms are underleveraged not because they want to but because they face restrictions to raise debt. On the other hand, other firms deliberately seek to follow a zero-leverage strategy as a means to maintain its financial flexibility and take advantage of growth opportunities (see also Bessler et al., 2013; Strebulaev & Yang; 2013; Caban, 2018). Thus, a firm can be underleveraged not due to managerial misbehavior but due to “financial constraints”, or the desire to keep a “reserve borrowing capacity”.

The financial constraints explanation asserts that low-leveraged firms would in fact prefer to carry more debt, but they are unable to do so because they face restrictions in the debt market owing to the firms’ low debt capacity or to unfavorable macroeconomic factors, such as a wider term structure of interest rates or a low or negative growth in their countries of operation (Dang, 2013; Huang, Li & Gao, 2017). Supporting this hypothesis, Devos et al. (2012) and Bessler et al (2013) compared firms worldwide regarding their debt level and concluded that most zero-leverage firms are in fact constrained by their debt capacity and only a small number of firms deliberately seek a zero-leverage strategy.

Nonetheless, even if it is true that most underleveraged firms are financially constrained, this explanation is not sufficient to account for the number of firms that are not financially constrained and do pursue a zero-leverage strategy. Thus, a third strand of explanation arose, asserting that managers may pursue a zero-leverage strategy not out of risk aversion or even financial constraints, but because they have a long-term value maximizing strategy in mind. A strategy that is often, if not impossible, to accurately communicate to the financial markets. This approach is consonant with the “reserve borrowing capacity” explanation, which asserts that a firm may want to increase its financial flexibility for future investment opportunities (Modigliani & Miller, 1963; Myers, 1977; Dang, 2013; Huang, Li & Gao, 2017; Caban, 2018). The “reserve borrowing capacity” theory is based on the idea that by taking debt, a firm will reduce its investment opportunity range and therefore lose potential future growth opportunities. Therefore, managerial misbehavior is not the explanation for the low debt levels found in many firms. On the contrary, the manager maintenance of a reserve borrowing capacity is a deliberate strategy to increase the firm’s value by maintaining its ability to capture future investment opportunities.

2.2. Managerial Discretion: Risk-Taking and Rule-Taking Behaviors
Although it is traditional to resort to a model of the world in which a “static state”, representing equilibrium, can be reached, some economists argue that the state of equilibrium is always disrupted by novelties (Georgescu-Roegen, 1993; see also Makowski & Ostroy, 2001; Kirzner, 1997), which obliges the players of the market to rearrange their plans constantly (Schumpeter, 1983). In a similar view, Oliver Hart and colleagues propose that a key element to understand firm behavior is the impossibility to anticipate the future and adequately prepare contracts beforehand that will protect the firm against all possible events and outcomes (cf. “world of incomplete contracts”; Grossman & Hart, 1986; Hart & Moore, 1990). Thereby, since a firm has to deal with contingencies that cannot be resolved via contracts beforehand, it will need a person endowed with some degree of discretion to make decisions and fill the vacuum created by the impossibility of complete contracting. In modern firms and corporations, this decision-maker will often not be the firm’s owners, but its top manager: the CEO.

The CEO bears the responsibility of determining the firm’s long-term goals and objectives and implementing corresponding courses of action (Chandler, 1962; Child, 1972; Wangrow, Schepker & Barker, 2015). It can include making strategic decisions for the firm, such as implementing structural changes, determining the environmental domain in which to compete, altering performance standards, and undertaking or foregoing risky projects. In addition, the top manager of the firm has the job of dealing with the competition and the “creativity of the market” (cf. Makowski & Ostroy, 2001), but they can—and should—also carry out innovation themselves. In fact, they are in a key position to make strategic decisions that will lead to the generation of novelties in the market, becoming not the passive respondents of change, but change-makers—entrepreneurs (cf. Baumol, 1996; Kirzner, 1973; Schumpeter, 1983).

Naturally, to respond to the constantly changing environment and, specially, to carry out creative projects, managers need a certain degree of discretionary power. A manager whose latitude of action is highly constrained is almost by definition destined to carry out only un-creative projects. Managerial discretion, although important for all managers who need to implement their strategies and respond to the uncertainty of the environment, will differ considerably depending on three key factors: the task environment; internal organizational factors; and psychosocial factors (Hambrick & Finkelstein, 1987; Wangrow, Schepker & Barker, 2015). In this article, we investigate observable variables related to two key elements for managerial discretion and that can ultimately affect the firm’s decision on its debt levels. The first element, rule taking, is intimately tied with the governance mechanisms found in the firm; in particular when these mechanisms interfere with or suppress the manager’s latitude of action (Hart, 1996) or creativity (Kirzner, 1973). The second element, managerial risk taking, arises from the managerial action in an environment with uncertainty and is exacerbated with wedge of knowledge between insiders (managers) and outsiders (shareholders or debtholders).

2.2.1. Risk taking and zero leverage

In the literature (e.g., Fernández-Mesa et al., 2012, Lumpkin and Dess, 1996), the association of risk taking and leverage mainly stems from the trade-off theory, which asserts that debt increases the risk of bankruptcy. Through this reasoning, the greater the debt, the greater the risk of bankruptcy, therefore a manager who is taking up debt is also—and automatically—taking up more risk. A second, and very popular approach, stems from the agency theory. The agency theory approach proposes that managers will tend to be risk averse (Jensen & Meckling, 1976; Jensen, 1986). Because managers, unlike shareholders, have most of their capital in the form of undiversifiable human capital, which is often tied to the firm, an
eventual bankruptcy of the firm would have a more dramatic effect on managers compared to shareholders. The main difference is that shareholders are able to mitigate their idiosyncratic risk through diversification whereas managers are tied to their undiversifiable human capital. This approach has been substantiated with economic models that suggest that managers are typically viewed as overly risk averse. That is, if the expected values for two strategies are similar, but one is a greater gamble (uncertain), managers will choose the strategy with a more certain outcome (Hoskisson, Chirico, Zyung & Gambeta, 2017; Guay, 1999; Smith and Stulz, 1985; Van Wesep & Wang, 2014).

Based on these assumptions, agency theory assumes that top managers should be compensated or monitored to achieve better outcomes. Theoretically, one way to achieve a better outcome is through the optimization of the firm’s capital structure. Because managers do not have the “natural” incentive to do so, the finance literature has argued that equity-based compensation should be awarded to managers to overcome their risk aversion and induce optimal risk-taking behavior (e.g., Smith and Stulz, 1985; Guay, 1999). However, empirical evidence on the effect of equity-based incentives on managerial risk-taking behavior has been inconclusive (Low, 2009).

In the managerial discretion perspective, however, risk taking is seen neither as a liability or as something that managers should avoid. Risk becomes as a most vital and necessary aspect of strategic management, both in the short and the long term. In the course of their decision-making, managers have to deal with an uncertain environment; that is, they need to take risks to deal with the novelties of the market (Georgescu-Roegen, 1993) and to improve competitive advantage and performance (Hoskisson, Chirico, Zyung & Gambeta, 2017). As the top manager of the firm is the one responsible for the enactment of effective strategies to deal with risk and uncertainty, this person must not only coordinate and passively respond to change. In fact, according to some entrepreneurship theories, real economic profits are only brought to the firm as long as its managers are able to successfully deal with risk (Kirzner, 1973; Knight, 1921; Schumpeter, 1983), putting risk taking at the center of all managerial decisions, naturally including those related to capital structure.

2.2.2. Risk taking as a manifestation of the creativity of the manager

The connection between risk taking an innovation can, in fact, be understood from a perspective that integrates different important elements of financial behavior that are scattered thorough the economics, finance and business literature. A fundamental idea that bridges these different strands is the existence of transaction costs that impede the manager to perfectly inform the market about the real quality of the firm’s projects (Williamson, 2008). This idea has been explored by the pecking order theory, which asserts that due to imbalances of information external financers will demand a premium to invest in the company or lend money to it (Myers & Majluf, 1984). It also relates to the signaling theory (Ross, 1977), which asserts that managers can influence the firm’s perceived value through decisions regarding a firm’s capital structure.

Perhaps surprisingly for the domain of finance and economics, the idea that asymmetry in perceptions cast difficulties in the communication of an idea is also found in the theories of creativity applied to organizational behavior. Creativity often involves challenging a given aspect of the status quo of the organization (Amabile, Conti, Coon, Lazenby & Herron, 1996). Similarly, theories of entrepreneurship have posed that managers are a category apart precisely because they go beyond the role of mere coordinators of assets: they respond to an uncertain environment and they also generate uncertainty in their environments themselves by engaging into novel and uncertain—i.e., potentially value-enhancing or value-destroying—projects. Although uncertainty permeates firm management, it is important to
remember that people differ in their capability to analyse the world. As Kirzner (1973; 1997) poses, a manager can be endowed with greater or smaller level of *alertness* to opportunities, which enables them to have differentiated access to information; a key input to generate successful foresight.

This inherent discrepancy between valuations of projects by different entities is at the heart of the approach utilized in this paper. The manager is capable of seeing value on projects that, because of transaction costs, he or she is unable to accurately convey to external financiers, be them potential lenders or investors. The idea that a manager can see opportunities that others cannot is also at the core of the economic theories of profit. For authors such as Schumpeter (1983), Mises (1952) and Kirzner (1973), economic profit—the motivator of entrepreneurial behavior—arises from the capture of opportunities that the entrepreneur perceives (and others do not). Mises (1952, p. 190) describes the entrepreneur as the person capable of judging the future prices of the products more correctly than other people. Thus, he or she buys factors of production at prices which, seen from the point of view of the future state of the market, are too low.

In the modern corporation, this entrepreneur is not the sole merchant looking for an opportunity. They are the top manager responsible for the strategic decisions of the firm. To capture those profit opportunities, the “manager-entrepreneur” has to go against the mainstream perception of the market, which will perceive the entrepreneurial action as riskier than it really is—given that the entrepreneur’s judgment of the future prices is really superior to that of the market. Thus, if the “manager-entrepreneur” is correct, he or she will face an unfortunate consequence: external finance is priced not by his or her valuation of future prices but by those of the market, which means that these funds will be priced too high in the eyes of the “manager-entrepreneur”. Consequently, the best way to capture the opportunity will be by foregoing the use of (the expensive) external financing, if this option is available.

In sum, managerial risk taking can be seen as a reflection of incursions in uncharted territory, where there is a greater level of uncertainty and a great distance between the managerial valuation of a project and that of external parts, such as potential creditors and investors. This increase in the potential asymmetry of information will lead to an increasing discrepancy in the valuation of the projects undertaken by the firm, making external funds increasingly expensive in the eyes of the management. Therefore, managers will forego the use of external financing and rely only on internal funds, if possible. This decision is not out of reluctance or risk aversion—it is done because external financing is seen as overly expensive and therefore resorting to it would destroy, instead of generate value. Due to this reasoning, it is hypothesized that *risk taking is positively associated with zero leverage* (*HI*).

### 2.2.3. Rule taking and zero leverage

To justify the need of a governance structure, Oliver Hart (1995) evokes the idea of a comprehensive contracting world, where everything has been specified in advance: all parties' obligations in all future states of the world are specified beforehand by contracts to the fullest extent possible. In this “world of complete contracts”, there is no need for corporate governance since there are no “residual” decisions to be made. A governance structure only matters inasmuch as it provides a way for deciding on actions that cannot or have not been specified in the initial contract. Because there are unforeseeable future states (Knight, 1921) and because there are high costs related to such comprehensive contracting (Hart, 1995), comprehensive contracting is implausible, thus the firm will need the figure of a manager with the discretionary power to exercise day-to-day control of the actions beyond the scope of what can be contracted in advance.
The degree of discretionary power of the manager varies according to factors related to the environment (e.g., more stable environments make comprehensive contracting easier which in turn diminishes the range of “residual” actions), the firm (e.g., powerful inside forces may restrict some of the decision-making power of the top manager) and to the psychosocial profile of the manager (e.g., the manager’s drive to exercise control may lead them to make choices that increase their discretionary power of the firm’s assets) (see also Finkelstein & Peteraf, 2007; Hambrick & Finkelstein, 1987; Wangrow, Schepker & Barker, 2015).

Not surprisingly, the managerial discretion literature posits that when the top manager’s ability to influence decisions is high, their effect on firm-level outcomes is also greater (Wangrow, Schepker & Barker, 2015). But what happens when the opposite is true: the manager has their discretionary power constrained by internal and corporate governance mechanisms in such a way that the manager becomes influenced rather than the major influencer of some strategic decisions? Using Hart’s theoretical framework, such situation may arise when, instead of transferring discretionary power to the manager, the board decides to curb their latitude of action via a series of measures. In such situation, the manager is not left with as much “residual” decision making. We propose the novel construct of managerial rule taking to cover this situation.

Rule taking represents, thus, a loss in the latitude and discretionary powers of the manager. Given the loss of power in the strategic decisions, the rule-taking manager acts in more a similar way to Clark’s (1902) “manager-coordinator”. This type of manager is centered on the oversight of the ongoing efficiency of the firm by coordinating labor and capital goods and by making sure that available processes and techniques are combined appropriately for current output levels and for the future outputs that are already in prospect. It is a sharp contrast with the “entrepreneurial manager” outlined by authors such as Schumpeter, Knight, Kirzner and Baumol. As discussed in earlier sections, this latter type of manager is endowed with the personal capacity and the institutional power to pursue projects based more on his or her own perception and valuation than on the consensus of the market. The “entrepreneurial manager” is alert of the behavior of the market and may be able to perceive, before any other, a profit opportunity. At the opposite spectrum, the rule-taking manager lacks such latitude of action and thus their actions must be based on consensus or follow the direction of powerful entities, such as blockholders or the board of directors. Instead of navigating through the uncharted waters of uncertain projects, the rule-taking manager’s job is to keep the firm on track, maintaining its ongoing efficiency and carrying out the tasks that are relevant for the strategies already in prospect.

2.2.4. Rule taking leads to more consensual and traditional financial behavior

Creative behavior, in general or within the organizational setting, is associated less traditional behavior (Simonton, 2016; Runco & Jaeger, 2012) and with challenging the status quo (Gabora, 2017; Araki, 2015; Amabile et al., 1996). This is a point of agreement between the theories of creativity and entrepreneurship. As put by Kirzner (2009, p. 146), the entrepreneur does not operate passively in a given world, he is a pioneer who introduces novel products and methods of production, operating in a “hitherto undiscovered territory”. In fact, Kirzner poses that it is precisely because of the entrepreneur’s creativity that an otherwise serene market can be disrupted. This aggregate entrepreneurial creativity has the effect of inducing complexity in the environment, which in turn generate problems for the implementation of Hart’s comprehensive contracting, making it very costly—if not impossible—to anticipate or pre-specify actions (Finkelstein & Peteraf, 2007; Tirole, 1988; Williamson, 1975). In sum, the entrepreneurial theory constructs the idea of an economy that
can be understood as a big “creativity tournament”. Every firm is potentially a vector of creativity—generating disruptions that will affect other firms—but also a possible “victim” of the creativity of others, having their business disrupted by innovations advanced in other places.

Despite the importance of managerial creativity for the long-term survival of the firm, different companies will place different degrees of emphasis on their creativity potential. Because of their environment, structure or internal organization, they might see other dilemmas as more critical in comparison. One example is when the need to treat agency problems (Jensen & Meckling, 1976) surpasses the need for creativity. As managers can use their discretion not (only) to pursue valuable projects but also to advance their own agenda, generating potential loss of firm value, it is “obviously important” (Hart, 1995, p. 681) that there exist checks and balances on managerial behavior. However, when these checks and balances are so high that it hurts the “residual” decision making of the manager, it leads to a situation advanced here as managerial rule taking. In this situation, the manager is stripped of the discretion to pursue the projects that he or she perceives as valuable simply because of his or her differential knowledge or insight. That is, the very checks imposed on the manager to curb misbehavior will also undermine their discretion to make potentially profitable investments: the manager will not be able to buy the factors of production at prices which only the manager judges differently from the market. This is a great contrast with the Schumpeterian entrepreneur, the pioneer that “creates new worlds, different from what they find.”

Since the rule-taking manager has his creativity highly constrained, what kind of course of action will be available to them? In this situation, in which the mistrust of the top manager prevails over the necessity for managerial creativity—either because the situation does not call for so much creativity or because the managerial discretion necessary for creativity can be used by the manager in a self-serving way—the actions undertaken by the firm are likely to be those that offer more security for the shareholder and the board of the directors and which are more aligned with the preferred policies of corporate governance activists.

In what regards the preferred financial behavior of corporate governance activists, it is quite unequivocal that a structure with debt should be preferred over a structure without debt, since it is expected to better protect and safeguard the interests of the shareholders. According to the classical theories of capital structure a firm, in order to maximize its value, should aim to reach an optimal capital structure target that will almost always include debt (Mayers, 1984; Kraus & Litzenberger, 1973; Modigliani & Miller, 1958). In addition, according to the agency theory (Jensen, 1986; Fama, 1980; Jensen & Meckling, 1976), the presence of debt is beneficial for shareholder protection since it makes managerial exploitative actions more difficult. Lastly, the signaling theory (Ross, 1977) postulation that leverage can send a positive signal to the market, altering its perception of the firm’s value, is another argument that favors eschewing a zero-leverage structure to the best interest of shareholders.

Thereby, given that the rule-taking manager is a follower of the policies of shareholders, the board of the directors and corporate governance activists, and given that for the above reasons they should prefer a capital structure with some amount of debt, it is hypothesized that rule taking is negatively associated with zero leverage (H2).

3. EMPIRICAL DESIGN

Our sample was collected from ORBIS - Bureau Van Dijk covering the period from 2009 to 2017. This database possesses accounting, financial, ownership and governance data from more than 200 million companies, and a significant amount of them are of private
capital. Thus, this database proved greatly useful for our objective to study zero leverage across publicly traded companies and those which are not.

Our sample included firms from all countries with at least 50 observations in the database. We excluded firms belonging to the financial sector and firms with negative or missing total assets and gross sales, as well as firms with negative or missing capital stock (net property, plant and equipment). Furthermore, to alleviate the effect of extreme observations, we winsorize the data at 1.0% in both tails. For missing values, we performed a listwise deletion, with 10,845 observations deleted due to missing values in the rule taking variable and 53,890 deleted due to missing values in the risk taking variable. The final sample comprises of a panel with 93,240 observations from 52 countries.

3.1. Variables measurement

To measure zero-leverage firms, we utilize a similar strategy to Strebulaev and Yang (2013). We classify firms as ZL (zero leveraged) if in a giver year, the outstanding amounts of both short-term and long-term debt equal zero. For our probit model, we create the variable ZL=1 when this condition is met, otherwise this variable receives a value of zero (see also Fischer, Heinkel & Zechner, 1989; Leland, 1994, 1998; Leland & Toft, 1996; Goldstein, Ju & Leland, 2001; Ju, Parrino, Poteshman, & Weisbach, 2005; Strebulaev & Yang, 2013).

To measure risk taking (RISKTK), we utilize Nakano and Nguyen’s (2012) model, originally based on Adams et al. (2005). The model gauges risk taking by calculating the firm’s absolute deviation from expected performance (ROA), as follows:

$$\text{ROA}_{it} = \gamma_0 + \gamma_1 \text{LNBS}_i + \gamma_2 \text{INDR}_i + \gamma_3 \text{DIROWN}_i + \gamma_4 \text{INST}_i + \gamma_5 \text{LNTA}_i + \gamma_6 \text{CAPEX}_i + \gamma_7 \text{DEBT}_i + \gamma_8 \text{AGE}_i + \lambda \text{YEAR}_i + \phi \text{IND}_i + \epsilon_i$$

(1)

Where ROA represents Returns on Assets; LNBS is the log of the number of board members; INDIR is the percentage of inside directors; DIROWN is the percentage of shares owned by all directors; INST is the cumulated ownership of institutional investors; LNTA is the log of total assets; CAPEX is capital expenditures divided by sales; DEBT is the ratio of total debt to total assets; AGE is proxied by the number of years since the firm’s listing; and IND is a vector of industry dummies based on the stock exchange’s two-digit industry classification; and $\epsilon$ is the error term.

To measure our novel construct, rule taking (RULETK), we conducted a factor analysis of the governance variables related to the degree of managerial discretion: CEO duality (DUAL); CEO age (CEOAGE); the number of committees which the CEO participates (COMM); the number of board members (LNBS); the log of the percentage of shares owned by all directors (DIROWN); CEO ownership (COWN); and ownership of the largest shareholder (LSHR). After the principal component analysis, we utilized a varimax rotation and we extracted the first factor as the rule taking variable.

3.2. Empirical Model

To test our hypotheses, we use a set of three related probit models. In our probit models, we regress a series of explanatory variables on the dependent variable (ZL), which is a dummy variable that takes the value ‘1’ for zero-leveraged firms and ‘0’ for levered control firms. We also include a series of control variables in our models. For controls regarding accounting and financial variables, we include the Tobin’s Q or Market Capitalization to Total Assets (LNQ); Return on Assets (ROA); Firm Size as measured by the log of the total assets (LNTA); the log of Gross Sales (LNGS); and Investment level as measured by the
difference in Net Property, plant and equipment over Total Assets (INV). Moreover, the same governance variables that were utilized as components to build the rule taking variable are also used as stand-alone controls.

Equations (2) to (6) below describe the five models utilized in this study. Model 1 utilizes only the financial controls (equation 2). In Model 2 we include RISKTK, one of our variables of interest (equation 3). In Model 3, we focus on the effect of just RULETK plus the financial controls (equation 4). Model 4 includes both variables of interest plus the financial controls (equation 5). Finally, Model 5 includes governance-related variables as additional controls (equation 6).

\[
Pr(ZL = 1 | X) = \Phi(\beta_1 + \beta_2LNQ + \beta_3ROA + \beta_4LNTA + \beta_5LNGS + \beta_6INV + \epsilon_i)
\]

(2)

\[
Pr(ZL = 1 | X) = \Phi(\beta_1 + \beta_2LNQ + \beta_3ROA + \beta_4LNTA + \beta_5LNGS + \beta_6INV + \beta_7RISKTK + \epsilon_i)
\]

(3)

\[
Pr(ZL = 1 | X) = \Phi(\beta_1 + \beta_2LNQ + \beta_3ROA + \beta_4LNTA + \beta_5LNGS + \beta_6INV + \beta_7RULETK + \epsilon_i)
\]

(4)

\[
Pr(ZL = 1 | X) = \Phi(\beta_1 + \beta_2LNQ + \beta_3ROA + \beta_4LNTA + \beta_5LNGS + \beta_6INV + \beta_7RISKTK + \beta_8RULETK + \epsilon_i)
\]

(5)

\[
Pr(ZL = 1 | X) = \Phi(\beta_1 + \beta_2LNQ + \beta_3ROA + \beta_4LNTA + \beta_5LNGS + \beta_6INV + \beta_7RISKTK + \beta_8RULETK + \beta_9DUAL + \beta_{10}LNBS + \beta_{11}DIROWN + \beta_{12}CEOOWN + \beta_{13}LSHR + \epsilon_i)
\]

(6)

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

Table 1 shows the descriptive statistics for all the variables included in this study. This table shows the mean, median, the standard deviation (SD), the number of firm-year observations (Count), as well as the minimum (Min.) and maximum (Max.) values of each variable. Given that we perform a listwise deletion of missing variables in each model, our final model counts with 93,240 observations with no missing values in any of the 13 variables involved in the study (see Model 5 – table 2).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero Leverage (ZL)</td>
<td>.057</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>.232</td>
<td>147494</td>
</tr>
<tr>
<td>Risk Taking (RISKTK)</td>
<td>.043</td>
<td>.022</td>
<td>0</td>
<td>.924</td>
<td>.067</td>
<td>147494</td>
</tr>
<tr>
<td>Rule Taking (RULETK)</td>
<td>-.114</td>
<td>-.142</td>
<td>-.514</td>
<td>.864</td>
<td>.098</td>
<td>147494</td>
</tr>
<tr>
<td>Tobin's Q (LNQ)</td>
<td>.955</td>
<td>.590</td>
<td>.041</td>
<td>7.629</td>
<td>1.144</td>
<td>128949</td>
</tr>
<tr>
<td>ROA</td>
<td>.019</td>
<td>.031</td>
<td>-.963</td>
<td>.293</td>
<td>.128</td>
<td>147494</td>
</tr>
<tr>
<td>Size (LNTA)</td>
<td>12.268</td>
<td>12.193</td>
<td>6.371</td>
<td>17.553</td>
<td>2.212</td>
<td>147494</td>
</tr>
<tr>
<td>Gross Sales (LNGS)</td>
<td>11.860</td>
<td>11.781</td>
<td>4.026</td>
<td>17.214</td>
<td>2.425</td>
<td>146534</td>
</tr>
<tr>
<td>Investment (INV)</td>
<td>.013</td>
<td>.000</td>
<td>-.286</td>
<td>.521</td>
<td>.089</td>
<td>147235</td>
</tr>
<tr>
<td>CEO duality (DUAL)</td>
<td>.095</td>
<td>.00</td>
<td>0</td>
<td>1</td>
<td>.294</td>
<td>147494</td>
</tr>
<tr>
<td>Size of the BoD (LNBS)</td>
<td>2.078</td>
<td>2.197</td>
<td>0</td>
<td>7.037</td>
<td>.743</td>
<td>147494</td>
</tr>
<tr>
<td>Board Ownership (DIROWN)</td>
<td>.714</td>
<td>.01</td>
<td>.99</td>
<td>99.99</td>
<td>5.274</td>
<td>147494</td>
</tr>
<tr>
<td>CEO Ownership (CEOOWN)</td>
<td>.485</td>
<td>.01</td>
<td>0</td>
<td>100</td>
<td>4.081</td>
<td>147494</td>
</tr>
<tr>
<td>Largest Shareholder (LSHR)</td>
<td>30.428</td>
<td>24</td>
<td>0</td>
<td>100</td>
<td>23.314</td>
<td>103522</td>
</tr>
</tbody>
</table>

4.2. Multivariate Analysis
We report the estimations of Equations (2) to (6) in Table 2. All models obtained a likelihood ratio Wald chi-square of at least 1208.70 with a p-value of 0.0000, which demonstrates that all models are statistically significant at very stringent levels.

Model 1 is the simplest model, which analyzes only the capacity of our financial controls of predicting our dependent variable. All variables in the model are significant, with a highlight to the variables related to size (LNTA and LNGS). These variables, along with investment (INV) are negatively associated with the occurrence of zero leverage, a result in line with previous findings (Huang, Li & Gao, 2017; Dang, 2013; Bessler et al., 2013; Devos et al. 2012). In Model 2, we analyze the influence of RISKTK, one of our variables of interest. As predicted in H1, we found a significant positive association of risk taking with ZL. Besides that, RISKTK is together with INV one of the strongest predictors in this model. Model 3 mirrors Model 2, but with the focus on RULETK. Although RULETK displays the expected negative sign, its relationship is not significant in the model. Interestingly, the addition of RULETK makes the investment level an even stronger negative predictor of ZL. Model 4 analyses the influence of both variables of interest together keeping our accounting and financial controls. Like in Model 2, RISKTK remains a significant and strong predictor of ZL. RULETK remains non-significant in this model and the size-related variables (LNTA and LNGS) remain very significant predictors, along with INV. Finally, in Model 5 we add governance-related variables as additional controls. RISKTK retains its significance and in this model RULETK also becomes very significant besides showing the largest absolute coefficient in all models. Regarding the governance controls, all variables except the ownership of the largest shareholder are significant. Although small in effect, variables related to strong CG mechanisms such as a large BoD and high board ownership are negatively related with ZL. Conversely, variables associated with a strong CEO such as CEO duality and CEO ownership are positively related with ZL.

Table 2. Results of the Probit Models.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Taking (RISKTK)</td>
<td>0.880</td>
<td>0.931</td>
<td>0.969</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.75)</td>
<td>(4.35)</td>
<td>(5.07)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rule Taking (RULETK)</td>
<td></td>
<td>-0.020</td>
<td>-0.018</td>
<td>3.926</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.86)</td>
<td>(-0.79)</td>
<td>(-4.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobin's Q (LNQ)</td>
<td>0.120</td>
<td>0.116</td>
<td>0.126</td>
<td>0.122</td>
<td>0.116</td>
</tr>
<tr>
<td></td>
<td>(11.12)</td>
<td>(10.81)</td>
<td>(8.80)</td>
<td>(8.57)</td>
<td>(8.98)</td>
</tr>
<tr>
<td>ROA</td>
<td>0.240</td>
<td>0.436</td>
<td>0.385</td>
<td>0.593</td>
<td>0.535</td>
</tr>
<tr>
<td></td>
<td>(3.03)</td>
<td>(5.10)</td>
<td>(3.50)</td>
<td>(4.99)</td>
<td>(5.01)</td>
</tr>
<tr>
<td>Size (LNTA)</td>
<td>-0.420</td>
<td>-0.406</td>
<td>-0.425</td>
<td>-0.414</td>
<td>-0.427</td>
</tr>
<tr>
<td></td>
<td>(-20.81)</td>
<td>(-20.59)</td>
<td>(-15.87)</td>
<td>(-15.77)</td>
<td>(-17.95)</td>
</tr>
<tr>
<td>Gross Sales (LNGS)</td>
<td>-0.239</td>
<td>-0.242</td>
<td>-0.244</td>
<td>-0.246</td>
<td>-0.248</td>
</tr>
<tr>
<td></td>
<td>(-17.86)</td>
<td>(-18.24)</td>
<td>(-13.81)</td>
<td>(-14.05)</td>
<td>(-16.27)</td>
</tr>
<tr>
<td>Investment (INV)</td>
<td>-0.904</td>
<td>-0.882</td>
<td>-1.534</td>
<td>-1.502</td>
<td>-1.116</td>
</tr>
<tr>
<td></td>
<td>(-6.38)</td>
<td>(-6.26)</td>
<td>(-7.11)</td>
<td>(-7.01)</td>
<td>(-6.31)</td>
</tr>
<tr>
<td>CEO duality (DUAL)</td>
<td>1.630</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.42)</td>
<td></td>
<td></td>
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<tr>
<td>Size of the BoD (LNBS)</td>
<td></td>
<td>-0.061</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(-1.51)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board Ownership (DIROWN)</td>
<td></td>
<td>-0.018</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-4.10)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO Ownership (CEOOWN)</td>
<td></td>
<td>0.018</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(2.54)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Largest Shareholder (LSHR)</td>
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<td>0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.69)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>128,010</td>
<td>128,010</td>
<td>128,010</td>
<td>128,010</td>
<td>93,240</td>
</tr>
</tbody>
</table>
Each column represents a model. The numbers in parenthesis below the coefficients refer to the z statistics, which is the ratio of the coefficients to their standard error.

The results demonstrate that both RISKTK and RULETK can be significant explanatory variables of zero leverage behavior, depending on the model utilized. We found a significant and positive relationship between managerial risk taking and zero leverage behavior in all models that included RISKTK, lending strong support to hypothesis 1. That is, managerial risk taking does appear to be a reliable predictor of zero leverage.

Our novel variable, managerial rule taking, behaved as predicted in our models (i.e., displayed a negative coefficient), but it only showed statistical significance in two occasions: when regressed on the dependent variable without the financial controls (this very simple model is not shown in Table 2) and when rule taking was part of a model that included the governance-related control variables. In such models, a significant negative relationship was found, which is in line with the predictions of hypothesis 2. Nevertheless, the lack of significance in the models with the financial controls leads to a more cautious interpretation of its effect as a predictor of ZL behavior.

5. CONCLUSION

In this paper, we underwent a lengthy theoretical discussion to present a novel perspective to analyze the traditional financial puzzles of the zero-leverage behavior. We presented a novel construct, rule taking, which reflects the degree which a manager has their discretionary power constrained and we underlined two hypotheses concerning how the interplay of governance and innovation can affect a firm’s financial outcomes in apparently surprising ways. We hypothesize firstly that risk taking is positively associated with zero leverage and secondly that our novel construct of rule taking is negatively associated with zero leverage. Using a panel regression with a sample of 24,484 firms, our overall results lend moderate support for our hypotheses.

In all models tested, the coefficient signs of our variables of interest behaved as predicted, even though in some models, depending on the array of controls utilized, there was not enough statistical confidence to completely support the relationship regarding rule taking. Of our two variables of interest, risk taking showed greater robustness, being a significant predictor in all models. The rule taking variable—the proxy utilized in this study for our novel construct—demonstrated to be a significant predictor in two occasions and, more remarkably, it was the predictor with the highest absolute coefficient in our most complete model (6). We understand this result to be a strong indicator of the validity of this novel construct for future studies.

This study corroborates the theoretical predictions seen in the managerial discretion literature, which posits that when the top manager’s ability to influence decisions is high, their effect on firm-level outcomes is also greater (Wangrow, Schepker & Barker, 2015). Firms in which the manager is freer to take more risks may depart from the expected behavior or face financial constraints that inhibit their capacity to take debt (Bessler et al., 2013; Dang, 2013; Devos et al., 2012). This can lead them to “anomalous” financial behavior such as ZL behavior. Similarly, firm in which the manager is a rule-taker, heavily limited in their latitude of action, may be unable to depart from expected behavior, therefore unlikely to be a member of the club of firms that display “anomalous” financial behavior.

In sum, our novel outlook, which derives new propositions from a detailed look at subtle components of managerial and corporate behavior, can shed new light and provide an alternative explanation to a phenomenon that has puzzled researchers for decades. We encourage more theoretical advances in the direction of joining different research strands to
investigate surprising phenomena and further exploration of the novel construct of rule taking introduced here. This paper demonstrates that the articulation of traditional finance models with the “managerial” strands may lead to interesting and useful insights that can inform research and policy in the field. We believe that future integrations of this type can further enable researchers to develop a more diverse and integrated look to tackle complex and difficult questions in the fields of finance and management.

REFERENCES


Knight, F. (1921). Risk, Uncertainty and Profit.


