Corporate governance and the capital structure behavior: empirical evidence from France

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Abstract

Purpose – The purpose of this paper is to test the validity of dynamic tradeoff theory and argue that the speed of adjustment toward the target capital structure may vary depending primarily on some inherent firm characteristics.

Design/methodology/approach – The objective of this article is to study the impact of the corporate governance arrangements on the capital structure behavior taken by listed French firms. The author measures the corporate governance arrangements in three different ways to capture its influences on the capital structure and analyze how it affects a firm's rebalancing behavior in the presence of relevant control variables. Assuming that costs related to deviations from the target leverage are positively correlated with the duration of the deviation, the author finds that firms with a strong governance system adjust at a faster rate because the longer the deviation lasts, the greater the loss in firm value. In addition, firms with more efficient governance structures face lower adjustment costs.

Findings – The author measures corporate governance quality in different ways by using several proxies. The results make a major contribution to the literature and show that the quality of the governance system is an important factor in helping the company achieve fatly its target leverage. The authors produces further support for the initial finding by showing that the two extreme leverage deviation groups are dominated by firms with weak governance. The author also shows that the rebalancing speed is faster for firms with strong governance systems.

Originality/value – The paper proposes that a firm characterized by a strong governance system will display a shorter-duration deviation from the target capital structure and a higher adjustment level than a firm with weak governance. In other words, the author argues that the deviation from the target capital structure and the adjustment level are related to the quality of corporate governance. The results indicate that firms with a stronger governance structure are characterized by shorter-term deviations from the target. The author also finds that firms belonging to the two subsamples where leverage deviation is at extremely high or low levels are characterized by a weak governance system. The results corroborate the hypothesis on the speed of adjustment toward the desired target leverage. Furthermore, the author empirically proves that the adjustment level of firms with stronger governance is higher in both extreme leverage situations. This paper extends the existing literature on capital structure adjustment by introducing the effect of corporate governance.

Keywords Corporate governance, Board characteristics, Gender diversity, Capital structure, Target leverage, Dynamic tradeoff theory, Dynamic partial adjustment model

Paper type Research paper

1. Introduction

Starting with Modigliani and Miller (1963), tradeoff theory has hypothesized that there is an optimal capital structure for each firm derived from the tax benefits of debt and the financial distress costs that debt creates. Robichek and Myers (1966), Kraus and Litzenberger (1973), Scott (1976) and Kim (1978) consider a balance between the dead-weight costs of bankruptcy and the tax-saving benefits of debt. More recent empirical studies tend to confirm these earlier findings and test the validity of tradeoff theory by estimating how fast firms move toward their target capital structure. Ozkan (2001), Flannery and Rangan (2006) and Antoniou *et al.* (2008) document evidence in favor of firms' (mean-reverting) adjustment toward target leverage, which is consistent with tradeoff theory. However, Huang and Ritter (2009) disagree on the magnitude of the speed of adjustment toward target leverage, which is sensitive to the econometric procedures employed, especially in the presence of unobserved firm fixed effects in short dynamic panels. According to Abel (2018), the optimal debt ratio reflects a balanced

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combination of the benefits from the tax deductibility of interest with the marginal cost of increased exposure to default. In his work, he highlights the changes over time in ownership structure can be attributed mainly to differences in the managerial interest tax shield and/or managerial cost default.

Our paper aims to fill the gap in the literature by developing a new approach to testing dynamic tradeoff theory in the presence of costs of adjustment toward leverage targets. We examine, in a dynamic panel threshold model of leverage, how corporate governance practices influence firms' capital structure decisions. Assuming the existence of a positive relationship between costs and the extent of deviation from the target capital structure, we hypothesize that to minimize the loss of their value, firms characterized by good corporate governance practices will display deviations that are shorter in duration. In other words, a firm's market value may deteriorate further the longer the firm displays a deviation from the target capital structure. Indeed, corporate governance best practices in the firm promote the reduction of agency costs vis-à-vis the issuers of funding. Consequently, firms with a good corporate governance mechanism, including gender diversity and managerial ownership, are more likely to be characterized by lower costs of capital structure adjustments.

In this paper, we test the validity of dynamic tradeoff theory and argue that the speed of adjustment toward the target capital structure may vary depending primarily on some inherent firm characteristics. Jalilvand and Harris (1984) give pioneering evidence of partial adjustment and document that factors such as firm size and capital market conditions influence the speed through adjustment costs. Ozkan (2001) shows that UK firms have a relatively fast speed of adjustment (above 50%), while Fama and French (2002) find that US firms adjust toward their target leverage at a very slow speed, ranging from 7 to 18%. In most recent empirical studies, however, the most attention is paid, for practical reasons, to the aggregate effect, with firm-level heterogeneity often hidden due to the use of advanced econometric techniques for dynamic panel data models, providing stronger support for the tradeoff theory. Flannery and Rangan (2006) estimate a speed of adjustment of 35% per year, suggesting that it takes approximately 1.6 years for a firm to remove half of the effect of a shock to its leverage. Byoun (2008) argues that adjustment of the capital structure involves asymmetries, namely, that firms with higher leverage than their target level face more severe information asymmetry problems than those with lower leverage. Antoniou *et al.* (2008) investigate how firms determine their capital structure according to their capital market or bank orientation. Their results show that the whole sample of firms undertake partial adjustment toward their target leverage at relatively quick speeds, with the fastest speed for the French firms and the lowest for the Japanese firms. Furthermore, Faulkender *et al.* (2012) analyze firm-level (rather than country-level) heterogeneity in the speed of adjustment by focusing the firms' cashflows. Their study suggests that the benefits and costs of adjustment vary with the sign of a firm's leverage gap and its operating cash flow, investment opportunities, and access to capital markets. Dang *et al.* (2012) show that firms characterized by a budget deficit, significant investment and low profit volatility adjust their financial structure faster than those with the opposite characteristics. Mukherjee and Wang (2013) find that overleveraged firms adjust their leverage deviations faster than underleveraged firms because the cost of not adjusting increases at an increasing rate for overleveraged firms. The authors also corroborate the findings of Welch (2004) whereby the fixed cost of not adjusting may keep the firm off target if the deviation from the target is small.

Since the factors that affect a firm's corporate governance system are not straightforward, we measure corporate governance quality in different ways by using several proxies. Our results make a major contribution to the literature and show that the quality of the governance system is an important factor in helping the company achieve fatly its target leverage. We produce further support for our initial finding by showing that the two extreme leverage

deviation groups are dominated by firms with weak governance. We also show that the rebalancing speed is faster for firms with strong governance systems. Finally, the results reports that the proportion of women in the boardroom increases the adjustment speed to the optimal target leverage ratio. Our findings show clearly that the majority the selected explanatory variables in the study model have a significant influence on the firm's financing decisions.

The remaining of the paper proceeds as follows. Section 2 discusses previous literature on the dynamic and partial capital structure adjustment process. Section 3 discusses the relation between corporate governance and the capital structure. Section 4 presents our hypothesis and the empirical models. Section 5 describes the variables and summarizes the data. Section 6 discusses the empirical findings. Section 7 offers some concluding remarks.

2. Literature review on dynamic capital structures

2.1 Capital structure theory

The capital structure of a company depends on the nature of its activities and its strategic decisions in terms of investment and financing. There are tradeoffs firms must make when they decide whether to use debt or equity to finance their activities, and managers balance equity and debt to find the optimal capital structure. Various capital structure theories have tried to examine the relationship between firms' financial leverage and market value. One such approach is the Modigliani and Miller (1958) theorem, which is a linchpin of modern corporate finance. The central assumption of the theorem is based on the independence between the financial decisions of the firm and its value. Since the 1950s, debates on firm capital structure have received much attention in the finance literature, and the concept of an optimal target debt-to-equity ratio at which the benefits of debt are exactly outweighed by its marginal cost has appeared. Robichek and Myers (1966) stretched the framework of the Modigliani and Miller theory by introducing financial crisis costs and agency costs (known as bankruptcy costs). Thus, the main pillar of tradeoff theory is the balance between debt tax shield benefits and expected bankruptcy costs. Because interest on debt is a tax-deductible expense, debt creates a tax shield that results in increasing firm cash flows and maximizes its value. Conversely, the emergence of bankruptcy costs will offset debt tax shields and decrease firm value. In fact, firm value will reach its maximum at the balance point between value added from the debt tax shield and value added from bankruptcy costs, which corresponds to the optimal capital structure.

Jensen and Meckling (1976) proposed the agency cost theory and pointed to two kinds of agency problems (conflicts of interests) in corporations. The first conflict is between equity holders and bondholders, which arises because the owners of a levered firm have an incentive to take risks. In this case, equity holders are motivated to receive an excess return, while bondholders are motivated to reduce the default risk. The second conflict arises between equity holders and managers due to the separation of ownership and control, which makes it difficult for equity holders to fully control managers' actions. Ross (1977) first incorporated asymmetric information into the study of firm capital structure. He assumed that managers act in accordance with the incentive of the signal given to investors. Therefore, firm managers maximize their incentive return by choosing a financial package that trades off the current value of the signal given to the market against the incentive consequences of that return. The corporate debt ratio is a signal tool that conveys internal information to the market. Under the assumption of a perfect market, as in the Modigliani and Miller theorem, Ross (1977) argued that what amounts to value in the marketplace is the perceived stream of return for the firm. Consequently, changes in the capital structure have the effect of altering the firm value perceived by capital markets. Although there are many different financial instruments, what matters for managers is the set of incentive returns that the chosen mix of financial instruments yields.

Myers and Majluf (1984) have developed the theory of hierarchical financing or the pecking order theory model of financing decisions, based on the asymmetry of information between insiders (are better informed) and outsiders. The theory argue that managers give priority to protect the interests of the controlling shareholder. Indeed, it rejects the assumption that an optimal capital structure promotes an increase in a firm's market value. On the other hand, the theory supports the hypothesis that the manager chooses financial policy aiming to minimize asymmetric information costs. Thus, the manager adheres to the following hierarchy: *self-financing, no risky debt issuance, risky debt issuance and equity issuance as a last resort*. This behavior prevents a decline in the equity share price of the firm. Indeed, managers adjust corporate payout policies by restricting the distribution of dividends, which reduces the cost of capital and limits the amount of debt financing. Consequently, profitable firms enjoy a greater availability of internal funds, and asymmetric information should drive the issuance of debt over equity. The increase in debt signals that the company's shares are undervalued and that the board is convinced that the undertaken project is profitable. In contrast, any increase in equity signals that stock is overvalued and that the manager is looking for capital dilution.

2.2 Dynamic capital structure adjustment models

One of the most studied questions in corporate finance is what determines the capital structure. The partial adjustment model has proven to be a popular method of modeling dynamic adjustment behavior in empirical specifications of the capital structure. Numerous empirical studies conducted in recent decades examine this dynamic behavior to assess competing explanations for the observed heterogeneity in leverage ratios. Let us suppose that an optimal capital structure exists and that there must be some costs for firms to adjust to the target. The capital structure tradeoff theory implies that the firm has an incentive to rebalance its capital structure toward its target leverage only in the absence of adjustment costs. However, in the presence of significant adjustment costs, the firm has no incentive to adjust. Therefore, firms may temporarily deviate from their optimal capital structure if the adjustment costs fall between the two extremes. In other words, the adjustment process toward target levels is quite rapid when adjustment costs are important. Most partial adjustment models assume that firms have the same rebalancing speed toward their target capital structure. The idea of partial adjustment is empirically tested in studies by Ozkan (2001), Fama and French (2002) and Flannery and Rangan (2006). The conventional econometric specification for modelling the adjustment toward target leverage predicted by static tradeoff theory takes the form of a partial adjustment process. Fama and French (2002) estimate a speed of adjustment toward target leverage about 7–18% per year, while Flannery and Rangan (2006) estimate a speed of approximately 36% per year. Flannery and Rangan (2006) estimate that it takes on average 3.2 years after a shock for a firm to reach its target capital structure. Whereas the capital structure literature reject the hypothesis of target leverage ratio convergence (see in this regard Myers, 1984; Baker and Wurgler, 2002; Welch, 2004). Leary and Roberts (2005) support the idea according to which the process of convergence to firms' target leverage ratios is interesting only if adjustment costs are significantly lower than the gains provided by this adjustment. The latter may include financial distress costs of debt, the cost of informational asymmetries (*pecking order theory*) or the time-varying relative costs of equity and debt (*market timing story*).

In addition, Jalilvand and Harris (1984), Hovakimian *et al.* (2001), Hovakimian *et al.* (2004) and Byoun (2008) argue that the rebalancing process is heterogeneous depending on certain inherent firm characteristics, such as firm size and capital market conditions. The speed of capital structure rebalancing varies according to the company and over time. Fama and French (2002) give evidence that payout policy plays a key role in the rebalancing process and examine whether pecking order or tradeoff theory is more applicable for predicting the leverage and

dividend behavior of companies, which changes with profitability and investment opportunities. Consisting with the pecking order theory, they also find that more profitable firms are characterized by a lower leverage. Byoun (2008) estimates the rebalancing speed during debt securities issues or repayment of debt, using two-stage partial adjustment models. He observes that when the adjustment requires debt retirement, firms with a financial surplus adjust their financial structure faster than those with a financial deficit, taking advantage of low adjustment costs. A recent study by Faulkender *et al.* (2012) recognizes that cashflow realizations can provide firms with opportunities to adjust leverage at a relatively low marginal cost and reach their target capital structure. They assert that cash-flow realizations decrease the marginal cost of adjustment and affect the speed of adjustment.

3. The relationship between corporate governance and the capital structure

3.1 The fundamentals of corporate governance

The separation of ownership and control in a firm leads to a potential conflict of interest between managers and shareholders. According to Jensen and Meckling (1976), the conflict of interest between the principal (*shareholder*) and the agent (*manager*) gives rise to principal-agent problems, which are the key focus area of corporate governance. The principal does not have full information on how the agent will behave. In turn, the interests of the principal diverge from those of the agent, meaning that management outcomes may be less desirable than the principal expects. The traditional finance literature has indicated the existence of different corporate governance mechanisms, that is, *internal* and *external* mechanisms. Jensen (1993) highlights the importance of four forces of control driving managers' decisions to converge toward the optimal decisions for firms. Denis (2001) reexamines and enumerates these mechanisms, namely, external control, legal and regulatory control, product market competition and internal control.

In later work, Shleifer and Vishny (1997) define corporate governance as the set of means by which the funders of firms ensure the return of their investment. This first approach does not mention the key role of the manager. Differently, La Porta *et al.* (2000, 2002) view the corporate governance as a set of mechanisms through which the shareholders protect themselves and delimit the discretionary decisions of managers. Picou and Rubach (2006) reopen the debate on corporate governance to discuss the wider concept as the construction of rules, practices and incentive mechanisms aiming to align the interests of boards and managers with those of shareholders. Thus, to maximize firm value, corporate governance mechanisms exist to provide accurate information to investors and shareholders, which is important in terms of investment and resource allocation decision-making.

The finance literature categorizes corporate governance mechanisms into two typologies: those internal to companies and those external to companies. These typologies paved the way for the two models of corporate governance, namely, the shareholder model, characterized by external control exerted by shareholders, and the stakeholder model, characterized by internal control exerted by different parties with an interest in the company's operations. More recently, Gillan (2006) has developed a broader corporate governance system, depicting the complicated relationships among stakeholders: *shareholders, creditors, employees, customers, and suppliers*. His framework provides a wider perspective and incorporates some nontraditional elements of corporate governance structures. He essentially separates all mechanisms into two sets: internal governance (board of directors-related topics, managerial incentives, capital structure, bylaw and charter provisions or antitakeover measures, and internal control systems) and external governance. External governance can be split into five types of mechanism: law and regulation, capital markets (related to the market for corporate control, labor markets, and product markets), providers of capital market information, services from external parties (such as auditing, investment banking advice, etc.), and private

sources of external oversight (particularly the media and external lawsuits). Despite the current body of frameworks in the literature on the topic of corporate governance schemes, it should be noted that there are no clear dividing lines between the various categories above, as they overlap and are ambiguous. In addition, many of the determinants of corporate governance do not have direct implications for a firm's capital structure decision.

From the standpoint of Nwabueze and Mileski (2008), agency theory fails to resolve the conflict of interest between managers and shareholders, and the adoption of good corporate governance practices aims to reduce problems arising from this relationship. Thus, Jiraporn *et al.* (2012) argue that firms with higher governance quality suffer fewer agency conflicts. Armstrong *et al.* (2010) and Detthamrong *et al.* (2017) highlight that good governance practices are seen as capable of improving company management and organizational performance, increasing market value and reducing informational asymmetry through a better disclosure process. Chen *et al.* (2010) emphasize that this set of benefits tends to improve the company's relationship with the external credit market. In this sense, best practices in corporate governance play the primary role in improving access to external funding sources, regardless of the institutional environment. Liao *et al.* (2015) empirically show that better quality corporate governance systems contribute positively to access to debt. Monks and Minow (2016) assert that corporate governance has emerged as an increasingly integral and critical part of modern management. Corporate governance may be viewed as a system used to protect the interests of the company and its stakeholders.

3.2 Relevant governance indicators in the rebalancing process

Traditional corporate governance indicators considered in the literature are the characteristics of the board and the ownership structure, as these reflect the direct monitoring power of shareholders. Based on agency theory, such monitoring functions contribute to aligning the board's interests more closely with those of other shareholders and further increase firm performance. For our research purpose, the relevant governance mechanism should focus on the monitoring function covering related decision-makers and capture the integrated effect of the whole system. Furthermore, the relevant governance instruments can reduce the adjustment costs of rebalancing toward the firm's optimal capital structure. Thus, we identify four groups of related governance mechanisms: (1) *the board of directors' characteristics*, (2) *the moderating effect of board gender diversity,* (3) *managerial incentives*, and (4) *ownership concentration*.

3.2.1 The board of directors' characteristics. Chaganti *et al.* (1985) specify the role of boards of directors as fulfilling two important functions, namely, monitoring managerial behavior and giving official approval to specific corporate decisions and strategies. According to Zahra and Pearce (1989), the board first plays a mediating role for the firm because it spreads the firm's reputation, establishes contacts with its external environment and offers advice to the management team. These authors note that the two main legal functions performed by the board of directors are control and service. Zahra (1990) notes that to ensure corporate growth and protect shareholders' interests, the control function encompasses the duties of appointing the manager (*and, if necessary, dismissing her*), monitoring her skills and measuring firm performance. The board of directors has the fundamental responsibility of overseeing the firm's strategic direction and risk management since it is the guardian of the development and implementation of the mission, values, and strategy of the firm.

The highest standards of corporate governance stress that board efficiency is based on its *independence*, *leadership structure*, and *size*. Several texts [1] recommend that the board be composed mainly of independent directors. Board independence is the state in which all or many board members do not have a relationship with the company except as directors. The more independent a board is, the stricter the monitoring function the board can offer and thereby further prevent managerial opportunism that may decrease firm value.

Baysinger and Butler (1985) find that firms have better performance if their boards include more outsiders. Brickley *et al.* (1994) provide evidence that boards dominated by outside directors are the best way to align management with the long-term interests of shareholders. Fama and Jensen (1983) state that the separation of the functions of the director and the chair of the board of directors improves the performance of companies. Fama and Jensen (1983) and Yermack (1996) assert that the agency problem is more important when the CEO also holds the position of chair of the board (*CEO duality*). In addition, they suggest that small boards work more efficiently and better control managerial discretion.

Fama (1980) assumes that the presence of several external members on the board of directors ensures better firm performance. Nevertheless, Rechner and Dalton (1991), Pi and Timme (1993) and Fosberg and Nelson (1999) show that firms with CEO duality perform better. This theory implies that CEOs and directors often have the same interests as shareholders. Thus, under stewardship theory, duality can assist executive managers with fully implementing their plans and increase the efficiency of decision-making on the board. These two findings conflict with theory, and thus the empirical evidence on CEO duality is mixed. Baliga *et al.* (1996) find that firms that announce a separation (or combination) of the roles do not exhibit a positive (or negative) abnormal return around the announcement date. They also find no evidence of performance changes surrounding changes in the duality status. Some empirical evidence supports the stewardship idea and shows that CEO duality may benefit some firms while split positions benefit other firms. Finkelstein and D'Aveni (1994) find a positive stock price reaction following the announcement of the dismissal of certain members of the board. They also find that a positive response to a change of CEO is increased by the appointment of an executive external to the firm, consistent with the latter's ability to be an agent of change for a company in financial distress. The real effectiveness of the board as a managerial control system also plays an important role in enabling such changes. Brickley *et al.* (1997) consider the potential costs and benefits of split CEO-chair positions. They provide evidence that the costs of separating the roles – in terms of information costs, agency costs associated with monitoring the CEO and overall efficiency – are greater than the associated benefits of separating the positions. Dey *et al.* (2011) show that firms that separate the CEO and chair positions due to investor pressure suffer lower announcement returns and worse subsequent performance. In general, using a more recent sample, they do not find any evidence that separating the roles adds firm value.

In addition, board size and its impact on firm behavior is one of the most debated issues in the corporate finance literature; see Jensen (1993) and Yermack (1996). Boone *et al.* (2007) argue that board size reflects a tradeoff between the firm-specific benefits of increased monitoring and the costs of such monitoring. Although in some specific circumstances larger boards provide optimal monitoring, most of the governance literature generally suggests that smaller boards may have fewer divergent opinions among board members. In addition, discussion on smaller boards is more efficient than on larger boards in carrying out board functions. Generally, having more than nine members may make the board too large to function effectively, with an inverse relation arising between board size and firm value. In short, an effective system of corporate governance provides a framework for both the board and the management to fulfil their respective responsibilities.

3.2.2 The moderating effect of board gender diversity. The topic of board diversity has received increasing attention in recent years, emerging as one of the most significant current themes in corporate governance research. According to Zelechowski and Bilimoria (2004), work with women in top management bring different perspectives and voices to the table, to the debate and to the decisions. They are better than their male counterparts about management skills, human resource management, communication, and knowledge of public relations. In this sense, García and Herrero (2021) and Nguyen *et al.* (2021) show that gender diversity influences firm's capital structure decisions. However, Schubert (2006) and Maxfield

et al. (2010) stress that women consistently display more risk-averse behavior than men when confronted with decisions involving risk. It is without any doubt the relationship between gender diversity and dynamics capital structure has not been well studied or documented, and there is a lot to gain by sharing and recognizing best practices, particularly in France. The 6th edition of Deloitte's Women in the Boardroom [2] report establishes that women hold only 16.9% of board seats worldwide and estimates the timeframe needed to achieve gender parity at 30 years. Ten years will have passed since the promulgation of the French quota law of 2011, the high council [3] for equality between women and men points the success of this law, with 44.6% of female directors for large, listed companies in the CAC40 in 2020 and 45.2% for the SBF120. In ten years, the progression has been spectacular for CAC 40 companies, the percentage of women of which was around 10% in 2009. Based on these results, France is in first place within the European Union and the second in the world after Iceland with 46%.

Furthermore, Virtanen (2012) reveals that there is hardly any difference between having women and men directors on the boards. However, the author argues that women directors on boards appear more active and credible than men in the way they address board work. Women differ from men members on the board and thus contribute various ways to the variety for governance tasks. Moreover, Ruigrok *et al.* (2007) indicate that the simple fact of including one or more women was not necessarily a guarantee of financial performance, but can contribute to the board performance by their pervasive influence on the decision-making process. Likewise, Strøm *et al.* (2014) showed that female CEO or director are positively correlated to financial performance. Since gender-diverse boards can take advantage of the knowledge, experiences, networks, and monitoring skills of female directors, they are more efficient and suffer less information asymmetry. Recently, Usman *et al.* (2019) prove that the presence of women directors on the boardroom allow significantly the decrease of the cost of debt. This presence alleviates the managerial opportunistic behavior and information asymmetry, thus affects the lenders' perceptions about the borrower's ability to pay off the debt with interest. Elmagrhi *et al.* (2018) asserts that diversity in boards motivates firms to use more debt to mitigate opportunistic behavior of managers that may stem from potential weak managerial monitoring and sketchy corporate governance.

3.2.3 Managerial incentives. The challenge of corporate governance is generally based on the objectives of upgrading economic structures with a view to bringing together the best possible conditions for improving both business administration and the harmonious management of companies while protecting the interests of shareholders. Jensen and Meckling (1976) show a positive correlation between the property rights held by managers, i.e. their capital participation, and the value of the company. Otherwise, increasing managements' equity ownership may be a feasible way to motivate them to work to advance shareholders' interests. This idea is reflected in modern compensation design, whereby equity incentives are granted to managers. According to Harris and Raviv (1979), executive incentives are necessary mechanisms allowing companies to attract, select and motivate highly qualified professionals and create the right incentives to avoid conflicts with shareholders. Indeed, executive compensation is broken down into an agreed fixed wage, a variable bonus based on firm performance, stock options, warrants and free shares. This remuneration includes instruments that align the interests of the executive with those of the shareholders (bonuses, stock options, stock warrants, etc.) but remain risk-free.

Agency theory predicts that executive compensation depends, at list in part, on changes in shareholder wealth. To align executive and shareholder interests, owners must establish incentive contracts and effective monitoring mechanisms within the firm to control managers' discretionary margin. The relationship between executive compensation and corporate performance (*pay-for-performance*) is the subject of an extensive literature. Jensen and Murphy (1990) find that a remuneration policy linked to the company's performance is

expected to align the interests of executives and shareholders. They state that firms that focus on equity-based payments perform significantly better than those who prefer cash compensation. Equity-based payments or cash bonuses depend on stock returns, because these methods reward executives for good stock return performance. Consequently, this mechanism is good for shareholders, although executives cannot totally control the stock price. A study by Mehran (1995) presents empirical evidence on pay and performance using Tobin's Q and return on asset proxies.

Hall and Liebman (1998) use other performance measures on a more complete sample and integrate all components of executive compensation. The authors detect a low sensitivity of fixed payroll and bonus compensation to stock price fluctuations. On the other hand, the portion of compensation composed of stock options and shares is very sensitive to such fluctuations: for a 10% increase in the value of the firm, the variable portion of compensation increases by $1.25 million. They conclude that, contrary to the results of Jensen and Murphy (1990), US managers are not paid like bureaucrats but rather according to the performance of the firms they manage. Core and Guay (1999) show that annual grants of stock options are adjusted to bring deviations in the incentive effect of the manager's portfolio of options toward a certain target incentive level. This result suggests that the current year's grants of stock options should be linked to the value of the option portfolio at the beginning of the year. This relationship can be positive or negative. It depends on whether the current option portfolio is below or above the optimal target incentive level. For our analysis, consistency of opinion between management and shareholders stimulated by an incentive compensation plan could mitigate agency problems and reduce firms' costs in making material financial decisions. This helps to minimize the cost of adjustment required to achieve the optimal capital structure.

3.2.4 Ownership concentration. Jensen and Meckling (1976) define the ownership structure by the distribution of equity regarding votes and capital as well as the identity of the equity owners. The shareholding structure of a company is likely to influence the implementation of governance mechanisms within it. Indeed, the level of involvement of a shareholder in the control of managers will vary depending on her direct shareholding, as well as on her investment horizon and objectives. In this vein, Demsetz and Lehn (1985) and Shleifer and Vishny (1986) emphasize that the presence of a controlling shareholder acts as a governance mechanism to discipline management and strengthen firm performance. However, Fama and Jensen (1983) argue that controlling shareholders may also take advantage of their position to extract a share of the firm's wealth to the detriment of minority shareholders. According to Shleifer and Vishny (1997), this can lead to an entrenchment of the majority shareholder, which is detrimental to the firm's performance. The link between shareholder concentration and firm performance is therefore not obvious *a priori*.

4. Hypotheses and model specification

4.1 Hypotheses

Based on our theoretical framework, we pose the following two testable questions: *Does the quality of a corporate governance system (good corporate governance practices) affect the extent to which a company deviates from its target capital structure*? *Does the corporate governance arrangements affect a firm's speed of adjustment toward its target capital structure*? *Does the gender diversity significantly affect capital structure decisions*? First, we investigate the relationship between firms' initial deviation and governance quality. Then, we examine whether dynamic capital structure adjustment is correlated with the quality of corporate governance that firms have in place.

Good corporate governance ensures the company's management makes decisions in the best interests of the company and thus significantly contributes to companies'

competitiveness and maximizes shareholder wealth. The prediction of tradeoff theory is that any deviation from the optimal capital structure leads to a less than optimal firm value. The further the capital structure from the target, the greater is the value loss from not adjusting, as costs increase at a much higher rate than benefits. Consequently, a strong governance system, relative to a weak governance system, can ensure greater incentives for managers to stay closer to the target. Drawing on the analysis presented in the literature review and under the assumption of a positive correlation between the costs generated by the deviation of the debt level from the target level and the extent of this gap, we hypothesize the following:

H1. The initial deviation from the target capital structure will be shorter in duration for a firm with good corporate governance than for a firm with poor corporate governance.

According to Huse and Grethe Solberg (2006), Adams and Ferreira (2009) and Gul *et al.* (2011), women on a board are better able to control management effectively than their male colleagues. Gender diversity in the boardroom can serve as substitutes for weak corporate governance as it provides additional monitoring. Consequently, Adams and Ferreira (2009) and Carter *et al.* (2010) argue that the agency costs resulting from the separation between ownership and control can be significantly reduced. We assume that a diverse board also improves the working of the board as board members exercise their impact on a firm's conduct mainly by attending meetings. Furthermore, women are not just appointed as tokens to the board as they have a lasting effect on the attending behavior of male board members. Additionally, they tend to be part of more monitoring related committees (audit or corporate governance) than male board members. On the other hand, from an empirical point of view, the direction of the relationship between the representation of women on the board and the capital structure decision of the company remains unclear. Therefore, it seems reasonable to assume that the corporate governance level of a firm is crucial concerning the extent of the effect of gender diversity in the board on the dynamics of capital structure. Hence, the second hypothesis to analyze the speed of adjustment toward the target leverage ratio and the moderating role of board gender diversity is as follows:

H2. The initial deviation from the target capital structure will be shorter in duration for a firm with a high proportion of women on the board.

The first hypothesis prevails even in the absence of adjustment costs. In fact, the leverage deviation from the target across firms depends on the quality of corporate governance, with the firm with a stronger governance system having a smaller divergence from the target than one with weaker governance. On the other hand, we posit that the longer the duration of a firm's deviation from its target capital structure, the higher is the present value of the losses it sustains. This potentially incentivizes a firm with a stronger corporate governance system to take a process of corrective actions at a faster rate than that of its counterpart with a weaker system. Additionally, Jiraporn *et al.* (2012) argue that firms with higher corporate governance quality suffer fewer agency conflicts. In other words, inside these firms, it is easier to promote transparency and reduce and solve agency problems. Accordingly, firms characterized by a good corporate governance system face lower adjustment costs than those with a poor system. Thus, our second hypothesis is as follows:

H3. The former group will display a faster rebalancing speed toward the target capital structure than the latter group.

4.2 Econometric models

Following Flannery and Rangan (2006), our primary leverage measure is a firm's *market debt ratio*, defined as follows:

$$MDR_{i,t} = \frac{D_{i,t}}{D_{i,t} + S_{i,t}P_{i,t}}, \quad (1)$$

where $D_{i,t}$ denotes the financial debt of firm i at time t, $S_{i,t}$ equals the number of common shares outstanding at time t and $P_{i,t}$ denotes the price per share at time t.

Flannery and Rangan (2006) argue that when there are no market frictions and imperfections (e.g. taxes, costly financial distress/bankruptcy, agency problems and asymmetric information), firms maintain a target level of leverage. However, the importance of the adjustment costs may hinder firms from aligning their capital structures immediately toward their target levels because they can compensate for the adjustment costs with their operating costs, even with suboptimal leverage. To study the capital structure behavior of firms, Jalilvand and Harris (1984), Fama and French (2002), Flannery and Rangan (2006), Lemmon *et al.* (2008), and Huang and Ritter (2009) suggests the use of a partial adjustment model. Thus, for our study, a regression specification is used to test for tradeoff leverage behavior by each firm over time, whereby deviations from target leverage are not necessarily offset quickly. These requirements are satisfied by a model with partial adjustment toward a target leverage ratio that depends on firm characteristics such as that in Flannery and Rangan (2006). Furthermore, Byoun (2008) shows that transaction costs are important determinants of capital structure decisions. The presence of high transaction costs prevents the company from attaining its target leverage level, and the adjustment process depends on the tradeoff between the observed leverage and the cost of adjustment toward the target level. If we assume a frictionless economy, the unobserved target leverage ratio ($Lev^{*}_{i,t}$) of firm i over time t can be considered as follows:

$$Lev^{*}_{i,t} = \beta X_{i,t-1} + \varepsilon_{i,t}, \quad (2)$$

where β is a coefficient vector of the parameters estimated from a fixed effects regression of leverage on its determinants, $X_{i,t-1}$, and $\varepsilon_{i,t}$ is the error term. Under the tradeoff hypothesis, $\beta \neq 0$, and the variation in $Lev^{*}_{i,t}$ should be nontrivial. This tradeoff suggests that firms adjust their current leverage (the change in observed leverage is measured by $Lev_{it} - Lev_{it-1}$), Lev_{it}, with a certain adjustment coefficient, λ_{it} (which takes a value between 0 and 1) to attain their target leverage ratio (the target change is measured by $Lev^{*}_{it} - Lev_{it-1}$) as follows:

$$Lev_{i,t} - Lev_{i,t-1} = \lambda_{it}\left(Lev^{*}_{i,t} - Lev_{i,t-1}\right) + \varepsilon_{it} \quad (3)$$

The rebalancing speed toward the target leverage ratio is estimated by $1/\lambda_{it}$. If $\lambda_{it} = 1$, it indicates complete adjustment (between $t-1$ to t), and the leverage ratio of firm i is at the optimal point ($Lev_{it} = Lev^{*}_{it}$). Otherwise, if $\lambda_{it} = 0$, there is no adjustment, and the leverage during period t is equal to its level in t–1. Indeed, the adjustment process is regularly carried out by each firm to cover the gap between the observed leverage ratio and the optimal point. Following Flannery and Rangan (2006), substituting (2) into (3) and rearranging, we empirically estimate Model (4) for the speed of adjustment toward the target leverage ratio as follows:

$$Lev_{i,t} = \lambda\beta X_{i,t-1} + (1-\lambda)Lev_{i,t-1} + \varepsilon_{it} \quad (4)$$

The equation indicates that managers take *action* or *steps* to close the gap between where they are ($Lev_{i,t}$) and where they wish to be ($\beta X_{i,t-1}$). In addition, the firm's observed debt ratio is converging toward its target level. Moreover, the impact of the firm-specific capital structure determinants ($X_{i,t-1}$) is given by its estimated coefficient, divided by λ. Small and Hsiao (1985) point out that the coefficients of the simple linear regression model are potentially biased due to the correlation between unobservable firm-specific effects and the residual of the lagged

dependent variable. Using linear panel data, Byoun (2008) and Flannery and Rangan (2006) consider fixed effects and allow firms to target leverage to move over time. From this same perspective but using a different econometric technique, Lemmon *et al.* (2008) show that the financial structure of the firm converges toward its target level with a flat debt level. This consequently is reflected, according to the authors, by the existence of a transitional and permanent component of the financial structure of companies. Furthermore, they find that in the majority of cases, the gap with the target level is due to unobserved fixed effects. Petersen (2009) underlines that the pooled ordinary least squares approach excludes initial leverage and assumes that the errors are possibly heteroskedastic and autocorrelated within firms.

To model the target debt ratio, consistent with the literature, we use firm characteristics as explanatory variables. Our first step consists of employing a Tobit regression with double censoring (*from zero to one*) to estimate equation (4). The second step consists of estimating the speed of adjustment toward target leverage using equation (3). Mukherjee and Wang (2013) consider two factors related to firms' adjustment, namely, the baseline speed (homogenous factor), λ_0, and the starting deviation speed (heterogeneity factor), λ_1. Assuming that the two speeds are constants for all firms, the model can be addressed as follows:

$$Lev_{i,t} - Lev_{i,t-1} = \left(\lambda_0 + \lambda_1 \left| Lev^*_{i,t} - Lev_{i,t-1} \right| + \gamma I_H\right)\left(Lev^*_{i,t} - Lev_{i,t-1}\right) + \varepsilon_{it}, \quad (5)$$

where I_H is an indicator equal to 1 if the beginning leverage, $L_{i,t-1}$, is greater than 0.9. Therefore, following the heterogeneous capital structure adjustment literature, our estimations involve two stages described by equations (4) and (5).

To test hypothesis H1 and H2 on how the quality of the governance system and gender diversity affects the initial deviation from the target leverage, we specify a model as follows:

$$Lev_{i,t} - Lev_{i,t-1} = \beta_j Gov_{i,t} + \varepsilon_{i,t}, \quad (6)$$

where Gov_{it} is the governance variable for firm i at time t (with j being the number of governance proxies). It should be noted that the duration of divergence from the target leverage should be shorter for firms with a good corporate governance system. Consequently, it is expected that the coefficients of the governance proxies (β_j) will be negative.

Following the model for heterogeneous capital structure adjustment, we test hypothesis H3 using the following model:

$$\begin{aligned} Lev_{i,t} - Lev_{i,t-1} = {} & \lambda_0\left(Lev^*_{i,t} - Lev_{i,t-1}\right) + \lambda_{1,j}\left(Gov_{i,t} \times \left(Lev^*_{i,t} - Lev_{i,t-1}\right)\right) \\ & + \lambda_{1,k}\left(Control_{i,t} \times \left(Lev^*_{i,t} - Lev_{i,t-1}\right)\right) + \varepsilon_{i,t}, \end{aligned} \quad (7)$$

where Lev_{it}, $Lev^*_{it} - Lev_{i\,(t-1)}$, and $Gov_{i,t}$ are estimated as in equation (5) and $Control_{i,t}$ includes control variables for firm i at time t.

5. Variable definition and data

5.1 Corporate governance measures

The corporate governance system is multidimensional; in any country, it is determined by several factors. It should exert distinct impacts in allowing the capital structure to reach its optimal level. In this study, we employ two methods to determine the corporate governance system of a firm as follows.

5.1.1 Governance indicators. Larcker *et al.* (2007) argue that inconclusive results in previous corporate governance research could be caused by using less reliable and valid measures or proxies. To ensure the consistency of the regression coefficients and avoid possible autocorrelation among corporate governance variables, they suggest the use of

multiple proxies. In addition, Agrawal and Knoeber (1996) and Bowen *et al.* (2008) recommend not ignoring the interrelationship among governance measures to prevent studies from falling into spurious inferences. The relevant governance variables that affect leverage decisions in our study are as follows:

(1) *Board composition.* Following Coles *et al.* (2001), we use four measures of board composition: (1) board size (*BSize*), which is taken to refer to the total number of members serving on a firm's board; (2) the percentage of outside directors (%*Outside*); (3) for gender diversity, the proportion of women on the board (*GenD*); and (4) chief executive officer duality of board chair (*CEO-duality*). According to Finkelstein and D'Aveni (1994) the duality aims to facilitate decision-making procedures within a firm.

(2) *Managerial incentives.* According to Jensen and Murphy (1990), performance sensitivity in CEO pay is a fundamental question in helping to determine the optimal executive compensation with a view to creating value in the eyes of shareholders. We measure management incentives (*ManInc*) by dividing the average value of compensation for the top 5 executives (salary, bonuses, shares or call options on the company stock and benefits) by the total compensation of all employees. The more managerial incentives incorporated into CEOs' compensation, the better are the governance effects from the alignment of agency conflicts.

(3) *Ownership concentration variables.* A study by Gompers *et al.* (2003) reveals that firms with good corporate governance are characterized by better profits and lower capital expenditures. Following Thomsen *et al.* (2006), we compute blockholder ownership (*BlocOw*) as the aggregation of all direct and indirect fractions held by shareholders who own voting shares above 5% of the company total. To capture the role played by institutional investors, we compute the variable *InsOw* by dividing the shares held by institutions by the number of shares outstanding.

Good corporate governance may play a vital role in the determination of the capital structure and may save on the costs of adjustment to the target leverage. Indeed, an effective board, an incentive compensation plan for management, and ownership monitoring indicate strong governance mechanisms. We expect that a good governance system negatively influences the initial deviation from the target leverage level. Moreover, strong governance mechanisms should produce a faster capital structure adjustment than weaker mechanisms.

5.1.2 Governance index prediction. Certain research has tried to synthesize governance quality into an index. Gompers *et al.* (2003) compute a governance index based on 24 governance provisions that are aimed at reducing shareholders' rights in the event of a takeover and that can be interpreted as an increase in the power of managers. These provisions are represented by binary variables. Hence, if the firm opts for a certain provision, the authors add one point to the calculated score; otherwise, the score remains unchanged. The index is a number from 0 to 24; a score lower than 5 indicates good governance, whereas a score higher than 15 indicates bad governance. In a recent paper, Bebchuk *et al.* (2013) examine the provisions composing the Gompers *et al.* (2003) index and develop an "entrenchment" index based on only six provisions. The authors demonstrate that the eighteen remaining provisions are uncorrelated with firm performance. For them, the six selected provisions in their index are enough to provide guidelines on a company's governance situation.

The Gompers *et al.* (2003) approach is widely used in the finance literature; for example, Klock *et al.* (2005) examine the relation between the governance index and firm value from the perspective of bondholders. However, for our study, following Bebchuk *et al.* (2013), we propose to construct a simplified governance index (SG-index) without antitakeover provisions because

it may be difficult for such provisions to affect a firm's capital structure. The SG-index comprises all dimensions influencing corporate finance decisions: (1) board efficiency (*BSize*) – we add 1 point to the SG-index if the board size is less than the median board size in the sample; (2) board independence (*%Outside*) – this measures the percentage of outsiders on the firm's board minus the median percentage of outsiders represented in the sample; (3) conflict of interest (*CEO-duality*) – this indicates if the CEO is also the chair (duality = 0); (4) managerial incentives (*ManInc*) – high managerial incentives are those greater than the median value of whole sample; (5) better monitoring system (*InsOw*) – this indicates that the institutional ownership percentage is greater than the median value of whole sample; and (6) ownership concentration (*BlocOw*) – this indicates that the percentage of shares held by blockholders is higher than the median value of sample. The SG index score has a range from 0 to 6, with 0 being the best governance outcome and 6 the worst. If a company has an SG-index value of 0, it is a democracy, and if it has a value greater than 5, it is a dictatorship.

5.2 Control variables

Welch (2004) argues that stock returns determine the capital structure and mentions that stock returns can explain approximately 40% of the debt ratio dynamics. To test H1 and H2, we use the absolute value of the stock return as a control variable ($|\boldsymbol{StRet}|$). In H3, we use a set of firm characteristics that appears widely in the literature including the following:

(1) *Initial deviation* (*InDev*): Following Mukherjee and Wang (2013), we measure the initial deviation as the absolute value of the deviation from the target leverage.

(2) *Operating cash flow* (*CF*): Faulkender *et al.* (2012) define a firm's operating cashflow (*or financing deficit*) as: $CF_{i,t} = \frac{OIBD_{i,t} - T_{i,t} - Int_{i,t}}{A_{i,t-1}} - CapEx_t$,
where $OIBD_{i,t}$ is the operating income before depreciation, $T_{i,t}$ is the total taxes allocated on the income statement, $Int_{i,t}$ is the interest paid, $CapEx_t$ is the capital expenditures, and $A_{i,t-1}$ is the value of total assets at the end of fiscal year $t-1$.

(3) *Firm size* (*FSize*): Based on the preliminary evidence of partial adjustment given by Jalilvand and Harris (1984), we use the firm size factor (*logarithm value of total assets*) to explain capital market conditions that influence the speed through adjustment costs.

(4) *Dividend*: Fama and French (2002) argue that firms can adjust leverage toward the target internally by keeping profits as retained earnings or pay them out as dividends. Thus, the variable (*dividend*) takes the value of 1 if the firm pays dividends during the fiscal year and 0 otherwise.

5.3 Sample design and descriptive statistics

The sample is based on the period 2010–2018 and covers all firms included in the SBF120 index (the largest companies by market capitalization and by trading volumes) on Euronext Paris. The SBF 120 firms turned out to be the only ones for which we were able to find sufficient data on the composition of the boards and other information on governance variables. Moreover, this index is also considered to be the most representative of the various activities of the French economy. Consistent with Fama and French (2002), we first exclude financial firms and regulated firms since their capital structure decisions might be determined by special factors. From this initial sample, we further exclude certain companies: (1) firms that do not publish the individual and nominal compensation of the CEO and (2) joint-stock companies (*sociétés en commandites par actions*) since by statute, their CEOs are paid based on profits.

We collect 1,080 observations-years for the period of study, and we also remove outliers, using the Mahalnobis distance for all variables. A firm has a significant Mahalnobis distance, and thus represents an outlier when this distance is higher than the χ^2 (k) statistics. We compute the Mahalnobis distance for all the firms of our initial sample, detected outliers, eliminate them and our final sample is made up of 112 companies and 1,008 observation-years over the study period. The initial CEO compensation data and firm-specific data come from the widely used DIANE database (*Bureau van Dijk*). We obtain stock market-related data from the Thomson DataStream database. The summary statistics for the variables under consideration, as indicated in the research constructs, are provided in Table 1. We winsorize all variables at the 1st and 99th percentiles to avoid the influence of extreme values. In panel A, on average, the value of the market debt ratio is 0.214, the target leverage ratio is 0.235, and the deviation from this target leverage is 0.025.

Panel B shows that the average board size of our sample is 11.013 members, with a pattern deviation of 3.01. This result is similar to Shivdasani and Yermack (1999) for a sample of US firms, which have an average board size of 11 members. It is also observed that the average percentage of outside directors is 47.10%, with a pattern deviation of 0.191. This percentage is similar to that reported in Li (1994) for European countries. Concerning CEO duality, the average is 0.645, with a pattern deviation of 0.401. According to Ong and Wan (2001), CEO duality reduces the level of effort spent on monitoring and controls. In fact, the more that companies practice CEO duality, the lower is the presence and use of knowledge and skills, and the greater is the level of cohesion between the company and the CEO/chair. However, the effects of corporate control actions are also lower, as the same person monitors, controls and makes decisions related to management. Our results show that institutional ownership and blockholder ownership present averages of 28.1% and 43.1%, respectively, with pattern deviations of 0.16 and 0.17.

We observe that incorporation of women on the board is very high in France than in other developed countries. In these supervisory bodies of SBF 120 companies, parity is becoming a reality. Women hold 28.35% of directorships during the study period,

Variable	Mean	Median	Std. Dev.	Min.	Max.
Panel A. Leverage variables					
Market debt ratio	0.214	0.161	0.161	0.145	0.899
Target market debt ratio	0.235	0.175	0.137	0.010	0.750
Deviation from target leverage	0.031	0.025	0.141	−0.509	0.495
Panel C. Corporate governance variables					
Board size (*BSize*)	11.013	10.751	3.012	4.000	15.00
Percent of outside director (%*outside*)	0.527	0.465	0.191	0.000	0.675
CEO-duality	0.645	0.431	0.401	0.000	1.000
Gender diversity (*GenD*)	0.2835	0.2501	0.1474	0	0.6017
Institutional ownership (*InsOw*)	0.281	0.175	0.161	0.123	0.720
Blockholder ownership (*BlocOw*)	0.431	0.307	0.172	0.051	0.725
Management incentive (*ManInc*)	0.352	0.281	0.197	0.000	0.895
Simplified governance index (*SG-index*)	2.109	2.052	1.317	0.000	6.000
Panel D. Control variables					
Stock return	0.079	0.065	0.471	0.002	7.128
Initial deviation (*InDev*)	0.112	0.110	0.105	0.000	0.498
Dividend	0.634	0.501	0.532	0.000	1.000
Operating cash flow (*CF*)	0.043	0.039	0.121	1.351	0.509
Total assets	2,151.14	1,905.15	5,781	31.57	175,602
Firm size (*FSize*): *Ln*(*Total asset*)	4.521	4.021	1.408	2.702	12.007

Table 1.
Summary statistics
(402 *observation-years*)

compared to 12.5% in 2010. This gain is primarily owing to the Copé-Zimmermann law, promulgated on January 27, 2011. This law set a quota of 40% of women administrators by 2017, with a first step at 20% in 2014. A real success. In 2018, more than twenty companies had at least 50% female directors, with some companies (example: Sodexo, Kering, Ipsos or CGG) even displaying a 60% female rate. As a result, France stands out today at the international level. The results indicate that in terms of management incentives, total compensation is approximately 35.2% of total employee compensation. Our simplified governance index has a mean value of approximately 3.6 within the range of 0–8. Therefore, overall, the companies in the sample are characterized by good practices in their corporate governance systems. Finally, in panel C, the mean value of total assets is 2,151.14 (million euros), indicating that the firm size in our sample in general is large and that the firms have corporate governance variables available.

To test the direction and magnitude of the linear relationship between the dependent, explanatory and control variables employed for the target capital structure and analysts' forecast factor models, we use a Pearson correlation matrix. As shown in Table 2, the Pearson correlation coefficients appear to be relatively low, and there are no correlations between the variables, except for the correlation between institutional and blockholder ownership, which reaches 0.47. As this coefficient is relatively high, we must avoid the multicollinearity problem when we build our regression model. We propose to employ two different versions of the model regressions: one that excludes blockholder ownership and one that excludes institutional ownership. Besides, the value of Variance Inflation Factor (VIF) for both variables are below 10.00, with a value of 1.04. Based on these tests, it can be concluded that there is no multicollinearity [4] between independent variables in the regression model.

6. Empirical results

6.1 Relation between initial deviation and corporate governance

To test hypothesis H1 on how the quality of the governance system affects the initial deviation from the target leverage, we estimate equation (6) by proxies for corporate governance quality including institutional ownership for Model (1), blockholder ownership for Model (2) and gender diversity for Model (3). Afterwards, estimation of Model (4) is based on the governance index created by relevant dimensions of governance in affecting the capital structure. Indeed, Welch (2004) argues that the stock return determines the capital structure, which is why stock return is a control variable in this model. Table 3 presents the coefficient estimations for the different models.

Table 2.
Pearson correlation coefficients among independent variables (1,008 *observation-years*)

Variables	*VIF*	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
[1] *iInDev*		1.00									
[2] *BSize*	2.06	0.05$^{\alpha}$	1.00								
[3] i%*Outside*	1.57	−0.03	0.08$^{\alpha}$	1.00							
[4] *iCEO-Duality*	1.79	0.02	0.05$^{\alpha}$	0.09$^{\alpha}$	1.00						
[5] *ManInc*	1.19	−0.08$^{\alpha}$	0.06$^{\alpha}$	0.06$^{\alpha}$	0.05$^{\alpha}$	1.00					
[6] *iInsOw*	1.49	−0.06$^{\alpha}$	−0.06$^{\alpha}$	0.29$^{\alpha}$	−0.01	0.11$^{\alpha}$	1.00				
[7] *iBlocOw*	1.65	0.04	−0.21$^{\alpha}$	0.14$^{\alpha}$	−0.03	−0.10$^{\alpha}$	0.47	1.00			
[8] i|*StRet*|	1.82	0.13$^{\alpha}$	−0.14$^{\alpha}$	−0.03	−0.02	0.05$^{\alpha}$	−0.04$^{\alpha}$	−0.04	1.00		
[9] i*SG-index*	1.19	−0.07$^{\alpha}$	−0.29$^{\alpha}$	0.31$^{\alpha}$	−0.28$^{\alpha}$	0.28$^{\alpha}$	0.41$^{\alpha}$	0.31$^{\alpha}$	0.03	1.00	
[10] *GenD*	1.38	0.28$^{\alpha}$	0.17$^{\alpha}$	0.22$^{\alpha}$	−0.21$^{\alpha}$	−0.13	0.17$^{\alpha}$	0.09	0.05	0.16$^{\alpha}$	1.00

Note(s): $^{\alpha}$Indicate the statistical significance of correlation at the 1% level

Variable	Model 1	Model 2	Model 3	Model 4
Constant	0.732 (0.401)	0.644 (0.368)	0.246* (0.098)	0.175 (0.328)
Stock return	0.029*** (0.000)	0.031*** (0.000)	0.027*** (0.000)	0.033*** (0.000)
Board size (*BSize*)	0.017*** (0.000)	0.031*** (0.000)	0.023*** (0.000)	
CEO-duality	0.001* (0.051)	0.004** (0.031)	0.009** (0.065)	
% of outside director (%outside)	−0.005 (0.271)	−0.021 (0.259)	−0.019 (0.351)	
Management incentive (*ManInc*)	−0.041*** (0.000)	−0.040*** (0.000)	−0.038*** (0.000)	
Institutional ownership (*InsOw*)	−0.031*** (0.051)			
Blockholder ownership (*BlocOw*)		−0.033*** (0.000)		
Gender diversity (*GenD*)			0.169** (0.033)	
Simplified G-index (*SG-index*)				−0.011*** (0.000)
Adjusted R^2	0.247	0.221	0.229	0.199
Number of observations	1,008	1,008	1,008	1,008
F-statistic/wald	10.18*** (0.000)	10.45*** (0.000)	11.26*** (0.000)	4.18*** (0.000)

Note(s): *p*-values are shown in brackets. ***, **, and * indicate that coefficient estimates are significant at the 1%, 5% and 10% levels of significance, respectively. Wald test is a test of joint significance of the estimated coefficients which is asymptotically distributed as Chi- Square under the null of no relationship. The Wald test results conclude that the models are correctly specified

Table 3.
Initial deviation and corporate governance

In Model (1), the coefficient estimations show that most governance indicators are significant, except for the percentage of outside directors. Our results indicate that firms characterized by a large board size, CEO duality, low participation by institutional investors on the board, and low managerial incentives have large initial deviations from the target. In Model (2), the result is statistically significantly positive for the relation between blockholder ownership and the initial deviation. This result is in opposition of our prediction based on the literature, which shows that the ownership concentration may work in the interests of shareholders. According to Zhong *et al.* (2007), blockholder ownership is positively correlated with income-increasing discretionary accruals for firms with declining revenues. Moving to the moderating effect of gender diversity on the adjustment speed, the results in Model (3) expose a positive effect and only significant at the 5% level. Thereby, we except the second hypothesis. This denotes that when the proportion of women in the boardroom increases the adjustment speed to the optimal target leverage ratio. Finally, the results in Model (4) indicate a significant negative coefficient between the initial deviation and the governance index. Our result is consistent with the hypothesis (H1) that firms with stronger governance stay closer to the target.

The second step of our empirical study is to examine the validity of the above finding. Therefore, we compare corporate governance quality at different leverage levels. In other words, firms with a good governance system might decide to deliberately remain deviated from the target ownership structure. Indeed, de Haas and Peeters (2006) argue that overleveraged firms may be expected to reach their target leverage faster as long as their repayment capacity permits. They also observe that firms prefer internal finance over bank debt and adjust leverage only slowly. We expect that a firm with a good governance mechanism takes the right actions to avoid extreme deviations from its target. Thus, we split our sample using the simplified governance index: firms with a stronger governance system, which have an index score of 5 or above, and those with a weaker governance system, which have a score of 1 or below. We examine two levels of under- or over-leverage: 1 and 1.5 standard deviations (σ) from the target.

Table 4 presents the results for the comparison of governance quality at different leverage levels. Our results show that 15.48% and 19.05% of our sample are characterized as firms with stronger and weaker corporate governance, respectively. Our findings corroborate our expectation that firms with weak corporate governance are associated with extreme leverage. In fact, we find that firms with the strong form of corporate governance in the two categories is significantly greater than their proportion in the full sample. In addition, the results in panels A and B reject the null hypothesis of the χ^2 test that governance quality and target leverage structure deviations are independent. Accordingly, our results confirm the existence of a relation between corporate governance quality and the initial deviation from the target capital structure.

6.2 Capital structure adjustment and corporate governance

In what follows, we present and discuss the main results of how corporate governance quality affects the speed of adjustment toward the target capital structure. We estimate regression (7) and are interested in $\lambda_{1,k}$, the coefficient associated with $Gov_{i,t} \times (Lev^{*}_{i,t} - Lev_{i,t-1})$, the interaction between governance and deviations. In Models (1) and (2) (Table 5), our results indicate that CEO duality, outside board members and managerial incentives are significantly positive at the 1% level. These three governance proxies tend to significantly increase the speed of adjustment toward the optimal capital structure. The combined coefficient of these factors is 0.257, implying an important capital structure adjustment. For example, if a firm has a 10% better governance quality than another, that is, the adjustment

Leverage level	Full sample *N*	Strong governance *N*	Strong governance Percentage	Weak governance *N*	Weak governance Percentage	Difference
Whole sample	1,008	156	15.48%	192	19.05%	3.57%
Panel A: Beyond 1 time σ from the target						
Underleverage	133	17	12.78%	21	15.79%	
Difference with whole sample			−1.78%*** (0.001)		2.16% (0.191)	3.94%
Overleverage	142	23	16.20%	29	20.42%	
Difference with whole sample			−1.92%*** (0.001)		0.87% (0.350))	2.79%
χ^2 *test of independence*						12.73*** (0.000)
Panel B: Beyond 1.5 time σ from the target						
Underleverage	46	13	28.26%	17	36.96%	
Difference with whole sample			−1.77%** (0.041)		2.06%** (0.031)	3.83%
Overleverage	77	15	19.48%	31	40.26%	
Difference with whole sample			−1.95%* (0.051)		0.99% (0.454)	2.99%
χ^2 *test of independence*						11.06*** (0.000)

Note(s): *p*-values are shown in brackets. ***, **, and * indicate that coefficient estimates are significant at the 1%, 5% and 10% levels of significance, respectively. A stronger (weaker) governance with governance score 5 or above (1 or below). We consider a firm severely underleveraged (overleveraged) when its leverage is more than −1.5 (+1.5) standard deviations away from the target. The difference with whole sample in different target deviation level is conducted by two-sample *T*-test. Indeed, we use a chi-square test for independence to determine whether governance quality is related to deviation from target leverage level

Table 4.
Corporate governance quality in different leverage levels

Variable	Model 1	Model 2	Model 3	Model 4
Constant	0.629 (0.461)	0.691 (0.398)	0.198 (0.231)	0.108 (0.297)
Adjustment level (λ_0)	0.021 (0.451)	0.025 (0.422)	0.031 (0.451)	0.124*** (0.000)
$\lambda_{1,j} \times BSize$	0.006 (0.151)	0.005 (0.501)	0.010* (0.031)	
$\lambda_{1,j} \times$ CEO-Duality	0.055*** (0.000)	0.049*** (0.001)	0.062*** (0.000)	
$\lambda_{1,j} \times$ %outside	0.105*** (0.002)	0.121*** (0.003)	0.948*** (0.000)	
$\lambda_{1,j} \times ManInc$	0.097*** (0.004)	0.101*** (0.001)	0.079*** (0.002)	
$\lambda_{1,j} \times InsOw$	0.051 (0.251)			
$\lambda_{1,j} \times BlocOw$		−0.078 (0.301)		
$\lambda_{1,j} \times SG\text{-}index$				0.011 (0.608)
$\lambda_{1,j} \times GenD$			0.063** (0.029)	
$\lambda_{1,k} \times InDev$	0.201*** (0.002)	0.199*** (0.005)	0.175*** (0.000)	0.141* 0.059
$\lambda_{1,k} \times Firm\ Size$	−0.011 (0.401)	−0.001 (0.495)	−0.006 (0.401)	0.011* 0.065
$\lambda_{1,k} \times Dividend$	−0.071*** (0.002)	−0.069*** (0.001)	−0.052*** (0.000)	−0.087*** (0.004)
$\lambda_{1,k} \times \lvert CF \rvert$	−0.001 (0.804)	−0.021 (0.781)	−0.005 (0.604)	0.051 (0.633)
Adjusted R^2	0.197	0.191	0.220	0.177
Number of observations	1,008	1,008	1,008	1,008
F-statistic/wald	8.49*** (0.000)	9.01*** (0.000)	11.26*** (0.000)	6.21*** (0.000)

Note(s): p-values are shown in brackets. ***, **, and * indicate that coefficient estimates are significant at the 1%, 5% and 10% levels of significance, respectively

Table 5. Target capital structure and corporate governance

will be faster by approximately 2.57%. It is important to mention that the three significant governance variables are consistent with the results of Mukherjee and Wang (2013). Otherwise, gender diversity and board size are positive and are respectively significant at 5% and 10% levels. This result show that firms with high proportion of women members on the boardroom and larger board size are characterized by a nigh speed of adjustment toward the optimal capital structure.

Model (4) indicates that the governance index is not significant. Firm size increases the adjustment level. The dividend payment coefficient is consistent with the Fama and French (2002) hypothesis that dividend payments decrease the speed of adjustment toward the target capital structure.

As we argue that a firm with good governance may still decide to apply a slow adjustment level up to a certain deviation, we test this hypothesis using equation (3), specifically, the estimation of the value of the adjustment level ($\lambda_{i,t}$). Our results are shown in Table 6, where in panel A we separate the firms into two groups with stronger and weaker governance. The adjustment level for the underleveraged firms with strong governance is 0.30. However, the speed for firms with weaker governance is not significantly different from zero. In panel B,

	Strong governance	Weak governance
Panel A. Underleveraged firms		
$\lambda_{it}(Lev^*_{i,t} - Lev_{i,t-1})$	0.301** (0.041)	0.191 (0.145)
N	13	17
Adjusted R^2	0.101	0.099
Panel B. Overleveraged firms		
$\lambda_{it}(Lev^*_{i,t} - Lev_{i,t-1})$	0.421** (0.021)	−0.124 (0.522)
N	15	31
Adjusted R^2	0.099	0.064

Note(s): p-values are shown in brackets. ***, **, and * indicate that coefficient estimates are significant at the 1, 5% and 10% levels of significance, respectively

Table 6. Capital structure adjustment in different corporate governance qualities

we present the results for the overleveraged group. The speed for the overleveraged firms and strong governance is 0.42, against the weaker group with the results that are not significant. These results corroborate our third hypothesis.

6.3 Robustness tests

This section aims to conduct additional tests to provide assurance that our results are robust. Econometrically, Brown *et al.* (2011) stress that endogeneity [5] is a serious issue in the relationship between a corporate governance mechanism and other matters of finance. To control for different causes of the endogeneity issue and provide robust results, Arellano and Bond (1991) and Blundell and Bond (1998) propose to employ dynamic panel data estimation using the system generalized method of moments (GMM) with robust standard errors. This method can control for the correlation of errors over time, heteroscedasticity across firms, simultaneity, and measurement errors due to the use of orthogonal conditions on the variance-covariance matrix to avoid significantly biased estimates. The dynamic impacts were checked by including a lagged value of leverage ratio variable $Lev_{(t-1)}$ into the study econometric model as an explanatory variable. In addition, we introduce a fixed affect industry dummy (*IndDummy*) variable to control for the fact that the speed of adjustment toward the target capital structure vary across industries. Finally, following Nguyen *et al.* (2015), we control for year fixed effects (*YearDummy*) to capture any variation in the output that exists over time, which reflects macroeconomic fluctuations.

The robustness of the results obtained by the GMM estimation method depends on the validity of the instrumental variables (IV). To check the validity of the IV, Arellano and Bond (1991) propose a second-order serial correlation test of the residual [$AR(1)$ and $AR(2)$] and Hansen's J. test. Table 7 the results for the main regression model using one-year lagged value to mitigate the detrimental influence of any potential endogeneity risk. The results of the GMM models 1 and 2 show an $AR(1)$ test value with a p-value of 0.000, indicating that there is enough lag to control for the dynamic aspect of the empirical relationship. The $AR(2)$ second-order serial correlation test yielded the p-value of 0.205 for model 1 and 0.310 for model 2, which means that the null hypothesis of no serial correlation cannot be rejected. The Hansen's J. test yields a p-value of 0.451 for model 1 and 0.372 for model 2, which means that the instruments' null hypothesis is valid and cannot be rejected at any conventional significance level. Finally, our findings of both GMM and lagged regression models are compatible with the fixed effect result reported in Table 3.

7. Conclusion

Strong corporate governance is one of the most important factors improving firm performance and growth and enhancing investor confidence. It refers to promoting the alignment of interests between managers and shareholders of the firm and minimizing avoidable costs. It also determines the structure by which a company's objectives are defined, as well as the means of achieving them. Good corporate governance helps the board of directors and management attain firm objectives and protect shareholder interests by facilitating the effective monitoring of the results achieved.

The existence of an effective system of corporate governance, both within individual companies and in the economy, contributes to the confidence necessary for the proper functioning of a market economy. This in turn reduces the cost of capital and encourages firms to use their resources more efficiently, thereby supporting growth. Using a dynamic tradeoff model to examine asymmetric capital structure adjustment, Dang *et al.* (2012) show

	GMM Model		Lagged IV	
	Model 1	Model 2	Model 3	Model 4
Constant	1.825*** (0.000)	1.614** (0.025)	1.272** (0.050)	1.627** (0.013)
$Lev_{(t-1)}$	0.065** (0.024)	0.075*** (0.000)		
Stock return	0.035*** (0.000)	0.052*** (0.000)	0.061** (0.041)	0.087*** (0.000)
Board size (*BSize*)	0.032*** (0.000)		0.051*** (0.000)	
CEO-duality	0.006 (0.407)		0.011 (0.522)	
% of outside director (%outside)	−0.009 (0.301)		−0.010 (0.395)	
Management incentive (*ManInc*)	−0.050*** (0.000)		−0.071***(0.000)	
Institutional ownership (*InsOw*)	−0.081*** (0.003)		−0.075*** (0.001)	
Blockholder ownership (*BlocOw*)	−0.021** (0.045)		−0.048** (0.039)	
Gender diversity (*GenD*)	0.101** (0.028)		0.081** (0.035)	
Simplified G-index (*SG-index*)		−0.082*** (0.000)		−0.064***(0.000)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes
Adjusted R^2	0.261	0.249		
Number of observations	1,008	1,000	1,000	1,000
F-statistic	11.42*** (0.000)	13.81*** (0.000)	12.65*** (0.000)	14.22*** (0.000)
Stadard errors	Clustered	Clustered	Clustered	Clustered
Arellano-Bond test for *AR*(1) test (*p*-value)	(0.000)	(0.000)		
Arellano-Bond test for *AR*(2) test (*p*-value)	(0.205)	(0.310)		
Hansen test of over identification (*p*-value)	(0.451)	(0.372)		
Difference-in-Hansen test (*p*-value)	(0.329)	(0.604)		

Note(s): *p*-values are shown in brackets. ***, **, and * indicate that coefficient estimates are significant at the 1%, 5% and 10% levels of significance, respectively. Wald test is a test of joint significance of the estimated coefficients which is asymptotically distributed as Chi-Square under the null of no relationship. The Wald test results conclude that the models are correctly specified

Table 7.
Empirical result for GMM and logged regression

that firms characterized by a budget deficit, significant investment and low profit volatility adjust their financial structure faster than those with the opposite characteristics. Furthermore, they prove empirically, using a dynamic model, that these companies are overleveraged and proceed to increase capital to achieve this adjustment.

Our paper proposes that a firm characterized by a strong governance system will display a shorter-duration deviation from the target capital structure and a higher adjustment level than a firm with weak governance. In other words, we argue that the deviation from the target capital structure and the adjustment level are related to the quality of corporate governance. Our results indicate that firms with a stronger governance structure are characterized by shorter-term deviations from the target. We also find that firms belonging to the two subsamples where leverage deviation is at extremely high or low levels are characterized by a weak governance system. Our results corroborate our hypothesis on the speed of adjustment toward the desired target leverage. Furthermore, we empirically prove that the adjustment level of firms with stronger governance is higher in both extreme leverage situations. This paper extends the existing literature on capital structure adjustment by introducing the effect of corporate governance using different proxies.

Notes

1. For example, the Vienot Report in France, the Sarbanes-Oxley law in the United States, the Cadbury Report in England and the OECD report on "Principles of Corporate Governance."
2. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Risk/gx-risk-women-in-the-boardroom-sixth-edition.pdf
3. https://www.haut-conseil-egalite.gouv.fr/IMG/pdf/livret_-_10_ans_loi_cope-zimmermann-2.pdf
4. Multicollinearity can be seen with the VIF, if the value is less than 10 and the tolerance value is greater than 0.10 then there are no symptoms of multicollinearity.
5. In econometrics, endogeneity broadly refers to situations in which an explanatory variable is correlated with the error term.

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