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The effect of governance quality on capital structure decisions surrounding acquisitions

ABSTRACT

Prior literature argues that corporate governance mitigates agency costs and enhances firm value. However, few papers look at the effect of increases in governance quality and its effect on capital structure decisions, especially the causal relation and surrounding large corporate events. This study argues, in line with agency theory and static trade-off theory, that management might use its discretion to deviate from the optimal leverage ratio to extract private benefits when not disciplined through governance mechanisms. Firms might deviate due to the Overinvestment or Substitution hypothesis, destroying shareholder value in the process. To test whether corporate governance influences capital structure decisions and mitigates these agency costs, a difference-in-difference research design is used on an exogenous shock in governance quality for 3,842 firms in 22 countries. The results show that firms decrease their leverage deviation from the optimal leverage ratio up to 4 years after an increase in governance quality and increase their speed of adjustment. Only weak support is found for the reduction in the use of cash in acquisition payment methods when firms are overleveraged. Additional analysis shows that the main effect is driven by underleveraged firms. Furthermore, the results are robust to alternative and pseudo reforms, and the assumptions of the research design do not appear to be violated. It is therefore argued that corporate governance quality reduces leverage deviation and cash payment used in acquiring overleveraged firms and increases speed of adjustment, as a result of decreased agency costs.

List of content

INTRODUCTION

In 1973, the car rental company Hertz had to reconsider its business model as the petrol stations were running dry and car traffic decreased significantly due to the oil embargo in the US. Hertz responded by changing its capital structure through selling a large part of its fleet and taking on large amounts of debt to repurchase more efficient cars. The change was a success as most competitors failed and Hertz survived and continued to create value for shareholders. However, debt continued to be taken on when the bankruptcy risk increased and the market value of equity plummeted (Vandevelde, 2020). As a result, the shareholders sold the company to three private equity firms in 2005. Without changing the firm's management nor strategy, the new owners doubled their investment by restructuring the capital structure through decreasing the cost of debt and moving the firm back to its optimal leverage ratio. The company was sold only nine months later for twice the purchasing price.

The case of Hertz shows that an optimal capital structure can matter for creating shareholder value around large corporate investments and that increased scrutiny from controlling parties can strengthen this focus. However, although this relation might exist, literature has not yet shown a causal relation between corporate governance quality and capital structure decisions surrounding large corporate investments (Chang, Chou & Huang, 2014). Following the seminal work of Modigliani and Miller (1959), the static trade-off theory argues that firms have an optimal ratio of debt and equity and should strive to reach this point to maximize shareholder value (Myers, 1984). Deviating from this optimal leverage ratio could reduce firm value as the firm either pays too many taxes (underleveraged) or suffers from the consequences of financial distress (overleveraged). Prior literature, therefore, argues that corporate governance mechanisms should monitor whether management optimizes the capital structure to create shareholder value and adjusts deviations from this optimal point (Fama & Jensen, 1983; Abor, 2007).

Nonetheless, firms often deviate from their optimal leverage ratio and the adjustment process takes time (Leary & Roberts, 2005; Faccio & Masulis, 2005). In particular, Myers (1984) argues that firms should adjust as quickly as possible when benefits outweigh costs and finds that firms facing higher adjustment costs take larger deviations away from their optimal leverage and take longer to adjust. These adjustment costs are partially related to agency conflicts between management and shareholders and could therefore be moderated by a firm's corporate governance quality (Chang et al., 2014). Firms with poor corporate governance might have self-interested

managers who would prefer to be overleveraged to defend against potential takeover threats (Berger et al., 1997) or underleveraged to weaken the disciplinary role of debt (Jensen, 1986; Morellec, 2004). In line with this reasoning, Chang et al. (2014) and Morellec et al. (2012) state that firms with weak corporate governance adjust significantly slower to the optimal ratio compared to firms with stronger governance. However, the question remains whether there is a causal link between increases in corporate governance quality and firm's capital structure decisions due to endogeneity concerns in previous literature.

An additional empirical question is whether corporate governance quality influences leverage ratios through acquisition payment decisions. Management often has much discretion in determining the acquisition payment method and can therefore significantly influence post-acquisition leverage outcomes (Uysal, 2011). To prevent managers from structuring acquisition payments to serve their own interest, via moving (or keeping) the company away from the optimal ratio, corporate governance mechanisms should step in and mitigate these agency costs. However, prior literature mainly looks at the separate effects of corporate governance on the leverage deviation (e.g., Morellec et al., 2012; Chang et al., 2014) or the effect of ownership on acquisition payment methods (Gompers et al., 2003; Faccio & Masulis, 2005; Masulis et al., 2007). Furthermore, prior literature on leverage adjustments to the optimal leverage ratio surrounding acquisitions might also suffer from endogeneity concerns. Findings from e.g., Harford et al. (2009) and Uysal (2011) should be interpreted with caution as both capital structure decisions and acquisition payment methods are endogenous. Neither study controls for governance mechanisms, although a relation is argued to exist (Israel, 1991; Gompers et al., 2003). This leaves us with a gab in our knowledge concerning the consequences of different levels of governance quality on the relation between pre-acquisition leverage and the acquisition payment method.

This study therefore seeks to capture the causal relation of corporate governance quality on capital structure decisions and acquisition payment methods by answering the following research question:

"What is the effect of corporate governance quality on capital structure decisions and the payment methods of acquiring firms?"

The paper uses staggered exogenous shocks in governance reforms related to board practices, similar to Fauver et al. (2017) and Bae et al. (2019), to proxy for an increase in governance quality. The sample contains 3,482 firms with 36,388 firm-year observations and 593

acquisitions between 1993 and 2012 for 22 countries that enacted a board reform between 1998 and 2007. This study focuses on governance reforms related to board practices, as boards are a fundamental governance mechanism and a commonly used approach to address governance issues (Fauver et al., 2017; Bae et al., 2019). Board reforms should provide greater oversight by outsiders to discourage managerial expropriation and increase transparency, reducing cost of capital and adjustment costs. Board reforms in this sample are either Comply-or-Explain or Rule-based and focus on independence of the audit committee and auditors, board independence, and restricting CEO duality. To assess the validity of the parallel trend assumption underlaying the Difference-In-Difference (DiD) research design pseudo reform year tests are conducted. The results are also checked for any endogeneity concerns related to the anticipation of a corporate governance reform by firms within a specific country or due to earlier reforms. Furthermore, two additional samples are created to match firms in different countries by year, continent, and firm characteristics. The DiD research design is finished using year and firm fixed effects. The payment method choice is measured using a tobit model with cut-off points at the 0 and 100 percent level.

The ultimate goal of this paper is to shed light on how much attention management pays to leverage ratios when conditional on different levels of corporate governance quality and how corporate governance reforms affect acquisition payment decisions. The relevance of studying leverage decisions and acquisition payment methods simultaneously relates to the significant influence acquisition payments can have on a firm's post-acquisition capital structure and the time it can take to adjust suboptimal deviations. Steering too far away from the optimal leverage ratio or using the acquisition payment to gain private benefits imposes significant costs on shareholders (2 et al., 1983; Huang & Walkling, 1987; Heron & Lie, 2002; Faccio & Masulis, 2005). Increases in corporate governance quality are, therefore, argued to reduce these agency costs as incentives become better aligned with maximizing shareholder value. Based on the findings of Chang et al. (2014), Uysal (2011), and Harford et al. (2009), it is hypothesised that increases in corporate governance quality cause firms to choose capital structures that deviate less from the optimal leverage ratio, adjust quicker to the optimal leverage ratio, and choose a payment method that takes the pre-acquisition deviation into account.

The findings show that firms significantly reduce their leverage deviation up to 0.5 and 0.7 percentage points after exposure to an exogenous shock in governance quality. Firms are also found to significantly increase their speed of adjustment between 5.0 and 7.9 percentage points in the

post-reform period. Regarding the payment method, weak support is found that firms reduce the cash component in their acquisition payment method after increases in governance quality. The assumptions of the DiD research design have not been found to be violated, providing reasonable ground to infer a causal relation for the effect of governance quality on leverage deviation and speed of adjustment. Lastly, the main driver of this effect is related to underleveraged firms, and Rule-based reforms significantly decrease the leverage deviation and the speed of adjustment.

This study contributes to prior literature in a number of ways. Firstly, by providing a way to measure the causal relation of changes in corporate governance quality on capital structure decisions. Secondly, it adds to the discussion on the relevance of optimal leverage ratios, and that management might influence finance decisions to reduce agency costs (Harford et al., 2009; Chang et al., 2014; Uysal, 2011). Controlling parties appear to significantly influence capital structure decisions incentivizing management to move firms towards the optimal leverage ratio and to take pre-acquisition leverage into account when structuring deals. Lastly, studying corporate governance in this setting might provide a solution for the decreasing explanatory power of variables that predict capital structures, since the 1980s (Graham & Leary, 2011). Corporate governance influence increased significantly in the same period and potentially limiting managerial discretion to determine capital structures (Smith & Watts, 1992). This study shows that corporate governance has a significant impact on capital structure decisions, and that this relation could potentially exist.

The paper starts by explaining the core theoretical concepts and literature used for developing the hypotheses. After providing the theoretical bases, the mechanisms and measurements used for the analysis are defined. The results of the analysis are discussed, followed by robustness tests and a discussion on the limitations and possible future research directions. The paper concludes with the final conclusions and implications.

THEORETICAL FRAMEWORK

This section covers the exploration of the theoretical background related to determinants of capital structures and payment methods, and the impact of corporate governance on capital structure decisions. The paper uses a deductive approach for deriving the hypothesis, which implies that existing theory and logical reasoning is used to deduce the hypotheses (Wilson, 2014).

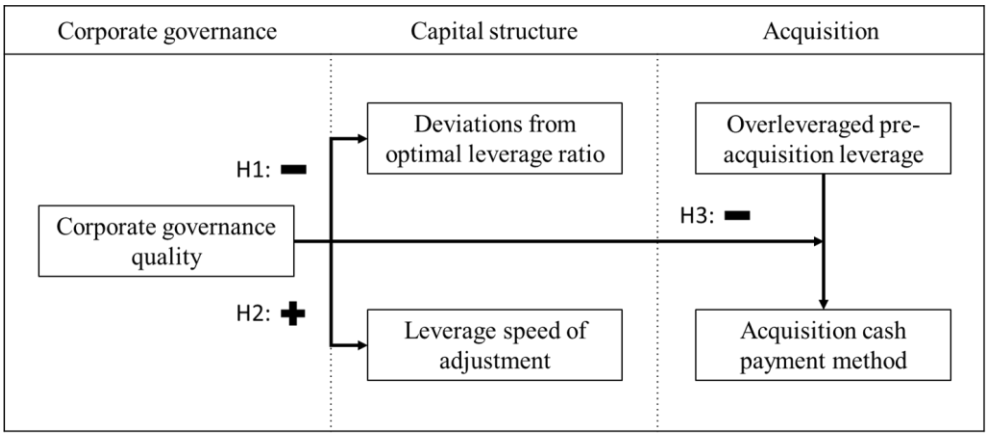


Figure 1. Overview of developed hypotheses

To explore the causal relation between corporate governance quality and capital structure decisions, it is important to first establish the theoretical relation between these two constructs. This relation consists of the effect of corporate governance quality on deviations from the optimal leverage ratio and the speed of adjustment towards this ratio. Secondly, the relation between capital structures and corporate governance quality is linked to acquisitions payment. Figure 1 shows an overview of the relations predicted by the developed hypotheses in this section.

Corporate governance and capital structure decisions

Optimal leverage ratio

The static trade-off theory argues that firms seek to reach an optimal capital structure by balancing the costs of financial distress against the benefits of debt through tax savings (Modigliani & Miller, 1963; Myers, 1984). The costs of financial distress can be related to direct (e.g., liquidation costs) and indirect costs (e.g., loss of clients or suppliers and agency costs due to risk shifting), while the benefits of debt relate to tax savings and the reduction of agency costs resulting from misalignment of interest between shareholders and management (Bradley et al., 1984; Graham & Harvey, 2001; DeAngelo et al., 2011). This study only focuses on the static trade-off theory as prior research already compares different capital structure theories (Fama & French, 2002; Kayhan & Titman, 2007; Graham & Leary, 2011). Furthermore, the adjustment towards optimal debt ratios can be estimated, making it possible to test the hypotheses developed by theory.

The static trade-off theory argues that due to the balancing of benefits and costs of debt financing, firms will adjust their leverage to an optimal level that best serves shareholder interests (Modigliani & Miller, 1963). Prior literature finds, in line with the theory, that firm characteristics

such as growth opportunities, firm size, firm risk, tangible assets, and the marginal tax rate all relate to leverage ratios as is predicted by the static trade-off theory (Titman & Wessels, 1988; Rajan & Zingales, 1995; Graham, 1996; Shyam-Sunder & Myers, 1999; Hovakimian et al., 2001). However, the static trade-off theory fails to correctly predict optimum leverage ratios for highly profitable firms (Shyam-Sunder & Myers, 1999; Graham & Leary, 2011). According to the theory, profitable firms have a large incentive to reduce taxes through high leverage ratios. Nonetheless, highly profitable firms are found to have relatively low leverage ratios indicating that the benefits of the tax shield do not outweigh the cost of high leverage (Fischer et al., 1989).

Furthermore, capital structure ratios are argued to revert back to the optimal leverage ratio (Graham & Harvey, 2001; Fama & French, 2002; Kayhan & Titman, 2007), and, after controlling for adjustments costs, firms could be argued to actively rebalance their capital structure (Leary & Roberts, 2005; Flannery & Rangan, 2006; Danis et al., 2014; Abel, 2018). This study therefore assumes that firms have an optimal leverage ratio based on balancing the costs and benefits of debt versus equity, and that this ratio can be estimated.

Corporate governance quality and leverage

When looking at the relation between corporate governance quality and leverage, prior literature mainly focuses on the effects of corporate governance on performance rather than capital structures (Graham & Leary, 2011; Saad, 2010). In theory, corporate governance seeks to mitigate agency costs between shareholders and management (Fama & Jensen, 1983; Singh & Davidson, 2003). These agency costs are a consequence of the separation of ownership and control, causing the incentives of management and shareholders to be misaligned. This misalignment could allow management to maximize personal utility rather than shareholder value when not properly monitored through corporate governance (Jensen, 1986). For example, executives might get excessive pay (Core et al., 1999) or destroy firm value through poor acquisitions (Hope & Thomas, 2008). To reduce these agency costs shareholders might put corporate governance in place to ensure that the interest of management is aligned with that of shareholders and to minimize agency conflicts (Jensen, 1986). Examples of how management can be disciplined are the market of corporate control, the board of directors, or blockholders (Singh & Davidson, 2003).

However, the quality of different corporate governance mechanisms can differ. For example, the quality of the board of directors is argued to vary based on factors such as the number

of independent board members (Rosenstein & Wyatt, 1990; Kang et al., 2007), the size and tenure of the board (Vafeas, 2003; Huang & Hilary, 2018), and CEO duality (Rechner & Dalton, 1991; Boyd, 1995). Furthermore, the controlling quality of the audit and compensation committees might also increase when members are not appointed by the CEO or have a dependency relation with the CEO (Klein, 2002; Cotter & Silvester, 2003).

In addition, most research on the impact of increases in corporate governance quality and shareholder value is endogenous as firms can choose to increase corporate governance quality voluntarily (e.g., Brown & Caylor, 2004; Bhagat, 2008). Nonetheless, corporate governance research argues that leverage has an important interaction with corporate governance quality and shareholder value (Jiraporn et al., 2012; Detthamrong et al., 2017).

Although corporate governance can influence leverage decisions to maximize shareholder value, management can use leverage decisions to maximize personal utility (Kim & Sorensen, 1986; Jensen, 1986; Harvey et al., 2004; Chang et al., 2014). Corporate governance can influence executive compensation such as stock-compensation (Berger et al., 1997), anti-takeover statutes (Garvey & Hanka, 1999), anti-takeover provisions (Jiraporn & Gleason, 2007), and the board structure (Harford et al., 2008). Through this influence, corporate governance can alter the incentives management receives and monitor capital structure relevant decisions such as large investments. However, poor corporate governance quality can lead to a deterioration of shareholder value as management has the discretion to make self-serving capital structure decisions. For example, previous research argues that boards lacking independent board members are less effective in monitoring management and preventing expropriation, leading to lower governance quality and shareholder value (Rosenstein & Wyatt, 1990; Kang et al., 2007). However, the impact of poor corporate governance quality on capital structure outcomes is mixed as firms with poor governance quality are found to have either significantly lower (Pfeffer & Salancick, 1978; Abor, 2007) or higher debt ratios (Jensen, 1986; Cremers & Nair, 2005). More recent studies, therefore, provide two theoretical views that explain these opposite outcomes for firms with poor corporate governance quality (Chang et al., 2014; Saad, 2010; Butt & Hasan, 2009)

On the one hand, the finding of lower debt ratios is in line with the Overinvestment hypothesis of corporate governance, where executives with large amounts of discretion are more likely to overinvest in value destroying projects to maximize personal utility (Masulis et al., 2017; Hope & Thomas, 2008; Officer, 2011). This reasoning assumes that managers try to keep leverage

low to allow for high free cash flows, which are used to maximize their own utility (Pfeffer & Salancick, 1978; Jensen, 1986). When specifically looking at acquisitions, the managerial literature often classifies this agency problem as empire building (Trautwein, 1990), which could explain insignificant results in prior research where underleveraged firms were not found to anticipate optimal capital structure changes surrounding acquisitions (e.g., Uysal, 2011).

On the other hand, higher debt ratios for firms with poor governance quality is in line with the Substitution hypothesis (Hirshleifer & Thakor, 1992; Berger et al., 1997; Israel, 1991). Executives who feel threatened by the market of corporate control might be prone to increase their leverage beyond the optimal point to fend off potential acquirors. A study from Berger et al. (1997) shows that firms receiving a takeover attempt significantly increase their leverage. Underleveraged firms increase their debt towards the optimal leverage ratio, while overleveraged firms take on even more debt and move further away from the optimum. An additional explanation comes from Jensen (1986), stating that executives are disciplined by high levels of leverage as interest payments reduce free cash flows. In these cases, higher leverage might substitute for poor governance quality, causing firms with high leverage to suffer less from agency costs, and become less attractive targets (Israel, 1991). Furthermore, the substitution effect of leverage for corporate governance is also found to persist for firms with poor corporate governance and poor shareholder protection (Jiraporn et al., 2012).

Therefore, it could be argued that increases in corporate governance quality move the firm's capital structure closer to the optimal ratio. Higher corporate governance quality decreases agency costs as it reduces management discretion to maximize personal utility. Hence, decreasing both the effect of the Overinvestment hypothesis and the Substitution hypothesis. In line with this reasoning, Morellec et al. (2012) and Berger et al. (1997) both argue that higher corporate governance quality reduces the average deviation from the optimal leverage ratio. Therefore, the following hypothesis can be deduced:

Hypothesis 1: There is a negative relation between corporate governance quality and the average deviation from the optimal leverage ratio

Leverage adjustment speed

Following this reasoning it could be argued that besides smaller average deviations, firms might more quickly revert back to the optimal leverage ratio. Prior literature on leverage speed of

adjustment (SOA) argues that firms appear to adjust their capital structures slowly towards the optimal leverage ratio. Firms might be forced away from their optimal leverage ratio due to external shocks and market changes (Welch, 2004; Shyam-Sunder & Myers, 1999), or could make sub-optimal capital structure decisions (Chang et al., 2014). Furthermore, adjusting capital structures towards the optimal point might be costly due to issuance costs of equity and debt. Leading to slower adjustments and firms having an optimal leverage range rather than a specific target (Fama & French, 2002; Hovakimian et al., 2001; Huang & Ritter, 2009). Kayhan and Titman (2007) also state that firm history strongly influences its capital structure, as firms might try to time the market when past stock returns are high (Marsh, 1982; Graham & Harvey, 2001; Baker & Wurgler, 2002). However, the paper also states that these deviations from the optimal leverage ratio become smaller in the long run, indicating that firms take this optimal ratio into account. Fama and French (2002), for example, show that firms' SOA is approximately 7 to 18 percent per year, while Flannery and Rangan (2006) find a higher SOA of 34.2% per year using book leverage and 35.5% when using market leverage. However, such a quick adjustment, 1.6 years in the research of Flannery and Rangan (2006), would make the impact of historical capital structures almost irrelevant as firms can easily adjust towards the optimal leverage ratio. It is therefore still uncertain what the SOA of firms actually is (Huang & Ritter, 2009).

Nonetheless, Chang et al. (2014) find that corporate governance quality increases firms' SOA to the optimal leverage ratio. This finding is in line with the argument that higher levels of corporate governance quality make management more sensitive to maximize shareholder value through optimizing the capital structure (Fama & Jensen, 1983; Abor, 2007; Detthamrong et al., 2017). Furthermore, higher corporate governance quality reduces the self-serving Overinvestment and Substitution hypotheses that lead to deviations from the optimal leverage ratio (Chang et al., 2014). Therefore, the following hypotheses is deduced:

Hypothesis 2: There is a positive relation between corporate governance quality and the leverage speed of adjustment to the optimal leverage ratio

Corporate governance, capital structure, and payment method

Now that the relation between corporate governance quality and capital structure decisions is explored, the paper focuses on the relation between corporate governance quality, capital structure decisions, and the acquisition payment methods. This section first explores the relation between

the optimal leverage ratio and acquisitions as acquisitions impact both adjustment costs and the post-acquisition optimal leverage ratio. Subsequently, the connection between the acquisition payment method and post-acquisition leverage is explained. The final part of this section focusses on the moderating effect of corporate governance quality on the relation between the pre-acquisition capital structure and acquisition payment method.

Optimal leverage ratio and Acquisitions

As discussed above, one of the main hypotheses in the static trade-off theory is that firms try to minimize the deviation between the optimal and actual leverage ratio and should only tolerate deviations when adjustments costs are too high (Harford et al., 2009). Adjustment costs, in this study, are related to the costs of issuing debt or equity and should outweigh the benefits firms receive from rebalancing their capital structure (Leary & Roberts, 2005) For example, Fischer et al (1989) show in their trade-off model that firms will only increase debt when the tax benefits outweigh the costs of issuing debt. Firms are therefore likely to only move towards the optimal leverage ratio when either the benefits of adjusting are higher (e.g., changing tax rates) or when the adjustment costs are relatively lower. Lower adjustment costs could relate to either reduced switching costs when issuing debt or equity, or when costs are not only useful for rebalancing purposes but also from a corporate investment perspective. The latter decreases the marginal costs of adjusting the capital structure as the firm has an additional motive to adjust its leverage. Large corporate investments, such as mergers and acquisitions (henceforth, acquisitions), can therefore play a significant role in adjusting capital structure as management often has high degrees of discretion in determining the payment method (Martin, 1996; Faccio & Masulis, 2005). Acquisitions allow the firm to acquire another firm or assets in exchange for equity or cash while simultaneously adjusting the capital structure. As the firm issues equity or debt to acquire assets of another business, it reduces the marginal costs of adjusting the capital structure to the optimal leverage ratio.

Furthermore, leverage is related to factors such as tangible assets that can be sold after bankruptcy, the growth opportunities of the company, the industry in which the firm operates, how competitive this industry is, how many dividends are paid, and the age of the firm (Graham & Leary, 2011). Large corporate events, such as acquisitions, can significantly change the above stated drivers of leverage. For example, the purchase of another firm could increase the tangible

assets, expand the firm to different industries, or reduce competition. It could also reflect increases in growth opportunities, as the acquisition might cause synergies to materialize that increase future firm prospects. Harford et al. (2009) find that firms take this into account when determining the optimal post-acquisition leverage ratio. Firms appear to incorporate a large fraction of the new optimal leverage ratio into the actual leverage ratio 5 years after the acquisition.

In conclusion, large corporate investments such as acquisitions can change the post-acquisition optimal leverage ratio, through the purchase of new assets and liabilities, and allow to decrease the adjustments costs for optimizing the capital structure, through the payment method choice.

Payment method and Capital structure

Following prior literature, this study classifies the acquisition payment method into cash and stock, where cash includes noncontingent liabilities and stock contains newly issued stocks and notes with full and inferior voting rights (Martin, 1996; Faccio & Masulis, 2005). Based on this definition, acquisition payments can consist of either pure cash, pure stock, or in a hybrid form. In which, the cash component in the acquisition payment is often largely financed through the issuance of new debt (Bharadwaj & Shivdasani, 2003; Harford et al., 2009; Uysal, 2011). Creating an interesting dynamic as the payment choice always influences the leverage ratio through the issuance of new debt or equity.

This dynamic causes the choice of payment method to be closely tied to capital structure decisions, as both decisions have similar considerations. Prior research states that the choice of payment method is conditional on, e.g., the acquirer's growth opportunities, pre-acquisition market and stock return, pre-acquisition capital structure, and managerial ownership and ownership structure (Martin, 1996; Faccio & Masulis, 2005). Only the pre-acquisition capital structure is discussed in this section due to its relevance for the goal of this research.

The pre-acquisition capital structure influences the payment method decision as firms that deviate from the optimal leverage ratio during the pre-acquisition period are likely to adjust their payment method to move towards the optimal leverage ratio. For example, overleveraged firms are more likely to issue equity compared to debt, while underleveraged firms are more likely to issue debt compared to equity (Harford et al., 2009; Uysal, 2011). Therefore, this study argues, in line

with the static trade-off theory, that firms take optimal payment choices into account when structuring acquisitions.

Corporate governance and payment method

Due to the similarities between determinants of capital structure decisions and acquisition payment method choices, it could be argued that corporate governance also affects payment method decisions. Prior literature already shows that corporate governance affects premiums paid (Faccio & Masulis, 2005), post-acquisition performance, and firm value (Masulis et al., 2007; Bhagat & Bolton, 2013). Corporate governance reduces premiums as managers are less able to expropriate or overpay for acquisitions due to increased scrutiny from monitoring parties. As a result, managers are more reluctant to pursue value destroying acquisitions that increase private benefits. As firms pursue less value destroying acquisitions, the average acquisition performance increases together with firm value. Furthermore, investors appear to have more confidence in acquisitions announced by firms with higher corporate governance quality as they show significantly higher abnormal announcement returns (Swanstrom, 2006; Masulis et al., 2007).

When combining these findings with the above developed hypothesis 1 and 2, it could be argued that corporate governance mechanisms also influence payment method decisions. Increases in corporate governance quality are likely to make management more sensitive to deviations from the optimal leverage structure (Chang et al., 2014). It is therefore predicted that increases in corporate governance quality cause firms to choose payment methods that contain the right balance of equity and debt to adjust the pre-acquisition leverage ratio more closely to the optimal post-acquisition leverage ratio (see figure 2). Management under increased scrutiny is expected to consider both pre-acquisition capital structure and the new post-acquisition optimal leverage ratio when determining the payment method.

Figure 2 shows an overview of how underleveraged and overleveraged firms differ when exposed to different levels of corporate governance quality in the pre- and post-acquisition period. The figure also contains the acquisition effect on the optimal post-acquisition leverage ratio, as discussed earlier. A leverage ratio of 1 represents a firm that is fully financed through debt, while a value of 0 represents firms fully financed with equity. The left graph shows the prediction for underleveraged firms. Underleveraged firms have too much equity compared to the optimal leverage ratio. Without increases in corporate governance quality, it is likely that management

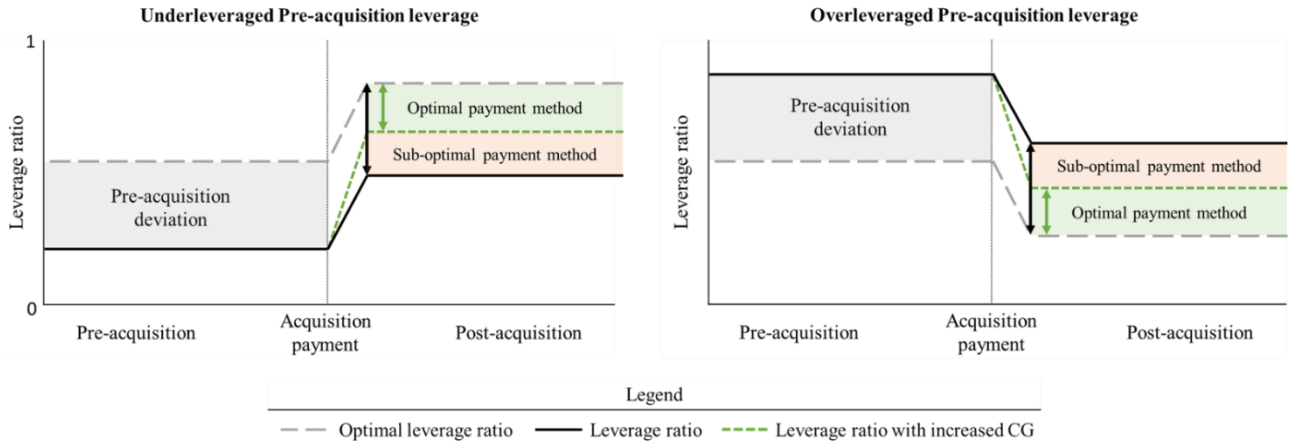


Figure 2. The effect of corporate governance quality on post-acquisition leverage

chooses a payment method that optimizes their personal utility according to the overinvestment hypothesis. The payment method is expected to consist of relatively more equity compared to cash (debt) as management derives utility from keeping the post-acquisition leverage relatively low. The resulting post-acquisition deviation is then likely to be sub-optimal and below the optimal leverage ratio as the firm has still too much equity compared to debt (black arrow). However, after an increase in corporate governance quality, management is predicted to choose a payment method that moves the pre-acquisition leverage closer to the optimal post-acquisition leverage ratio (green arrow). In case of underleveraged firms, this would result in a payment method that contains relatively more cash (debt) compared to equity to counter the lack of debt in the pre-acquisition leverage.

The right graph in figure 2 shows the prediction for overleveraged firms. Overleveraged firms have too much debt compared to the optimal leverage ratio. When not exposed to an increase in corporate governance quality, these firms are expected to choose payment methods that follow the Substitution hypothesis. The payment method should contain more cash (debt) compared to equity to keep the post-acquisition leverage ratio high and away from the optimal leverage ratio (black arrow). An increase in corporate governance quality is therefore predicted to increase the proportion of equity compared to cash (debt) as corporate governance mechanisms are better able align the interest of management and shareholders (green arrow).

Therefore, this study argues, based on agency theory, that corporate governance mechanisms will incentivise management to optimise the capital structure and choose a payment method that moves the pre-acquisition capital structure towards the new optimal post-acquisition leverage ratio. Hence,

Hypothesis 3a: For underleveraged firms, the proportion of cash in the acquisition payment method becomes larger after an increase corporate governance quality

Hypothesis 3b: For overleveraged firms, the proportion of cash in the acquisition payment method becomes smaller after an increase corporate governance quality

METHODOLOGY

Board reforms

This paper uses major corporate board reforms for the 41 countries in the sample that occur from 1997 to 2007. The paper of Fauver et al. (2017) is the main source of this information. They identify reforms in different countries and verify this information with the World Bank, European Corporate Governance Institute (ECGI), and the local stock exchanges. Despite that the content of the corporate governance reforms can vary across countries, one common goal is to strengthen the investor rights by changing corporate governance practices and increase corporate governance quality. These changes relate to the role and composition of the board of directors, the audit committee, and external auditors, to increase independence and to restrict CEO duality[1] (Fauver et al., 2017).

The governance reforms are classified in two non-mutually exclusive categories; reforms that include board-related components (board-reforms) and reforms with non-board-related components (non-board-reforms). Similar to Fauver et al. (2017), the list only contains major reforms. However, for countries that adopt multiple reforms, a second list is used with the earliest reform to check for the robustness of the findings later in the paper (Appendix A). All reforms are categorised into three components related to board practices, namely, board independence, audit committee and auditor independence, and restriction on CEO duality.

Furthermore, the reforms are classified as Rule-based or Comply-or-Explain reforms. The Rule-based reforms generally enact a law that requires firms to follow specific governance practices. For example, the requirement that an audit committee consists of independent directors under the US SOX reform in 2003. Comply-or-Explain reforms, also known as codes of best practices, generally contain the publication of governance codes. This reform provides guidelines

[1] CEO duality indicates that the chairman of the board of directors and the chief executive officer (CEO) are the same person.

to firms on what their corporate governance should look like, and firms can then voluntarily decide whether to comply with the best practice or explain why they do not comply. For example, the Dutch corporate governance code (De Code Tabaksblat) in 2003 provided guidelines on how to determine the independence of the supervisory board and that not more than one member can be dependent.

Table 1 shows an overview of the countries that enacted a major board reform in a specific year, the components of the reform, and whether it is a Rule-based or Comply-or-Explain reform (source: Fauver et al., 2017). The table shows a minor concentration in 2001 and 2002, with respectively 22 and 29 percent of the major reforms. In addition, a large portion of the reforms aim at reducing the board independence (76%) and the audit and auditor independence (80%). However only 27% of the reforms address the separation of the chairman and CEO position. The table also shows an almost even distribution between the type of reform. 54% of the reforms consists of a Comply-or-Explain approach, while 46% is Rule-based. Lastly, it is important to note that most of the reforms are enacted with additional non-board reforms (73%). Concurrent non-board governance reforms might influence the findings when testing for the effect of board reforms on increases in corporate governance quality. However, as this study seeks to capture the influence of increases in corporate governance quality rather than specifically the effect of board reforms, concurrent reforms are argued not to threaten the validity. Any additional effects of non-board reforms are tested through robustness checks.

Research design

To test the effect of corporate governance quality on capital structure decisions surrounding acquisitions, this study uses a Difference-In-Difference (DiD) research design. As the first two hypotheses require a different dependent variable, each regression is separately explained together with how the variables of interest are measured. Because the setting contains staggered exogenous shocks, the research has multiple treatment groups and time periods and therefore controls for firm fixed effects and year fixed effects in all models (Imbens & Woolridge, 2009). [2] Year and firm fixed effects are required as firms need to be comparable over time by keeping the within-firm and

[2] All models are also adjusted for the presence of heteroskedasticity and clustering in the error term at the firm-level

within-year characteristics fixed, and the fixed effects help to control for any cross-sectional and pure time-series variation that might bias the results (Fauver et al., 2017).

The DiD design enables the regression to disentangle the effect of governance reforms from other factors influencing capital structure decisions surrounding acquisitions. However, confounding events and correlated omitted variables can still bias the results. Confounding events that could significantly affect capital structure decisions might be related to financial crises. This paper identifies two confounding events, namely the Asian Crises from 1997 till 1999 for Asian countries (Mishkin, 1999) and the Dot-Com bubble from 2000 till 2002 for Europe and North America (Junior & Franca, 2012). The financial crisis of 2008 is excluded due to econometrical problems related high correlation between the dummy variable and the enactment of reforms surrounding the last years of the sample. Potential correlated variables for each different regression are discussed later in this section.

Measuring corporate governance quality

This paper uses the governance reforms shown in table 1 as staggered exogenous shocks to capture the effect of increases in corporate governance quality on the variables of interest. Consistent with prior literature of Fauver et al. (2017) and Bea et al. (2019), the variable for corporate governance reforms is measured as a dummy variable, equalling 1 for the years in which a corporate governance reform is effective and otherwise zero. Using board reforms as an exogenous proxy for increases in corporate governance quality is reliable due to four reasons. Firstly, boards are one of the main corporate governance mechanisms and reforms are an often-used approach to address corporate governance issues (Hermalin & Weisbach, 2001; Denis & McConnell, 2003; Fauver et al., 2017). Allowing for a measurement with high external validity for changes in corporate governance quality. Secondly, prior literature finds no evidence that governance reforms are driven by firm scandals, economic shocks, or country specific legal origins (Fauver et al., 2017; Bea et al., 2019). If this were the case, the used measurement would suffer from endogeneity concerns as firms and countries could than self-select themselves into the treatment group. Thirdly, the concern that some of the reforms are Comply-or-Explain and not mandatory, is argued not to cause different outcomes. Dahya et al. (2002) argue that the implementation of governance reform codes also carries a threat of more regulation when many firms do not comply without a legitimate

Table 1. Major board reforms per country

The table reports the major board reforms by country. Column 1 displays the year in which a reform becomes effective for a given country. Columns 2-4 represent the reform characteristics, whether a reform covers board independence, audit independence, and separation of the chairman and CEO position. Column 5 shows if a board reform occurs simultaneously with a non-board governance reform, and column 6 shows the type of reform that is enacted. Appendix A provides a similar table for the first board reforms. Source: Fauver, Hung, Li, and Taboada (2017)

Country	Reform year (1)	Board independence (2)	Audit committee and auditor independence (3)	Chairman and CEO role (4)	Non-board reform (5)	Type (6)
Argentina	2001	0	1	0	1	Rule-based
Australia	2004	1	1	1	1	Comply-or-explain
Austria	2004	1	1	0	1	Comply-or-explain
Belgium	2005	1	1	1	1	Comply-or-explain
Brazil	2002	0	0	0	1	Rule-based
Canada	2004	1	1	1	0	Rule-based
Chile	2001	0	1	0	1	Rule-based
China	2001	1	1	0	1	Rule-based
Colombia	2001	0	0	0	1	Rule-based
Czech Republic	2001	0	0	0	1	Rule-based
Denmark	2001	1	0	0	1	Comply-or-explain
Egypt	2002	1	1	0	1	Rule-based
Finland	2004	1	1	1	1	Comply-or-explain
France	2003	0	1	0	1	Rule-based
Germany	2002	1	1	0	1	Comply-or-explain
Greece	2002	1	1	0	0	Rule-based
Hong Kong	2005	1	1	1	0	Comply-or-explain
Hungary	2003	0	0	0	0	Comply-or-explain
India	2002	1	1	0	1	Rule-based
Indonesia	2007	1	1	0	0	Rule-based
Israel	2000	1	1	1	1	Rule-based
Italy	2006	1	1	0	1	Rule-based
Japan	2002	0	1	0	0	Rule-based
Malaysia	2001	1	1	0	0	Comply-or-explain
Mexico	2001	1	1	0	1	Rule-based
Netherlands	2004	1	1	1	0	Comply-or-explain
Norway	2005	1	1	1	1	Comply-or-explain
Pakistan	2002	0	1	0	0	Comply-or-explain
Peru	2005	1	1	0	0	Comply-or-explain
Philippines	2002	1	1	0	1	Comply-or-explain
Poland	2002	1	0	0	1	Comply-or-explain
Portugal	2001	1	1	0	0	Rule-based
Singapore	2003	1	1	0	1	Comply-or-explain
South Korea	1999	1	1	0	1	Rule-based
Spain	2006	1	1	0	1	Comply-or-explain
Sweden	2006	1	1	1	1	Comply-or-explain
Switzerland	2002	0	0	0	1	Comply-or-explain
Thailand	2002	1	1	0	1	Comply-or-explain
Turkey	2002	1	0	1	1	Comply-or-explain
United Kingdom	1998	1	1	1	1	Comply-or-explain
United States	2003	1	1	0	1	Rule-based

explanation. Furthermore, Fauver et al. (2017) find that Comply-or-Explain reforms have a larger effect on firm value compared to Rule-based reforms. It could therefore be argued that Comply-or-Explain reforms lead to relatively similar, or stronger, increases in corporate governance quality in specific countries. Fourthly, corporate governance reforms are argued to provide a good proxy for increases in corporate governance quality as corporate governance mechanisms might interact with one another, making it imperative to use a broad measure (Agrawal & Knoeber, 1996; Bowen et al., 2008).

Lastly, the Difference-In-Difference (DiD) research design requires an assessment of the underlying parallel trend assumption. The validity of this assumption is checked through matched samples and by constructing pseudo reform year tests for both the pre- and post-reform periods.

Measuring leverage deviation

The above developed hypotheses require an identification of the leverage deviation. The leverage deviation is defined as the difference between the firm's actual (*LR*) and predicted market leverage ratio (*OLR*) for a given year.[3] This definition is in line with prior research, such as Harford et al. (2009), Chang et al. (2014), and Kayhan and Titman (2007), and assumes that the optimal leverage ratio can be predicted based on the fitted values of prior leverage ratios. This approach tries to capture the value of what the leverage ratio ought to be based on statistical modelling.

The actual market leverage ratio is measured by dividing the book value of the interest-bearing debt (long-term and current portion in liabilities) by the sum of this debt and the market value of equity (common shares outstanding * price of shares in year t) (Harford et al., 2009; Change et al., 2014). Uysal (2011) measures debt as the difference between total assets and the market value of equity. However, this approach might be biased due to the impact of operating liabilities influencing the leverage ratio in different industries, causing noise in the measurement. The current approach mitigates this concern as operating liabilities are not captured.

[3] This study focusses on market value of leverage instead of the book value of leverage as most theoretical predictions of the capital structure theory related to leverage concern market leverage (Harford et al., 2009). Furthermore, recent work of Hovakimian et al. (2001), Welch (2004), Leary & Roberts (2005), Flannery & Rangan (2006), and Harford et al. (2009) also focus on the market value of leverage.

Partial adjustment model

The optimal leverage ratio is estimated using a partial adjustment model and must allow for variation in a firm's optimal leverage ratio over time and recognise that this deviation is not necessary resolved quickly (Change et al., 2014). Therefore, this paper follows prior literature by using a partial adjustment model (Fama & French, 2002; Chang et al., 2014, Kayhan & Titman, 2007). A problem related to this model is that it is potentially biased if firms have an optimal range due to adjustment costs. However, this bias is not a problem if the results reflect the relative change in the leverage deviation, rather than the absolute change in equity or debt. Absolute results should, nonetheless, be interpreted with caution.

The OLS model estimates the optimal leverage ratio (OLR) as a fitted value based on the observed leverage ratio, a set of firm characteristics based on capital structure theory (discussed later) and the corporate governance quality increase due to board reforms. The model is based on Chang et al (2014) and is formulated as follows:

$$OLR_{i,t} = \beta_0 + \beta_1 X_{i,t-1} + \varepsilon_{it} \quad (1$$

Where $X_{i,t-1}$ presents a vector for theory-based control variables for predicting leverage ratio based on the static trade-off theory; ε_{it} is the error term with a constant variance and a zero mean and is uncorrelated with the regressor (Change et al., 2014). The predictions of the *OLR* of this model are truncated to fit between boundaries of 0 and 1, as OLS predicts values beyond those boundaries which should be corrected. Prior research uses a Tobit model to censor the data at the thresholds of 0 and 1 (e.g., Kayhan & Titman, 2007; Harford et al., 2009; Change et al., 2014). However, Tobit does not allow for the modelling of fixed effects without introducing an 'incidental parameters problem', making only the slope coefficients reliable but not the variance (Wooldridge, 2010). Therefore, the alternative truncation approach is taken, and a robustness test is added to test for differences between the truncation approach and when scaling the data.

In addition, the model estimates the *OLR* via a pooled regression model in line with that of Kayhan and Titman (2007). Harford et al (2009), on the other hand, propose the use of separate annual regressions to predict leverage. Despite its advantages for samples with many continuous firm-year observations, it is not able to control for unobservable firm effects (Harford et al., 2009). This control is important due to econometric issues related to estimating the OLR. The OLR is unobservable and could be biased when estimated with imperfect controls (Graham & Leary, 2011). To partially resolve this issue, firm and year fixed effects are included to mitigate any firm-

specific bias that is constant over time and year specific (Flannery & Rangan, 2006). It is therefore argued that, in this research setting, the pooled regression model is more appropriate. Furthermore, the model is corrected for the presence of heteroskedasticity and clustering in the error terms at the firm level (Chang et al., 2014).

To allow for testing the causal relation between corporate governance quality and capital structure decisions, the following DiD research design is deployed for testing this relation:

$$\left|LR_{i,t} - OLR_{i,t}\right| = \beta_0 + \beta_1 Reform_{i,t} + \beta_2 Control_{i,t} + \varepsilon_{i,t} \quad (2$$

In which $\left|LR_{i,t} - OLR_{i,t}\right|$, henceforth leverage deviation, represents the absolute deviation from the optimal leverage ratio, capturing both the deviation from overleveraged and underleveraged firms; $Reform_{i,t}$ is a dummy variable that equals one for fiscal years t in which a board reform is effective in country i, and $Control_{i,t}$ presents a vector for theory-based control variables for predicting leverage ratio deviations based on the static trade-off theory. A standard DiD design would contain a post, treatment, and interaction term. However, as all firms in country i are part of the treatment group, the post and interaction variable become redundant. The DiD design is finished by introducing year and firm fixed effects. Lastly, the firms in countries that have not been exposed to a board reform prior to year t count as the control group and are in two samples matched to the treatment group. The matching method is described later in the data section.

Measuring speed of adjustment

Prior literature measures the SOA in two ways; the two-stage model and the reduced form model. However, as the previous part already predicts the first stage of the two-stage model, this study only discusses this model. The first stage in the two-stage partial adjustment model is determining the OLR through equation (1). The second stage measures the SOA by capturing the degree to which a firm adjusts its current leverage ratio to the optimal leverage ratio. The standard partial adjustment model, as in Chang et al (2014), Kayhan and Titman (2007), and Fama and French (2002), is as follows:

$$LR_{i,t} - LR_{i,t-1} = \beta_{SOA}\left(OLR_{i,t} - LR_{i,t-1}\right) + \varepsilon_{i,t+1} \quad (3$$

Where $LR_{i,t+1} - LR_{i,t}$ represents the change in leverage ratio over one fiscal year and β_{SOA} captures the speed of adjustment towards the *OLR*. If β_{SOA} equals 1, then a firm has fully adjusted towards the optimal leverage ratio within one year. However, a $\beta_{SOA} < 1$ indicates that the firm has not fully adjusted, due to e.g., adjustments costs, and predicts a suboptimal capital structure.

The leverage deviation ($OLR_{i,t+1} - LR_{i,t}$; the difference between the optimal and current leverage ratio) should decrease over time according to the static trade-off theory.

The DiD design used to test the causal relation between corporate governance quality and SOA is based on the adjusted model (2). The model tests whether changes in corporate governance quality have a significant impact on the SOA and is as follows:

$$LR_{i,t+1} - LR_{i,t} = \beta_1 Reform_{i,t} + \beta_{SOA}\left(OLR_{i,t+1} - LR_{i,t}\right) + \beta_3 Reform_{i,t} * \left(OLR_{i,t+1} - LR_{i,t}\right) + \varepsilon_{i,t+1} \quad (4$$

In which $Reform_{i,t}$ is a dummy variable that equals one for the fiscal years t in which a board reform is effective in country i, and otherwise zero; β_{SOA} captures the speed of adjustment towards the *OLR*. β_3 represents the effect of an increase in corporate governance quality due to a board reform on the leverage adjustment speed. Finding a significant and positive β_3 coefficient would be inline with the hypothesis that board reforms increase the SOA towards the optimal leverage ratio. The model does not contain any control variables as all control variables would interact with the β_{SOA}. Therefore, the controls are left out to prevent overfitting and keep the model interpretable, similar to prior literature (Kayhan &Titman, 2007; Chang et al., 2014).

Measuring payment method

As explained above, an acquisition payment method can consist of cash and equity. Due to this natural boundary, prior literature often uses a two-sided Tobit model to estimate the cash component of an acquisition payment (Faccio & Masulis, 2005; Uysal, 2011). Applying OLS fixed effects would not provide consistent estimators for the 'true' population (Long & Long, 1997) and fixed effects significantly reduces the variance within models with few observations (Wooldridge, 2010). This study, therefore, applies a similar methodology to Faccio and Masulis (2005) by setting the model's lower boundary to 0 and upper boundary to 100. The following model

$$Cash_{ait} = \beta_0 + \beta_1 OverLev_{i,t} + \beta_2 Reform_{i,t} + \beta_3 OverLev_{i,t} * Reform_{i,t} + \beta_4 Control_{i,t} + \varepsilon_{it} \quad (5$$

contains the variable; $Cash_{it}$ as representing the cash component in the total acquisition payment for acquisition a of company i in year t. $OverLev_{i,t}$ is a dummy variable that equals one for a firm that has a pre-acquisition leverage ratio above the post-acquisition *OLR* and zero otherwise, and again $Reform_{i,t}$ is a dummy variable that equals one for the fiscal years t in which a board reform

is effective in country i, and otherwise zero. $Control_{i,t}$ contains a vector for theory-based control variables for predicting payment methods. β_3 represents the interaction term between $OverLev_{i,t}$ and $Reform_{i,t}$, and is the main coefficient of interest. Finding a significant and negative β_3 coefficient would be in line with the hypothesis that board reforms increase the sensitivity of management to structure payment methods to decrease the post-acquisition deviation from the optimal leverage ratio.

Control variables

Each above stated model is tested using additional control variables. However, as each model predicts a different dependent variable, different control variables are identified. An overview of all control variables is shown in table 2, with each column representing a different set of control variables for a different model. The reasoning behind the inclusion and the way the variables are measured is shown in appendix B table 2.1, 2.2, and 2.3 for columns 1, 2, 3, respectively.

Table 2. Control variables per model

The table displays the control variables used for each analysis. Column 1 represents the control variables for estimating the optimal leverage ratio (OLR). Column 2 displays the control variables for the leverage deviation analysis. Column 3 shows the controls used for the payment method analysis. A detailed description of the variables can be found in appendix B.

Controls OLR	Controls leverage deviation	Controls payment method
Firm size	Firm size	Firm size
Market-to-book ratio	Market timing	Market timing
Tangibility	Change in Tangibility	Tangibility
Adjustment costs	Adjustment costs	Relative target size
Profitability	Profitability	Cross-border
Growth opportunities	Change in R&D exp.	Market-to-book ratio
Effective tax rate	Change in Effective tax rate	Growth opportunities
Asian crisis	Change in cash	Ownership
DotCom crisis	Asian crisis	Within-industry
	DotCom crisis	Country legal origin
		Target legal origin
		Asian crisis
		DotCom crisis

Data

The sample is constructed for all countries that have enacted a governance reform in table 1 and consists of 41 countries. The first two hypotheses require longitudinal panel data on firm's financial data and stock prices. The financial data and stock prices are retrieved from Compustat, which is a collection of databases with financial, statistical, and market information on active and inactive companies around the world since 1987 (S&P Global, 2021). In the sample, firms smaller than $10 million in total assets, negative book value of equity, and negative sales are excluded. Furthermore, all missing values for R&D expenditures are assumed to be 0, as firms without R&D expenditures report the same value as firms without available R&D data. However, as 61% of the R&D data is missing an additional dummy variable is included to check for any additional effects due to this treatment. The sample also excludes firms in utilities and financial sectors (SIC codes 4900-4949 and 6000-6999) due to their different business models and regulatory requirements, which could potentially bias the results. The sample period per country can vary due to data availability within Compustat. A [-5, +5] event window per country is taken and firms should therefore have ten sequential firm years covering all variables surrounding a board reform in a given country. Furthermore, this event window also mitigates the impact of confounding events during the measurement period (Fauver et al., 2017). In addition, increasing the event window per country would significantly reduce the sample size as firms would consistently need all variables required for the analysis. Therefore, the analysis requires at least ten sequential firm years covering all variables for a firm surrounding a board reform in a given country. Lastly, countries with less than 10 firms are dropped from the sample, causing 15 countries to leave the sample after the above-described data restrictions. The reduced Compustat dataset contains 136,043 firm-years (10,213 firms) for 37 countries over a period of 1987 to 2012. A sample of 50,358 firm-years (3,482 firms) for 27 countries remains after dropping firms that do not have 10 consecutive years in the sample. Only 36,388 firm-years (3,482 firms) for 22 countries remain during the event window of the reforms.

The third hypothesis requires, in addition to the previously created sample, data on acquisitions and their payment method. This data is retrieved from Thomson ONE, which is a database containing company financials, stock prices, M&A data, and ownership. Acquisitions with other payment methods than cash or stock are excluded together with acquisitions of targets with payments and prior year sales smaller than $10 million. In addition, the sample only contains

acquisitions that acquire more than 50% of the ownership after the transaction. The acquisition dataset contains 12.830 acquisitions between 1987 and 2013. However, the combination of both datasets, when matched on company name, leaves only 593 firm-year observations between 1993 and 2012, with 442 firm-year observations during the event window.

In addition, the Compustat database contains measurement errors related to observations being reported in millions of US dollars versus thousands of US dollars. The data is therefore screened and any firm-year-observation with an extreme outlier (1% and 99% percentile interval) in assets or change in cash is checked and potentially divided by 1.000 together with any previous firm-years that contain extreme values. Afterwards, all variables of interest are Winsorized at the 1% and 99% level to reduce the influence of other outliers. The estimation of the OLR is explained in appendix C.

Descriptive statistics

Table 3 shows the descriptive statistics and correlation table of the sample. Panel A depicts the descriptive statistics for both the financial and acquisition data used for the analysis of all three hypotheses. The sample contains firms that are present during the [-5, +5] event window surrounding a reform enactment in a specific country. Panel B shows the correlation of the financial data, excluding the correlation with the acquisition data due to different sample sizes.

Panel A shows that the average firm in the sample has a leverage ratio of 24%, an optimal leverage ratio of 25%, and deviates on average with 9% from the optimal leverage ratio. An OLR close to the actual leverage ratio indicates that the model is able to capture the average effect of the used variables when predicting the OLR for a specific firm. A firm that therefore deviates from this value is unlikely to follow the expected mean and is argued to have a suboptimal capital structure.

Panel A also shows that the effective tax rate contains values below and above 100% (-1 and +1). However, both groups with excessive tax rates contain firms with more leverage, worse performance, and higher research and development expenses ($p < 0.01$). It could therefore be argued that these extreme values are a result of tax carry forwards during years of low taxable income and tax carry backs in years of high taxable income. This is also shown in the variable 'Effective tax rate change' where firms change up to 361% in their effective tax rate over a year, which can only be a result of tax carry overs.

Table 3. Descriptive statistics and correlation table

Panel A shows the descriptive statistics for the variables used in the analysis of the effect of increases in governance quality using the [-5, +5] event window. *Reform* is a dummy variable that equals one for firm-years in a country where a governance reform is effective and zero otherwise. *Leverage* is the book value of the interest-bearing debt divided by the sum of this debt and the market value of equity. *OLR* is the optimal leverage ratio and is the fitted value of the truncated OLS model explained in appendix C. *Leverage deviation* is the absolute difference between *Leverage* and *OLR*. *OverLev* is a dummy variable that equals one for a firm-year where the *Leverage* is higher than the *OLR*. *Acquisition year* is a dummy variable that equals one if an acquisition occurs in a firm-year. *Firm size(log)* is a log of the total revenues (in millions of US dollars). *Market-to-book* represents the market value of equity scaled by the book value of total assets. *Tangibility* is the ratio of net property, plant, and equipment divided by total assets. *Tangibility change* is the change in tangibility between each year. *Adjustment costs* is the unlevered version of the Z-score as defined in appendix B table B.1. *Profitability* is the ratio of earnings before interest and taxes divided by total assets. *Growth opportunities* is the ratio of R&D expenditures divided by total assets. *R&D change* is the change in R&D expenses between years. *Effective tax rate* is the ratio of total income taxes to pre-tax income for the fiscal year *t*. *Effective tax rate change* is the change in effective tax rate between years. *Timing* is the measurement of market timing as defined in appendix B. *Cash change* the change in cash between years. *Asian crisis* is a dummy variable that equals one if a firm-year is between 1997 and 1999 and is registered in Asia. *DotCom crisis* is a dummy variable that equals one if a firm-year is between 2000 and 2002 and registered in Europe or North America. *Cash component* is the proportion of cash used in an acquisition divided by the total acquisition payment. *Relative target size* is ratio of target revenue to acquiror revenue in year t-1. *Cross-border* is a dummy variable equal to one for target firms outside the acquirors country. *Ownership* is a dummy variable that equals one for firms that have at least one owner with more than 10% control stake. *Within-industry* is a dummy variable that equals one if the acquiror and target firm are in the same industry. All variables, excluding dummies are Winsorized at the 1% and 99% level. Panel B shows correlation among the variables that have 36,388 observations. (1) Reform; (2) Leverage; (3) OLR; (4) Leverage deviation; (5) OverLev; (6) Acquisition year; (7) Firm size; (8) Market-to-book; (9) Tangibility; (10) Tangibility change; (11) Adjustment costs; (12) Profitability; (13) Growth opportunities; (14) R&D change; (15) Effective tax rate; (16) Effective tax change; (17) Timing; (18) Cash change; (19) Asian crisis; (20) DotCom crisis.

Panel A: Descriptive statistics

Variable	N	Mean	St. Dev.	Min	Q1	Median	Q3	Max
Reform	36,388	0.57	0.49	0.00	0.00	1.00	1.00	1.00
Leverage	36,388	0.24	0.24	0.00	0.04	0.18	0.39	1.00
OLR	36,388	0.25	0.19	0.00	0.09	0.21	0.37	1.00
Leverage deviation (| LR-OLR|)	36,388	0.09	0.09	0.00	0.02	0.06	0.13	1.00
OverLev	36,388	0.43	0.50	0.00	0.00	0.00	1.00	1.00
Acquisition year	36,388	0.02	0.13	0.00	0.00	0.00	0.00	1.00
Firm size (Log)	36,388	6.52	2.22	1.98	4.96	6.34	7.81	13.42
Market-to-book	36,388	11.20	73.32	0.06	0.40	0.74	1.37	626.39
Tangibility	36,388	0.32	0.22	0.01	0.14	0.27	0.46	0.89
Tangibility change	36,388	0.00	0.05	-0.19	-0.02	0.00	0.01	0.17
Z-score	36,388	0.65	1.19	-4.60	0.36	0.51	0.79	7.16
Profitability	36,388	0.07	0.10	-0.33	0.03	0.07	0.12	0.33
Growth opportunities	36,388	66.39	355.55	0.00	0.00	0.00	3.70	3,277
R&D change	36,388	4.06	33.09	-90.00	0.00	0.00	0.00	275
Effective tax rate	36,388	0.23	0.36	-1.59	0.11	0.29	0.36	1.76
Effective tax rate change	36,388	-0.01	0.62	-3.15	-0.06	0.00	0.05	3.20
Timing	36,388	41.71	283.53	-45.51	0.52	1.52	3.94	2,407.86
Cash change	36,388	62.74	1,047.57	-5,281.51	-8.09	0.83	19.40	7,762.36
Asian crisis	36,388	0.04	0.20	0.00	0.00	0.00	0.00	1.00
DotCom crisis	36,388	0.10	0.30	0.00	0.00	0.00	0.00	1.00
Cash component	593	78.25	37.94	0.00	70.59	100.00	100.00	100.00
Relative target size	593	0.24	0.76	0.00	0.02	0.09	0.23	13.68
Cross-border	593	0.34	0.47	0.00	0.00	0.00	1.00	1.00
Ownership	18,884	0.27	0.44	0.00	0.00	0.00	1.00	1.00
Within-Industry	593	0.22	0.42	0.00	0.00	0.00	0.00	1.00

Table 3. Descriptive statistics and correlation table (continued)

Panel B: Pearson correlation coefficients (N = 36,388)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1)	1																			
(2)	-0.09	1																		
(3)	-0.09	0.86	1																	
(4)	-0.12	0.36	0.36	1																
(5)	0,01	0,50	0,15	0,10	1															
(6)	0,01	-0,02	-0,02	-0,02	0,00	1														
(7)	0,06	0,16	0,20	0,01	0,04	0,07	1													
(8)	0,01	-0,15	-0,17	-0,11	0,00	0,00	0,1	1												
(9)	-0,07	0,24	0,28	0,08	0,04	-0,03	0,08	0,04	1											
(10)	-0,03	0,01	0,04	0,01	-0,04	-0,02	-0,02	0,01	0,13	1										
(11)	-0,03	0,17	0,16	0,07	0,07	0,01	0,02	-0,06	0,1	0,01	1									
(12)	0,03	-0,17	-0,18	-0,16	-0,06	0,02	0,27	0,07	0,07	-0,04	-0,03	1								
(13)	0,02	-0,04	-0,03	-0,05	0,00	0,09	0,32	0,00	-0,07	0,00	0,00	0,04	1							
(14)	0,02	-0,03	-0,03	-0,03	-0,01	0,08	0,19	0,00	-0,05	0,00	0,00	0,05	0,58	1						
(15)	-0,04	-0,03	-0,03	-0,04	-0,01	0,02	0,11	0,02	0,01	0,00	-0,02	0,21	0,02	0,01	1					
(16)	0,00	-0,01	-0,01	0,00	0,00	-0,01	0,00	0,01	0,00	0,00	-0,01	0,02	0,00	0,00	0,63	1				
(17)	0,02	-0,13	-0,15	-0,09	0,00	0,00	0,09	0,83	0,02	0,01	-0,05	0,06	0,00	0,00	0,02	0,00	1			
(18)	0,02	0,00	0,00	0,01	0,01	0,01	0,13	0,00	-0,01	-0,09	0,00	0,03	0,09	0,05	0,01	0,00	0,01	1		
(19)	-0,24	0,11	0,09	0,12	0,04	-0,02	-0,01	0,00	0,08	0,02	0,05	-0,03	0,00	0,00	-0,03	0,00	0,00	0,00	1	
(20)	-0,29	0,02	0,02	0,03	-0,01	0,01	-0,06	-0,05	-0,01	0,01	0,00	-0,02	0,00	0,00	0,03	-0,01	-0,04	-0,01	-0,07	1

The only notable value in panel B is the correlation between leverage and the OLR as the OLR is a predicted value of leverage. However, this correlation is not a concern as both variables are only used together in one model, where they represent a relative change rather than an absolute one.

Matching

Matching is defined as selectively pruning the sample by matching each treatment observation with a control observation based on similar characteristics (King & Nielsen, 2019). Matching is used in previous literature to check whether the parallel trend assumption of the DiD research design holds for the pre-treatment period. This means that no significant difference should exist between the control and treatment group prior to the event occurring. In case of significant differences, it could remain uncertain whether the underlying differences between the control and treatment group drive the results. Some studies therefore claim that matching allows for checking a part of this assumption (King & Nielsen, 2019). However, previous literature debates whether the use of matching increases the reliability of finding causal effects as matching can be prone to bias and measurement errors (Kothari & Warner, 2007; King & Nielsen, 2019). This study therefore adopts a combined method. The main analyses are conducted with an unmatched sample, while additional analyses are provided based on two different matching methods to check for robustness.

The first matching method is Propensity Score Matching (PSM) which is often used for event studies in prior literature (e.g., Heckman et al., 1997; Borusyak & Jaravel, 2017; Fauver et al., 2017; Bae et al., 2019). The method uses a logistic regression to estimate the likelihood (propensity) of the treatment occurring for each observation in a given year. This model is then used to match treatment and control firms based on the similarity in propensity scores.

The second matching method is Mahalanobis Distance Matching (MDM) which matches treatment and control firms based on the Mahalanobis distance metrics. The metrics calculates the distance between treatment firm i and control firm j :

$$D(X_i, X_j) = \sqrt{(X_i - X_j)S^{-1}(X_i - X_j)}$$

in which, S represents the covariance matrix of the original unmatched sample X. This approach is preferred over the PSM method as it provides less biased matching results, due to the approximation of a fully blocked randomized experiment rather than a completely randomized experiment through PSM (King & Nielsen, 2019).

Both matching methods apply a nearest neighbour matching technique with replacement. This indicates that control firms can be recycled for different treatment firms, and that pairs with the closest propensity score or Mahalanobis distance are matched. Furthermore, a cut-off point is chosen to prevent dissimilar firms from being matched. This study uses a cut-off point, also known as caliper, of 0.2 for both matching methods, as this is argued to be the optimal width (Austin, 2011). The matching models use firms in similar years and continents and match them based on the leverage and OLR estimation control variables shown in table 2 column 1 (see Appendix D).

In line with Fauver et al. (2019), table 4 shows the difference in means between the unmatched, PSM, and MDM samples for the UK benchmark in 1998. The UK benchmark represents the first enactment of a board reform in the sample, and therefore provides a way to compare the similarity between treatment and control firms after being matched. Table 4 panel A shows the differences in means for the unmatched data set, Panel B for the PSM sample, and Panel C for the MDM sample. Panel A displays significant differences between control and treatment firms for almost all selected firm characteristics except Tangibility, and only at the 5% level for the effective tax rate. The comparability between the control and treatment group increases for the PSM and MDM sample in Panel B and C, which display no significant differences. This indicates that the taken approach is successful in matching similar control and treatment firms.

Table 4. Mean difference UK benchmark year for matched and unmatched samples

This table presents the difference in means for variables in the unmatched, PSM, and MDM sample for the UK benchmark in 1998. Columns 1 and 2 represent the mean values for the control and treatment firms, respectively. Column 3 shows the difference between column 1 and 2. Column 4 contains the p-values based on t-statistics. †, *, **, and *** indicate significant differences between the control and treatment group at the 0.10, 0.05, 0.01, and 0.000 two-tailed level, respectively.

Panel A: UK benchmark unmatched firm characteristics 1998 (N = 1141)				
Variable name	Mean value Control (1)	Mean value Treatment (2)	Difference (3)	P-value (4)
Leverage	0.363	0.175	0.188	0.000***
Firm size	6.865	5.760	1.105	0.000***
Market-to-book	6.981	1.984	4.997	0.008**
Tangibility	0.382	0.381	0.001	0.929
Adjustment costs	0.871	0.510	0.361	0.000***
Profitability	0.060	0.101	-0.041	0.000***
Research and Development Expense	108.684	15.589	93.095	0.000***
Effective tax rate	0.200	0.259	-0.059	0.013*
Panel B: UK benchmark PSM firm characteristics 1998 (N = 342)				
Leverage	0.199	0.196	0.003	0.869
Firm size	6.571	6.361	0.21	0.195
Market-to-book	2.203	2.358	-0.155	0.885
Tangibility	0.361	0.351	0.01	0.649
Adjustment costs	0.559	0.518	0.041	0.247
Profitability	0.103	0.101	0.002	0.852
Research and Development Expense	19.088	23.425	-4.337	0.679
Effective tax rate	0.308	0.300	0.008	0.743
Panel C: UK benchmark MDM firm characteristics 1998 (N = 334)				
Leverage	0.198	0.200	-0.002	0.908
Firm size	6.516	6.359	0.157	0.324
Market-to-book	1.961	2.332	-0.371	0.730
Tangibility	0.342	0.358	-0.016	0.507
Adjustment costs	0.550	0.540	0.01	0.745
Profitability	0.100	0.102	-0.002	0.808
Research and Development Expense	19.949	23.869	-3.92	0.733
Effective tax rate	0.305	0.302	0.003	0.909

RESULTS

This section explores the results of the statistical analysis described in the previous section. It starts with presenting the results for the effect of increases in corporate governance quality on the leverage deviation and the speed of adjustment. The section continues with displaying the effect of governance reforms on the payment method choice of acquiring firms. Finally, some additional analyses are presented to check for additional explanations and robustness.

Leverage deviation

Table 5 provides the results of the fixed effects regression to test the effect of increases in corporate governance quality on the average deviation from the optimal leverage ratio. Panel A contains three columns related to three different samples. The first column is the unmatched sample, the second the matched sample based on PSM, and the third is matched on MDM. All three samples show a significant negative relation between leverage deviation and the enactment of a board reform at the 5% significance level. The enactment of a board reform is shown to decrease the deviation from the optimal leverage ratio up to approximately 0.4 ($p < 0.05$) and 0.5 percentage points ($p < 0.05$). This finding is in line with hypothesis 1 as firms appear to decrease their leverage deviation from the optimal leverage ratio when the quality of corporate governance mechanisms increases, potentially decreasing agency costs related to the Overinvestment and Substitution hypothesis. Although the overall average effect comes down to 33 million less deviation from the optimal leverage ratio in the post-reform period (ceteris paribus), which is economically large, these results should be interpreted with caution as mentioned in the methodology section.

Table 5 panel B displays the effects of each year surrounding the enactment of the reform and its relation to the leverage deviation. To save space, the panel only shows the coefficients of interest as the estimates of the control variables are comparable with table 5 panel A. Consistent with prior literature from Fauver et al. (2017) and Bae et al. (2019), all three models take the year prior to the enactment of the board reform ($t-1$) as the benchmark year to determine whether the leverage deviation changes significantly from zero. The three models in panel B show that the leverage deviation is significantly higher in the first five years prior to the enactment of a corporate governance reform, with the difference becoming smaller (lower p-values) when approaching the benchmark year $t-1$. The leverage deviation from the OLR is on average 2.5 percentage points ($p < 0.000$) further away from the OLR in $t-5$ compared to the average deviation in $t-1$. The

Table 5. Effect of increases in corporate governance reforms on leverage deviation from 1993 till 2012

This table presents the regression results of the effect of increases in governance quality on leverage deviation for a sample between 1993 and 2012 over the event window of [-5, +5]. The dependent variable is *Leverage deviation*, measured as the absolute difference between the actual leverage and the OLR. Panel A displays the main effect of governance reforms on leverage deviation. *Reform* is a dummy variable that equals one for firm-years in a country where a governance reform is effective and zero otherwise. *Firm size(log)* is a log of the total revenues (in millions of US dollars). *Timing* is the measurement of market timing as defined in appendix B. *Tangibility change* is the change in tangibility between each year. *Adjustment costs* is the unlevered version of the Z-score as defined in appendix B table B.1. *Profitability* is the ratio of earnings before interest and taxes divided by total assets. *R&D change* is the change in R&D expenses between years. *Effective tax rate* is the ratio of total income taxes to pre-tax income for the fiscal year *t*. *Effective tax rate change* is the change in effective tax rate between years. *Cash change* the change in cash between years. *Asian crisis* is a dummy variable that equals one if a firm-year is between 1997 and 1999 and is registered in Asia. *DotCom crisis* is a dummy variable that equals one if a firm-year is between 2000 and 2002 and registered in Europe or North America. Panel B shows the main effect separated of major governance reforms over the event window [-5, +5]. t + 5 is excluded due to perfect singularity. The control variables, similar to panel A, are excluded from the table to save space. For both panels, columns 1, 2, and 3 represent the unmatched, PSM, and MDM sample, respectively. The results are tested using firm and year fixed effects. t-statistics are based on the standard errors clustered at the firm level. †, *, **, and *** indicate significance at the 0.10, 0.05, 0.01, and 0.000 two-tailed level, respectively.

Panel A: Reform effect on Leverage deviation

Variable	Unmatched (1)	PSM (2)	MDM (3)
$Reform$	-0.004*	-0.005*	-0.004*
	(0.002)	(0.002)	(0.002)
Firm size (log)	0.005**	0.006**	0.005**
	(0.002)	(0.002)	(0.002)
$Timing$	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)
$\Delta Tangibility$	0.001	0.001	0.000
	(0.009)	(0.011)	(0.011)
$Adjustment\ costs$	0.000	0.001	0.001
	(0.000)	(0.000)	(0.000)
$Profitability$	-0.151***	-0.144***	-0.148***
	(0.008)	(0.010)	(0.011)
$\Delta R\&D\ change$	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
$\Delta Effective\ tax\ rate$	0.0002	0.0003	0.001
	(0.001)	(0.001)	(0.001)
$\Delta Cash$	0.000	0.00000	0.000
	(0.000)	(0.000)	(0.000)
$Asian\ Crisis\ dummy$	0.007†	0.006	0.006
	(0.004)	(0.004)	(0.004)
$DotCom\ dummy$	0.002†	0.002	0.003†
	(0.001)	(0.002)	(0.002)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	36,388	25,259	25,156
R^2	0.023	0.018	0.019

Panel B: Reform effect on leverage deviation for year [-5,+5]

Variable	Unmatched (1)	PSM (2)	MDM (3)
$Reform_{t-5}$	0.027***	0.027***	0.026***
	(0.003)	(0.004)	(0.004)
$Reform_{t-4}$	0.017***	0.017***	0.017***
	(0.002)	(0.003)	(0.003)
$Reform_{t-3}$	0.013***	0.012***	0.013***
	(0.002)	(0.003)	(0.003)
$Reform_{t-2}$	0.005**	0.004*	0.004*
	(0.002)	(0.002)	(0.002)
$Reform_{t}$	-0.005***	-0.005***	-0.004**
	(0.002)	(0.002)	(0.002)
$Reform_{t+1}$	-0.003†	-0.004*	-0.004†
	(0.002)	(0.002)	(0.002)
$Reform_{t+2}$	-0.006**	-0.008***	-0.007***
	(0.002)	(0.002)	(0.002)
$Reform_{t+3}$	-0.008***	-0.008***	-0.008***
	(0.002)	(0.002)	(0.002)
$Reform_{t+4}$	-0.005***	-0.004**	-0.004**
	(0.002)	(0.002)	(0.002)
Controls	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	36,388	25,259	25,156
R^2	0.027	0.023	0.024

reform year, $Reform_t$, shows a decrease in the leverage deviation indicating that average leverage deviations decreased in the year the reform becomes effective ($p < 0.000$). This effect persists up to 4 years after the enactment in all three samples. The first year after the enactment ($t + 1$) is only significant at the 10% level in the unmatched sample and MDM sample, and has only a decrease

from the benchmark year of -0.3 to -0.4 percentage points. The years $t + 2$ till $t + 4$ are all negative and significant with at least a significance level of 1%. The effect ranges between -0.4 and -0.8 percentage points in leverage deviation from the OLR compared to year $t - 1$. Furthermore, note, that the relatively weaker negative relation between the governance reforms and leverage deviation ($p < 0.05$) found in table 5 panel A could potentially be explained by the large decline of leverage deviation in the pre-reform period. The change in the leverage deviation from the OLR changes significantly less after the year of enactment t. This effect could hint towards potential anticipation by firms in countries that enact a major reform after the first reform in the sample, causing leverage deviations to already decline in the pre-reform period. The effects shown in panel B are also visualised in figure E in appendix E.

Overall, these results show that firms significantly decrease their leverage deviation prior to and after the enactment of a corporate governance reform, confirming hypothesis 1.

Speed of adjustment

The results of testing the effect of increases in corporate governance quality on firms' SOA are depicted in table 6. The variable of interest is the interaction term $Reform_t * (OLR_{t+1} - LR_t)$ which measures the effect of corporate governance reforms on firms' speed of adjustment towards the OLR. The interaction term in table 6 shows a significant positive relation with the dependent variable ($LR_{i,t+1} - LR_{i,t}$) of 0.050 ($p < 0.000$). This indicates that in the unmatched sample, reforms increase the SOA by approximately 5 percentage points on top of the average 40.9% speed of adjustment towards the OLR. However, this result does not persist in the PSM and MDM samples as both interaction terms become insignificant. The difference between findings in the three samples could suggest that underlying differences between the control and treatment group drive the increase in the SOA, rather than the reform.

Therefore, only weak support is found for the hypothesis that firms increase their SOA when exposed to increases in corporate governance quality. To remain conservative and acknowledge the limitations of this research, it is important to check whether the results are indeed driven by underlying differences between the control and treatment group or through anticipation.

Table 6. Effect of corporate governance increases on SOA

This table presents the regression results for the effect of increases in governance quality on firm's speed of adjustment (SOA). The dependent variable is the change in leverage ratio between firm-year observations. *Reform* is a dummy variable that equals one for firm-years in a country where a governance reform is effective and zero otherwise. $OLR_{t+1} - LR_t$ represents the speed of adjustment required to adjust to the OLR measured as the future OLR minus the current leverage ratio. $Reform * (OLR_{t+1} - LR_t)$ is the interaction term between *Reform* and $OLR_{t+1} - LR_t$, representing the change in SOA attributable to the increase in governance quality. Columns 1, 2, and 3 represent the unmatched, PSM, and MDM sample, respectively. The results are tested using firm and year fixed effects. t-statistics are based on the standard errors clustered at the firm level. †, *, **, and *** indicate significance at the 0.10, 0.05, 0.01, and 0.000 two-tailed level, respectively.

	Leverage change		
	Unmatched	PSM	MDM
Variable	(1)	(2)	(3)
$Reform_t$	-0.000	0.002	0.002
	(0.002)	(0.003)	(0.003)
$OLR_{t+1} - LR_t$	0.409***	0.434***	0.436***
	(0.012)	(0.015)	(0.015)
$Reform_t * (OLR_{t+1} - LR_t)$	0.050***	0.021	0.021
	(0.015)	(0.018)	(0.018)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	36,388	25,259	25,156
Adj. R^2	0.159	0.171	0.172

Payment method choice

Although the results show a modest impact of increases in governance quality on capital structure decisions, it could be argued that shareholders increase scrutiny when large changes in capital structure are about to occur due to acquisitions (Harford et al., 2009; Chang et al., 2014). Table 7 shows weak support for this argument as column 1 shows a significant negative effect of increases in corporate governance quality on the relation between pre-acquisition leverage and the payment method choice. The unmatched sample contains a negative interaction term of -15.277 ($p < 0.05$), indicating that firms use on average 15 percentage points less cash when financing acquisitions while being overleveraged. However, this result does not persist in the PSM and MDM sample, again indicating that this effect might be driven by underlying differences in the treatment and control groups.

The weak support for hypothesis 3 could relate to the fact that managers might already be under increased scrutiny when initiating an acquisition (Masulis et al., 2007; Hope & Thomas, 2008). Managers might therefore already make better capital structure decisions that are in line with shareholder value creation. Reforms would in this case not add additional value as managers already take shareholder wealth into account.

Table 7. Effect of corporate governance increases on payment method

This table presents a two-boundary Tobit regression model, with boundaries set at 0 and 100, measuring the relation between the acquisition cash payment choice and pre-acquisition leverage ratio, relative to the OLR, conditional on increases in governance quality. The dependent variable is the cash component in the acquisition payment method. *Reform* is a dummy variable that equals one for firm-years in a country where a governance reform is effective and zero otherwise. *OverLev* is a dummy variable that equals one for a firm-year where the leverage is higher than the OLR. $Reform * OverLev$ is the interaction term between *Reform* and *OverLev*, representing the change in cash payment method choice conditional on whether a reform is effective. Columns 1, 2, and 3 represent the unmatched, PSM, and MDM sample, respectively. z-statistics are based on the standard errors clustered at the firm level. †, *, **, and *** indicate significance at the 0.10, 0.05, 0.01, and 0.000 two-tailed level, respectively.

	Percentage cash		
Variable	Unmatched (1)	PSM (2)	MDM (3)
$Reform$	17.293***	10.909	13.687†
	(4.894)	(7.036)	(7.030)
$OverLev$	16.537*	9.445	10.073
	(6.401)	(9.625)	(9.234)
$Reform * OverLev$	-15.277*	-9.121	-13.007
	(7.785)	(11.541)	(11.300)
Controls	Yes	Yes	Yes
N	442	244	238
Scale factor	36.04	37.06	36.54
Adj. R^2	0.097	0.083	0.076

Robustness checks

Anticipation effect

The results shown in the previous section require further investigation to check whether the assumptions of the DiD research design are reasonably met and whether the results persist in different settings. Firstly, the results are checked for meeting the parallel trend assumption of the DiD research design by using the PSM and MDM samples. The parallel trend assumption is more likely to hold when matching firms on pre-treatment covariates (Callaway & Sant'Anna, 2018; Abraham & Sun, 2018). As discussed above, the results of both PSM and MDM samples only hold for the first hypothesis, indicating that the results of table 6 and 7 should be interpreted with caution when trying to infer causal relations. The DiD research design also assumes no anticipation of firms that are not yet exposed to a governance reform, even when firms in neighbouring countries have been. This is tested through two different analyses.

The first analysis divides the sample into two parts, one only containing the reform effect for the first major reform in 1998, and the second contains all reforms after 1998. The first sample tests whether firms unable to anticipate react differently compared to the overall sample. The second sample tests all firms that are able to anticipate, to check whether the effect is relatively weaker after the reform. The intuition behind this, is that if firms expect a reform in their country,

they might already pro-actively adjust their corporate governance quality to reduce the impact of the law. Anticipation could result in a relatively smaller effect of the reform on capital structure decisions in the post-reform period as the adoption period is spread out over both the pre- and post-reform period. Figure 3 shows the effect of the first major reform sample of 1998. The effect of the main coefficient, tested similarly to table 5 panel A, is insignificant and positive. However, the second 'anticipation' sample contains significant negative effects of -0.3 and -0.4 percentage points for the unmatched and PSM sample ($p < 0.05$). Figure 4 shows similar results as table 5 panel B, which is expected as most of the firms in the main analysis are able to anticipate. The steep decline in leverage deviation prior and after the reform remains, indicating that firms move more closely towards their optimal leverage ratio over time. Based on these figures, it is argued that, so far, anticipation is not a threat to the validity of the results. If anticipation occurs, the results would be stronger for figure 3 and weaker for figure 4. However, the opposite occurs as figure 3 shows no significant impact of reforms on leverage deviation for the first reform but only in figure 4 for the anticipation sample. Furthermore, the effect found in figure 4 does not differ much from the findings in table 5 (see Appendix F table F.1 panel A and B).

The second analysis compares the main findings to the results when using a sample with the first reform year rather than the major reform year. The analysis might reveal that firms react less strongly to a major reform when a country has already enacted an earlier reform. Firms might already have implemented the increases in corporate governance quality in the first reform causing no, or reduced, changes to occur in a later major reform. This would result in having a smaller coefficient for the major reform sample, compared to the first reform sample. To test this potential effect, table 8 shows all repeated main analyses using the sample on first reforms in a country, shown in Appendix A from Fauver et al. (2017), and compares them to the main results. The control variables are taken out to save space. Table 8 panel A and B show the results for testing hypothesis 1 with in column 1-3 the sample of the first reforms and 4-6 the results for the major reform sample. Again, if first reforms already implement governance enhancing mechanisms, the effect should be stronger for the first reform sample compared to the major reform sample, as firms are unable to anticipate the changes for the first reform years and are able to anticipate or implement these changes prior to major reform years. Panel A shows that the effect of the first reform sample becomes slightly stronger for all three subsamples in column 1 to 3, ranging between a significant decline of 0.5 ($p < 0.05$) and 0.7 ($p < 0.01$) percentage points in the post-reform

Figure 4. Effect of governance quality increases without anticipation

The graph displays the effect of an increase in corporate governance on the leverage deviation from the optimal leverage ratio, relative to the benchmark year t-1, based on the results for the 1998 sample shown in Appendix F panel B columns 4 to 6. The figure contains the relative deviation from the benchmark year t-1 for the unmatched, PSM, and MDM regression results for years t – 5 till t + 4. t + 5 is excluded due to perfect singularity.

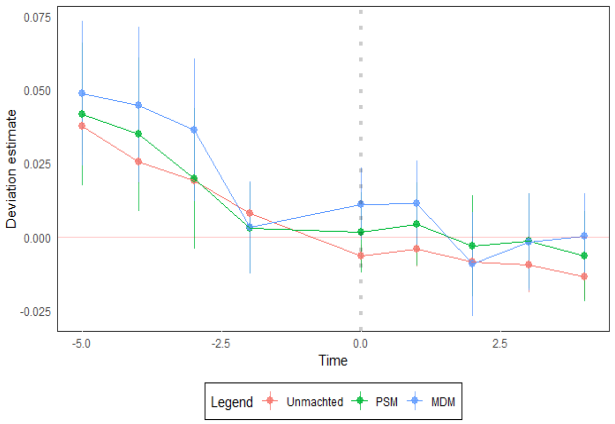


Figure 4. Effect of governance quality increases with anticipation

The graph displays the effect of an increase in corporate governance on the leverage deviation from the optimal leverage ratio, relative to the benchmark year t-1, based on the results for the 2001-2007 sample shown in Appendix F panel B columns 7 to 9. The figure contains the relative deviation from the benchmark year t-1 for the unmatched, PSM, and MDM regression results for years t – 5 till t + 4. t + 5 is excluded due to perfect singularity.

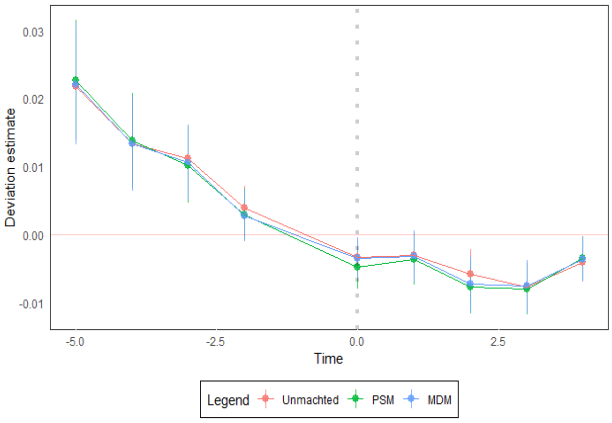


Table 8. Effect of first and major reforms on capital structure decisions

This table presents the regression results of the effect of increases in governance quality on leverage deviation for first and major reform sample over the event window of [-5, +5]. The dependent variable is *Leverage deviation*, measured as the absolute difference between the actual leverage and the OLR. Panel A displays the main effect of governance reforms on leverage deviation. *Reform* is a dummy variable that equals one for firm-years in a country where a governance reform is effective and zero otherwise. Panel B shows the main effect separated for first and major governance reform years over the event window [-5, +5]. t + 5 is excluded due to perfect singularity. The control variables, similar to panel A, are excluded from the table to save space. Panel C presents the regression results for the effect of increases in governance quality on firm's speed of adjustment (SOA). The dependent variable is the change in leverage ratio between firm-year observations. *Reform* is a dummy variable that equals one for firm-years in a country where a governance reform is effective and zero otherwise. $OLR_{t+1} - LR_t$ represents the speed of adjustment required to adjust to the OLR measured as the future OLR minus the current leverage ratio. $Reform * (OLR_{t+1} - LR_t)$ is the interaction term between *Reform* and $OLR_{t+1} - LR_t$, representing the change in SOA attributable to the increase in governance quality. Panel D presents a two-boundary Tobit regression model, with boundaries set at 0 and 100, measuring the relation between the acquisition cash payment choice and pre-acquisition leverage ratio, relative to the OLR, conditional on increases in governance quality. The dependent variable is the cash component in the acquisition payment method. *Reform* is a dummy variable that equals one for firm-years in a country where a governance reform is effective and zero otherwise. *OverLev* is a dummy variable that equals one for a firm-year where the leverage is higher than the OLR. $Reform * OverLev$ is the interaction term between *Reform* and *OverLev*, representing the change in cash payment method choice conditional on whether a reform is effective. For all panels, columns 1, 2, and 3 represent the Unmatched, PSM, and MDM sample, respectively, for the First reform sample, and columns 4, 5, and 6 represent the Unmatched, PSM and MDM samples for the Major reform sample. The results for panels A, B, and C are tested using firm and year fixed effects. t-statistics (z-statistics for panel D) are based on the standard errors clustered at the firm level. †, *, **, and *** indicate significance at the 0.10, 0.05, 0.01, and 0.000 two-tailed level, respectively.

Panel A: Reform effect on Leverage deviation for first and major reform sample

	First Reform			Major Reform		
	Unmatched	PSM	MDM	Unmatched	PSM	MDM
Variable	(1)	(2)	(3)	(4)	(5)	(6)
$Reform$	-0.005*	-0.007**	-0.007**	-0.004*	-0.005*	-0.004*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	29,123	18,917	18,834	36,388	25,259	25,156
R^2	0.024	0.019	0.021	0.024	0.019	0.021

Table 8. Effect of first and major reforms on capital structure decisions (continued)

Panel B: Reform effect on leverage deviation for year [-5,+5] for different reform samples

	First Reform			Major Reform		
	Unmatched	PSM	MDM	Unmatched	PSM	MDM
Variable	(1)	(2)	(3)	(4)	(5)	(6)
$Reform_{t-5}$	0.012*	0.010†	0.008	0.027***	0.027***	0.026***
	(0.005)	(0.006)	(0.006)	(0.003)	(0.004)	(0.004)
$Reform_{t-4}$	0.005	0.003	0.002	0.017***	0.017***	0.017***
	(0.004)	(0.004)	(0.004)	(0.002)	(0.003)	(0.003)
$Reform_{t-3}$	0.006*	0.005	0.005	0.013***	0.012***	0.013***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
$Reform_{t-2}$	0.005*	0.005*	0.005*	0.005**	0.004*	0.004*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$Reform_t$	-0.004*	-0.004*	-0.004*	-0.005***	-0.005***	-0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$Reform_{t+1}$	-0.004*	-0.004†	-0.005*	-0.003†	-0.004*	-0.004†
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$Reform_{t+2}$	-0.006**	-0.006*	-0.007**	-0.006**	-0.008***	-0.007***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$Reform_{t+3}$	-0.008***	-0.007**	-0.007**	-0.008***	-0.008***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$Reform_{t+4}$	-0.004**	-0.002	-0.003†	-0.005***	-0.004**	-0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	29,123	18,917	18,834	36,388	25,259	25,156
R^2	0.025	0.020	0.022	0.027	0.023	0.024

Panel C: Effect of corporate governance increases on SOA for First and Major reforms

	First Reform			Major Reform		
	Unmatched	PSM	MDM	Unmatched	PSM	MDM
Variable	(1)	(2)	(3)	(4)	(5)	(6)
$Reform_t$	0.007*	0.005	0.003	0.000	0.002	0.002
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
$OLR_{t+1} - LR_t$	0.399***	0.426***	0.426***	0.409***	0.434***	0.436***
	(0.014)	(0.017)	(0.017)	(0.012)	(0.015)	(0.015)
$Reform_t * (OLR_{t+1} - LR_t)$	0.079***	0.050*	0.054**	0.050***	0.021	0.021
	(0.017)	(0.021)	(0.021)	(0.015)	(0.018)	(0.018)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	29,123	18,917	18,834	36,388	25,259	25,156
Adj. R^2	0.161	0.173	0.174	0.159	0.171	0.172

Panel D: Effect of corporate governance increases on payment method for First and Major reforms

	First Reform			Major Reform		
	Unmatched	PSM	MDM	Unmatched	PSM	MDM
Variable	(1)	(2)	(3)	(4)	(5)	(6)
$Reform$	19.019***	11.920	12.870	17.293***	10.909	13.687†
	(5.308)	(8.312)	(8.666)	(4.894)	(7.036)	(7.030)
$OverLev$	18.780**	15.230	10.724	16.537*	9.445	10.073
	(6.762)	(9.365)	(10.327)	(6.401)	(9.625)	(9.234)
$Reform * OverLev$	-16.378*	-13.530	-8.497	-15.277*	-9.121	-13.007
	(8.312)	(11.91)	(12.794)	(7.785)	(11.541)	(11.300)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	363	173	166	442	244	238
Scale factor	36.23	35.01	36.08	36.04	37.06	36.54
Adj. R^2	0.105	0.034	0.062	0.097	0.083	0.076

leverage deviation. However, the coefficients for the first reform sample are not significantly different from their major reform counterparts in columns 4 to 6, when using the methodology described by Clogg et al. (1995) and Paternoster et al. (1998) for comparing regression coefficients.

Table 8 panel B shows the difference in effects for 5 years prior and 4 years after the enactment of a first reform and major reform, with the year prior to the reform $(t-1)$ as a benchmark year. The results in columns 1 to 3 show a different pattern for the pre-reform period, but similar pattern for the post-reform period, compared to the major reform sample in columns 4 to 6. The pre-reform change in leverage deviation (year $t-5$ till $t-2$) is smaller for firms in countries enacting their first reform compared to countries enacting major reforms (0.007 versus 0.022). Furthermore, the pre-reform change appears to be less volatility in the first reform sample, hinting towards potential confounding events for firms that are exposed to major reforms. This change in pre-major reform deviation is likely to be a consequence of the first reform, causing firms to already adopt prior to the major reform. First reforms occur on average 4 years prior to the major reform. The large decline in relative leverage deviation between $t-5$ and $t-4$ in columns 4 to 6 could therefore be potentially attributed to the confounding first reform effect. Nonetheless, the results still show a negative impact of governance reforms on leverage deviation in the post-reform period. These results, therefore, provide evidence in favour of the argument that increases in governance quality via reforms decrease leverage deviation, again confirming hypothesis 1.

Table 8 panel C shows the results for testing the effect of the first reform sample and the major reform sample on firm's SOA. The results in column 1 to 3 show that first reforms have a significant positive impact on firm's SOA, increasing the speed between 5 ($p < 0.05$) and 7.9 ($p < 0.000$) percentage points in the post-reform period. First reforms appear to have a stronger effect on the SOA compared to major reforms, especially in the PSM and MDM sample where the effect is significant for columns 1 to 3 and insignificant for column 5 and 6. These findings are in line with hypothesis 2. It also shows that the different findings in table 6 are not related to differences in underlying firm characteristics between control and treatment group, but due to firms already adjusting their SOA prior to the major reform as a result of the first reform.

Table 8 panel D displays the effect of the first- and major reform samples on the payment method choice of acquiring firms. Both the first and major reform show a significant negative relation between the cash payment choice and an increase in governance quality when firms are overleveraged. This effect ranges between the -16.378 and -15.277 percentage points cash used

when acquiring a firm in the post-reform period for column 1 and 4, respectively. However, this effect does not persist for the matched samples indicating that the effect might be driven by underlying differences between the treatment and control group. Nonetheless, columns 1 and 4 show support for hypothesis 3, where firms are less likely to use cash as their preferred payment method when they are overleveraged after governance quality has increased.

Reform characteristics

Based on the above discussed robustness tests, an alternative case could be made that the characteristics of the reform play a role in determining the impact of the reform on firm's leverage deviation. The analysis uses a dummy variable that equals one if a reform is 'Rule-based' and zero otherwise. The unreported results show weak support that Rule-based reforms are more effective in reducing leverage deviation by at least -0.4 percentage points ($p < 0.1$). Nonetheless, the SOA is found to reduce as a consequence of Rule-based reforms by approximately -9.0 and -16.4 percentage points in the post-reform period ($p < 0.01$ and $p < 0.000$ respectively). Lastly, Rule-based reforms are not found to influence the payment method choice for under- and overleveraged firms.

In addition, Fauver et al. (2017) find that the intensity of the reform might influence the impact of a reform. The intensity of a reform relates to how many characteristics are present within a reform, e.g., board independence or auditor independence, as shown in table 1 columns 3 to 6. An intensity scale is therefore created as a categorical variable that equals the number of characteristics present in the reform with a maximum of 4 if all reform characteristics are present for a given reform. Non-tabulated analyses show that only a reform intensity of 3 reform characteristics has a significant negative effect on firm's post-reform leverage deviation. However, this effect is mainly driven by the significant impact of the additional non-board reforms, indicating that the interaction between different reforms for governance mechanisms significantly influences governance outcomes.

Overleveraged effect

An additional concern is that overleveraged firms might react differently to increases in governance quality compared to underleveraged firms, as management might have different motives for adopting their specific capital structure (Chang et al., 2014). Table 9 shows the interaction between

Table 9. Effect of under- and overleveraged firms on reform effect

This table presents the different reform effect for under- and overleveraged firms for the major reform sample. The dependent variable is leverage deviation. *Reform* is a dummy variable that equals one for firm-years in a country where a governance reform is effective and zero otherwise. *OverLev* is a dummy variable that equals one for a firm-year where the leverage is higher than the OLR. The interaction term of $Reform * OverLev$ is separated in the effect for underleveraged firms $Reform(1) * OverLev(0)$ and overleveraged firms $Reform(1) * OverLev(1)$. Columns 1, 2, and 3 represent the unmatched, PSM, and MDM sample, respectively. t-statistics are based on the standard errors clustered at the firm level. †, *, **, and *** indicate significance at the 0.10, 0.05, 0.01, and 0.000 two-tailed level, respectively.

Variable	Leverage deviation		
	Unmatched (1)	PSM (2)	MDM (3)
*Reform (1) * Overleveraged (0)*	-0.007***	-0.009***	-0.008***
	(0.002)	(0.002)	(0.002)
*Reform (1) * Overleveraged (1)*	0.000	0.001	0.001
	(0.002)	(0.002)	(0.002)
Controls	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	36,388	25,259	25,156
R^2	0.025	0.021	0.021

a reform year and a dummy variable that equals one if a firm has a leverage deviation above the optimal leverage ratio (overleveraged) and otherwise zero. The table displays that underleveraged firms have a significant decrease in post-reform leverage deviation ranging between -0.7 and -0.9 percentage points ($p < 0.000$) for all three samples. On the other hand, no significant change is found in the leverage deviation for overleveraged firms. This could potentially be explained by two factors. First, the Substitution hypothesis argues that high leverage ratios substitute for poor governance quality, mitigating the consequences of increases in governance quality through a reform (Hirshleifer & Thakor, 1992; Berger et al., 1997; Israel, 1991). Overleveraged firms would not be affected by an increase in governance quality as they are already disciplined by their high levels of debt, making management unable to destroy shareholder value through e.g., empire building. A second explanation could be that overleveraged firms might face financial distress, making them unable to adjust their leverage ratio to the OLR as this would impose significant costs. These firms require their high debt levels to survive and might not be able to lower it. This effect would be stronger in times of financial crisis, where it is more expensive to raise capital.

Financial crisis effect

The findings presented in table 9 might hint towards a potential bias in the sample as no controls are used for the effect of financial distress during the financial crisis. During this period,

overleveraged firms might not be able to increase their debt due to their own constraints, while underleveraged firms can still take on debt and move closer to the OLR. This could create a misleading effect that is not related to increases in governance quality, but due to the interaction between overleveraged and underleveraged firms as is shown in table 9. Nonetheless, non-tabulated results show that the main coefficients are still significant ($p < 0.05$) after limiting the sample to only contain reform years prior to 2003, eliminating the potential effect of the financial crisis. It could therefore be argued that the substitution effect might be the main driver of the findings in table 9.

Pseudo reforms

Lastly, a pseudo reform year sample is created to check whether the effect is attributable to the specific reform year or is randomly present within the data. Each country receives a randomly assigned reform year and the main analyses is repeated. The reform effect becomes insignificant for all models, indicating that the effect can be assigned to the specific reform years rather than being randomly present within the data.

LIMITATIONS AND FUTURE RESEARCH

This paper uses a static trade-off theory perspective to determine the effect of increases in governance quality on leverage deviation. This also shows the boundaries of the used theory. It assumes that an optimal leverage ratio exists and seeks to approximate this by estimating the supposed leverage ratio based on industry and firm characteristics. Therefore, the results from the used models hinge critically on the effective estimation of the optimal leverage ratio. Potential measurement errors in predicting this value could in this case severely bias the results. Furthermore, some studies argue that no optimal ratio exists, creating a new question to explore what could be the driver of the results found in this paper when following other capital structure theories.

Furthermore, the models used for hypothesis 2 might suffer from omitted variable bias as other variables such as adjustment costs might influence firms their speed of adjustment. However, as each control variable would have to be interacted with the SOA term, it would significantly complicate the model. An additional limitation of the approach taken is that a pooled OLS estimation of the optimal leverage ratio is argued to be biased downward, while firm fixed effects bias the coefficients upwards (Lemmon et al., 2008; Huang & Ritter, 2009; Hsiao, 2014). The

results could therefore be biased either way, making it hard to determine whether the coefficients in the models are reliable and consistent when repeated for different datasets. Lastly, prior literature argues that Euclidean distance is a superior matching technique compared to Mahalanobis Distance Matching as it does not involve standardizing the variables (King & Nielsen, 2019). This allows the researcher to add additional insights from theory into the matching procedure. However, this paper uses MDM as the used R-packages only supports MDM and not Euclidean distance. Future studies should nonetheless seek to apply Euclidean distance rather than Mahalanobis distance.

An additional limitation to the internal validity could be that the models for hypotheses 1 and 2 do not control for ownership, while a relation is argued to exist (Shleifer & Vishny, 1997; Faccio & Lang, 2002). However, this would bias the results against finding a significant effect as large ownership stacks are claimed to result from poor shareholder protection. Governance reforms would be less effective for firms with high ownership stacks as management is already under higher levels of scrutiny compared to weak governance firms. These firms are therefore less likely to show a significant change in leverage deviation in the post-reform period.

Moreover, the external validity might be relatively low for acquiring firms due to the small sample size, making it hard to generalize the findings to the larger population. Future research could therefore expand the current setting by including more acquisitions to check the robustness of the results. In addition, this study might add to the literature seeking to determine the influences of corporate governance on post-acquisition capital structure decisions. For example, researchers could look at the effect of the payment method on post-acquisition leverage deviation, or post-acquisition changes in corporate governance and how this effects capital structure decisions.

Additionally, this research shows that corporate governance can have a significant influence on capital structure decisions and might therefore provide a solution for the decreasing explanatory power of variables that predict capital structures, since the 1980s (Graham & Leary, 2011). Researchers might, therefore, seek to further explore the boundaries and size of this potential influence to deepen our knowledge concerning capital structure decisions.

Lastly, future research could check whether the setting holds for other exogenous changes in governance quality and if other definitions of leverage and optimal leverage ratio still provide consistent results. It could also look into why Rule-based reforms significantly reduce the speed of adjustment, as this might have something to do with the country specific characteristics. However, this is beyond the scope of this research.

CONCLUSION

This study explores the relation between exogenous increases in governance quality and firms' capital structure decisions using a sample of 3,482 publicly listed firms in 22 countries. The study uses a DiD research design to test the change in capital structure decisions after the enactment of a corporate governance reform. The results show that increases in governance quality significantly reduce the leverage deviation from the optimal leverage ratio up to 5 years after a reform. The effect size ranges between 0.4 and 0.7 percentage points, which is considered economically large.

Furthermore, the results indicate that firms increase their SOA after increases in governance quality. Firms significantly increase their SOA up to 5 percentage points for major governance reforms. In addition, acquiring firms are found to reduce the cash component in the acquisition payment method after increases in governance quality, when they are overleveraged prior to the acquisition. However, the latter result should be interpreted with caution as it does not hold for the matched samples and does not improve during the robustness tests.

Further insights are derived from the robustness checks. The main effects of governance quality on leverage deviation and SOA are strengthened when using first reforms in countries rather than major reforms. Firms could already implement governance changes after the first reform, reducing the effect of major reforms. Hence, ruling out potential anticipation and strengthening the underlying DiD assumptions. In addition, only non-board reforms significantly strengthen the relation between increases in governance quality and leverage deviation. Furthermore, underleveraged firms are the main drivers of the effects found for the reduction in leverage deviation, while overleveraged firms do not significantly adjust in the post-reform period. This effect is argued to relate to the Substitution hypothesis and not due to financial distress during a financial crisis. Moreover, rule-based reforms are considered less effective for increasing firms' SOA. Lastly, the findings are not a result of random assignment in the sample, tested through pseudo reform years.

The above stated findings are in line with prior literature, which predicts that increases in governance quality reduce agency costs and subsequently lowers the deviation from the optimal leverage ratio to maximize shareholder value (Morellec et al.. 2012; Jiraporn et al., 2012; Chang et al., 2014). Hence, making the results consistent with the agency theory and static trade-off theory. The results therefore confirm that governance reform could be effective in reducing agency costs through capital structure decisions.

APPENDIX A

Table A.1: First board reforms per country

The table reports the first board reforms by country. Column 1 displays the year in which a reform becomes effective for a given country. Columns 2-4 represent the reform characteristics, whether a reform covers board independence, audit independence, and separation of the chairman and CEO position. Column 5 shows if a board reform occurs simultaneously with a non-board governance reform, and column 6 shows the type of reform that is enacted.
Source: Fauver, Hung, Li, and Taboada (2017)

Country	Reform year (1)	Board independence (2)	Audit committee and auditor independence (3)	Chairman and CEO role (4)	Non-board reform (5)	Type (6)
Argentina	2001	0	1	0	1	Rule-based
Australia	2003	1	1	0	1	Comply-or-explain
Austria	2002	1	1	0	1	Comply-or-explain
Belgium	1998	1	0	0	1	Comply-or-explain
Brazil	2002	0	0	0	1	Rule-based
Canada	2004	1	1	1	0	Rule-based
Chile	2001	0	1	0	1	Rule-based
China	2001	1	1	0	1	Rule-based
Colombia	2001	0	0	0	1	Rule-based
Czech Republic	2001	0	0	0	1	Rule-based
Denmark	2001	1	0	0	1	Comply-or-explain
Egypt	2002	1	1	0	1	Rule-based
Finland	2003	1	1	0	1	Comply-or-explain
France	2001	0	0	1	1	Rule-based
Germany	2002	1	1	0	1	Comply-or-explain
Greece	1999	0	0	0	1	Comply-or-explain
Hong Kong	2005	1	1	1	0	Comply-or-explain
Hungary	2003	0	0	0	0	Comply-or-explain
India	1998	0	0	0	1	Comply-or-explain
Indonesia	2000	1	0	0	1	Comply-or-explain
Israel	2000	1	1	1	1	Rule-based
Italy	2006	1	1	0	1	Rule-based
Japan	2002	0	1	0	0	Rule-based
Malaysia	2001	1	1	0	0	Comply-or-explain
Mexico	1999	1	1	0	1	Comply-or-explain
Netherlands	1997	0	0	0	1	Comply-or-explain
Norway	2005	1	1	1	1	Comply-or-explain
Pakistan	2002	0	1	0	0	Comply-or-explain
Peru	2002	1	1	1	0	Comply-or-explain
Philippines	2002	1	1	0	1	Comply-or-explain
Poland	2002	1	0	0	1	Comply-or-explain
Portugal	1999	0	0	0	1	Comply-or-explain
Singapore	2003	1	1	0	1	Comply-or-explain
South Korea	1999	1	1	0	1	Rule-based
Spain	1998	0	1	0	1	Comply-or-explain
Sweden	2005	1	1	1	0	Rule-based
Switzerland	2002	0	0	0	1	Comply-or-explain
Thailand	2002	1	1	0	1	Comply-or-explain
Turkey	1999	0	0	0	1	Rule-based
United Kingdom	1992	1	1	1	1	Comply-or-explain
United States	2003	1	1	0	1	Rule-based

APPENDIX B

This appendix explains the control variables, the intuition behind their inclusion and how they are measured. Table 2.1 shows the variables used for estimating the optimal leverage ratio (OLR). The variables chosen are mostly firm characteristics similar to Rajan and Zingales (1995), Fama and French (2002), Flannery and Rangan (2006), and Chang et al (2014). Table 2.2 shows the variables for measuring the effect of corporate governance reforms on the deviation from the OLR. Table 2.3 depicts the control variables for the effect of corporate governance quality on the relation between pre- and post-acquisition leverage deviation.

Table 2.1 Control variables Optimal leverage ratio

Control variable	Description for inclusion	Measurement
Firm size	Firm size can affect the excess to financial resources and the height of the debt boundary. *Sources*: Kayhan & Titman (2007); Harford et al (2009); Graham & Leary (2011)	Logarithm of the revenue for fiscal year t.
Market-to-book ratio (M/B)	A higher M/B ratio might signal larger future growth and investment opportunities, leading to a different optimal leverage ratio or to adjust to take on more equity to prevent the constraints of debt. *Sources:* Faccio & Masulis (2005); Kayhan & Titman (2007); Harford et al (2009); Chang et al (2014)	Equals the market value of equity (shares outstanding * share price at end of fiscal year) divided by total assets of fiscal year.
Tangibility	Firms with higher ratios of tangible assets can use these assets as collateral for debt, decreasing the costs of debt and increasing the debt capacity. *Sources:* Leary & Roberts (2005); Kayhan & Titman (2007); Harford et al (2009)	Ratio of net property, plant, and equipment divided by total assets.

***Table 2.1* (*continued*)**

Adjustment costs	In the absence of adjustment costs, companies are argued to instantly take on the OLR. However, higher adjustment costs prevent certain firms from reaching the OLR. *Sources:* Fama & French, 2002; Welch, (2004); Harford et al (2009)	A modified unlevered version of the Z-score is used and equals (Total assets) / (3.3 times earnings before interest and taxes + Revenue + 1.4 times retained earnings + 1.2 times working capital).
Profitability	Prior literature argues that firms with higher profitability have different OLR due to the financial constraints of debt and a large potential tax shield. *Sources:* Kayhan & Titman (2007); Antoniou et al (2008); Chang et al (2014)	Ratio of earnings before interest and taxes (EBIT) divided by total assets.
Growth opportunities	Firms with many growth opportunities are argued to have significantly different capital structures due to the constraints of debt. Furthermore, firms with high R&D expenditures might prefer lower leverage to protect themselves against risk of default. *Sources:* Kayhan & Titman (2007); Harford et al., 2009; Chang et al (2014)	Measured as the ratio of R&D expenses to total assets in year $t-1$.
Effective tax rate	Static trade-off theory argues that tax rates determine the benefits of debt throught the size of the tax shield. *Sources:* Graham & Harvey (2001); Antoniou et al (2008); Graham & Leary (2011)	Ratio of total income taxes to Pre-tax Income for fiscal year t.

***Table 2.1* (*continued*)**

Asian Crisis	Confounding events that influence firm's capital structure decisions such as the Asian financial crisis can significantly influence the results (Mishkin, 1999).	Measured as a dummy variable that equals one if a firm-year is between 1997 and 1999 and is registered in Asia.
DotCom crisis	Confounding events such as the Dot-Com bubble can significantly influence firm's capital structure decisions and should therefore be controlled for (Junior & Franca, 2012).	Measures as dummy variable that equals one if a firm-year is between 2000 and 2002 and registered in Europe or North America.

Table 2.2 Control variables Leverage deviation

Control variable	Description for inclusion	Measurement
Firm size	See table 2.1 Appendix B	See table 2.1 Appendix B
Market timing	Firms might deviate from the optimal leverage ratio as they try to time the market for a favourable equity issuance. Firms could either be underleveraged due to favourable equity prices, or underleveraged due to unfavourable equity prices. The variable takes on large values when the firm issues equity when the market-to-book ratio is high, and small when no issues are made during high market-to-book ratios. It is a lagged variable for the year prior to the fiscal year when measuring the deviation from the OLR. The variables in the equation are calculated as follows: Book equity: total assets - Total Liabilities - Preferred Stock + Deferred Taxes Net equity issued: Change in Book Equity - change in Balance Sheet Retained Earnings Net debt Issue: Residual Change in Assets = change in total assets - *net equity issue* – change Retained earnings *Sources:* Baker & Wurgler (2002); Kayhan & Titman (2007)	$\sum_{s=0}^{t-1} \frac{e_s + d_s}{\sum_{r=0}^{t-1} e_r + d_r} * \left(\frac{M}{B}\right)_s$ In which both summations are taken starting at the first uninterrupted data point in the sample. e and d are the net equity issue and net debt issue, respectively, and $\frac{M}{B}$ represents the market-to-book ratio in year s.
Δ Tangibility	Changes in tangibility might shift the optimal leverage ratio, causing firms to readjust their capital structure. *Sources:* Leary & Roberts (2005); Kayhan & Titman (2007); Harford et al (2009)	Change in the ratio of net property, plant, and equipment to total assets between $t-1$ and t
Adjustment costs	See table 2.1 Appendix B	See table 2.1 Appendix B

***Table 2.2* (*continued*)**

Profitability	See table 2.1 Appendix B	See table 2.1 Appendix B
Δ R&D expenses	Firms might deviate from the OLR as they need to invest in new growth opportunities or finish their current innovation program. This might cause the OLR to shift and could require adjustments. *Sources:* Kayhan & Titman (2007); Harford et al., 2009; Chang et al (2014)	Change in the ratio of R&D expenses to total assets between $t-1$ and t
Δ Effective tax rate	Prior literature argues that tax rate changes can drive changes in capital structure as the benefits through tax savings change. *Sources:* Graham & Harvey (2001); Antoniou et al (2008); Graham & Leary (2011)	Change in the ratio of total income taxes to Pre-tax Income between $t-1$ and t
Δ Cash	Changes in available cash might indicate changes in investment patterns unrelated to the issuance of debt and equity. This could change the drivers of the OLR without changing the leverage ratio. *Sources:* Graham & Harvey (2001); Graham & Leary (2011)	Change in the Cash and Cash equivalents between $t-1$ and t
Asian Crisis	See table 2.1 Appendix B	See table 2.1 Appendix B
DotCom crisis	See table 2.1 Appendix B	See table 2.1 Appendix B

Table 2.3 Control variables payment method

Control variable	Description for inclusion	Measurement
Firm size	See table 2.1 Appendix B	See table 2.1 Appendix B
Market timing	Firms might structure their payment method to achieve a favourable equity issuance when paying for an acquisition. This could result in a higher equity component unrelated to the effect of corporate governance and away from the OLR. *Sources:* Baker & Wurgler (2002); Shleifer & Vishny (2003); Jenter (2005); Kayhan & Titman (2007)	See table 2.2 Appendix B
Tangibility	See table 2.1 Appendix B	See table 2.1 Appendix B
Relative target size	The size of the target might result in the acquiror not being able to pay the optimal payment method as it is restricted through a debt capacity. Relatively large acquisitions might therefore have different payment methods than smaller ones. *Sources:* Martin (1996); Faccio & Masulis (2005)	Ratio of target revenue to acquiror revenue in year $t-1$.
Cross border	Prior research shows that firms might have a home country bias and will therefore be less likely to sell stocks to foreign shareholders. This can potentially decrease the equity component in the payment method. Furthermore, cross border acquisitions can expose the firm to new regulation and different tax systems. *Sources:* Faccio & Masulis (2005); Uysal (2011); Graham & Leary (2011)	A dummy variable equal to one for target firms with a different home country than the acquiror, otherwise zero.

***Table 2.3* (*continued*)**

Market-to-book ratio	See table 2.1 Appendix B	See table 2.1 Appendix B
Growth opportunities	Firms with large growth opportunities are argued to have a higher probability of financing the acquisition with equity rather than cash (henceforth, debt) High growth firms are likely to require capital investments to pursue their growth and try to prevent financial constraints as interest payments decrease future free cash flows. *Sources:* Smith & Watts (1992); Martin (1996); Harford et al (2009); Uysal (2011); Alshwer et al. (2011).	See table 2.1 Appendix B
Ownership	Prior literature argues that management makes payment decisions based on incentives to maintain voting power and control for current shareholders. Equity acquisitions dilute current shareholder voting power causing these shareholders to potentially lose their minority or majority interest. To avoid these corporate control concerns, firms with large shareholders are less likely to issue equity compared to debt. *Sources:* Stulz (1988); Amihud et al (1990); Martin (1996); Ghosh & Ruland (1998); Faccio & Masulis (2005)	Ownership is measured using a dummy variable that equals one for firms that have at least one owner with more than 10% control stake in the year prior to the acquistiion, and zero otherwise. The 10% threshold is argued to provide enough incentive to monitor management (Shleifer & Vishny, 1997; La Porta, et al., 1999; Faccio & Lang, 2002).

***Table 2.3* (*continued*)**

Within industry	Equity might be less attractive as a payment method for firms that acquire a firm form a different industry. Target shareholders might have less knowledge about the industry risks and future prospects of the acquiring firm. This could result in a relatively less effective payment method as cash is valued higher than equity. *Sources:* Faccio & Masulis (2005)	Measured as a dummy variable that equals one if the acquiror and target firm are in the same industry, and zero otherwise.
Country legal origin	The sample contains data from multiple countries and there should therefore be controlled for countries' legal system and shareholder rights. *Sources:* Antoniou et al (2008); Chang et al (2014)	The legal system origin of each country is retrieved from Porta et al (1998) and is measured using a categorial variable.
Target legal origin	Acquiring a firm in another country might impose different laws on the acquiror. A different legal origin might then provide different changes to the OLR, and the payment method used. *Sources:* Faccio & Masulis (2005); Harford et al (2009)	Measured as a dummy variable equal to one if the target has different legal origin compared to the acquiror, and otherwise zero.
Asian Crisis	See table 2.1 Appendix B	See table 2.1 Appendix B
DotCom crisis	See table 2.1 Appendix B	See table 2.1 Appendix B

APPENDIX C

Table C Procedure to estimate the OLR for 1993 till 2012

This section covers the procedure for estimating the *OLR*. Panel A summarizes the results of estimating a regression model to predict the market leverage in year t based on the firm characteristics in table 2 and firm- and year fixed effects. The model is based on a pooled regression model in line with Kayhan and Titman (2007). The values of this model can range beyond the boundaries of 0 and 1 and are therefore truncated to fit between 0 and 1. The dependent variable is a continuous variable that represents the market leverage in year *t*. *Firm size(log)* is a lagged log of the total revenues (in millions of US dollars). *Market-to-book* represents the lagged market value of equity scaled by the book value of total assets. *Tangibility* is the ratio of net property, plant, and equipment divided by total assets. *Adjustment costs* is the lagged unlevered version of the Z-score as defined in appendix B table B.1. *Profitability* is the ratio of earnings before interest and taxes divided by total assets. *Growth opportunities* is the lagged ratio of R&D expenditures divided by total assets. *Effective tax rate* is the lagged ratio of total income taxes to pre-tax income for the fiscal year *t*. Panel B contains the statistics before and after the truncation together with the effect of normalizing the data to fit between 0 and 1, rows *Truncated OLR* and *Normalized OLR* respectively. The number of observations in panel A and B is higher compared to the sample used in the main regressions due to the requirement of having a lagged variable to predict next year's optimal leverage ratio.

Panel A: OLS regression of estimating OLR for years 1993-2012	
Variable	Leverage
$Firm\ size\ (log)_{t-1}$	0.030***
	(0.000)
$Market-to-book_{t-1}$	0.000
	(0.000)
$Tangibility_{t-1}$	0.180***
	(0.020)
$Adjustment\ costs_{t-1}$	-0.000**
	(0.000)
$Profitability_{t-1}$	-0.330***
	(0.030)
$Growth\ opportunities_{t-1}$	-0.000
	(0.000)
$Effective\ tax\ rate_{t-1}$	-0.001*
	(0.000)
Firm fixed effects	Yes
Year fixed effects	Yes
N	54.196
Adj. R^2	0,694
** p < 0.05; ** p < 0.01; *** p < 0.000*	

Table C Procedure to estimate the OLR for 1993 till 2012

Panel B: Descriptive statistics OLR estimation for year 1993-2012

Variable	N	Mean	St.Dev.	Min	Q1	Median	Q3	Max
Leverage	54.196	0,24	0,23	0,00	0,04	0,18	0,39	1,00
Fitted OLR	54.196	0,24	0,19	-0,31	0,09	0,21	0,37	1,71
Truncated OLR	54.196	0,25	0,19	0,00	0,09	0,21	0,37	1,00
Normalized OLR	54.196	0,27	0,10	0,00	0,20	0,26	0,34	1,00

APPENDIX D

Table D shows the development of the PSM matching method. The second method MDM calculates a distance measure called the Mahalanobis distance metrics. As the value itself has no descriptive meaning, no figures are provided. The variables used for calculating the measurement are similar to the ones used for PSM.

Table D. Logit model used to predict propensity scores for UK benchmark

The PSM approach relates to pairing control and treatment firms based on similarity of characteristics (King & Nielsen, 2019). PSM first estimates a logistic regression, in this case a logit model, shown in table D for the UK benchmark sample shown in table 4. As explained earlier, the model is used to estimate propensity scores for each firm in year *t* of the reform. In other words, the logit model is estimated for each year in which a reform is enacted and matches treatment and control firms with each other in this sample. The reform year subsample matches firms without replacement within single reform years, but with replacement for each new reform year, causing some firms to be a control firm for multiple reform years. The matching procedure uses a calliper of 0.2. Table D represents the logistic regression for estimating the propensity scores for the UK benchmark sample. The dependent variable is a dummy variable indicating treatment firms. *Leverage* is the ratio of total debt divided by total debt and equity. *Firm size(log)* is a log of the total revenues (in millions of US dollars). *Market-to-book* represents the market value of equity scaled by the book value of total assets. *Tangibility* is the ratio of net property, plant, and equipment divided by total assets. *Adjustment costs* is the unlevered version of the Z-score as defined in appendix B table B.1. *Profitability* is the ratio of earnings before interest and taxes divided by total assets. *Growth opportunities* is the ratio of R&D expenditures divided by total assets. *Effective tax rate* is the lagged ratio of total income taxes to pre-tax income for the fiscal year *t*. The parentheses are based on t-statistics with standard errors clustered by country.

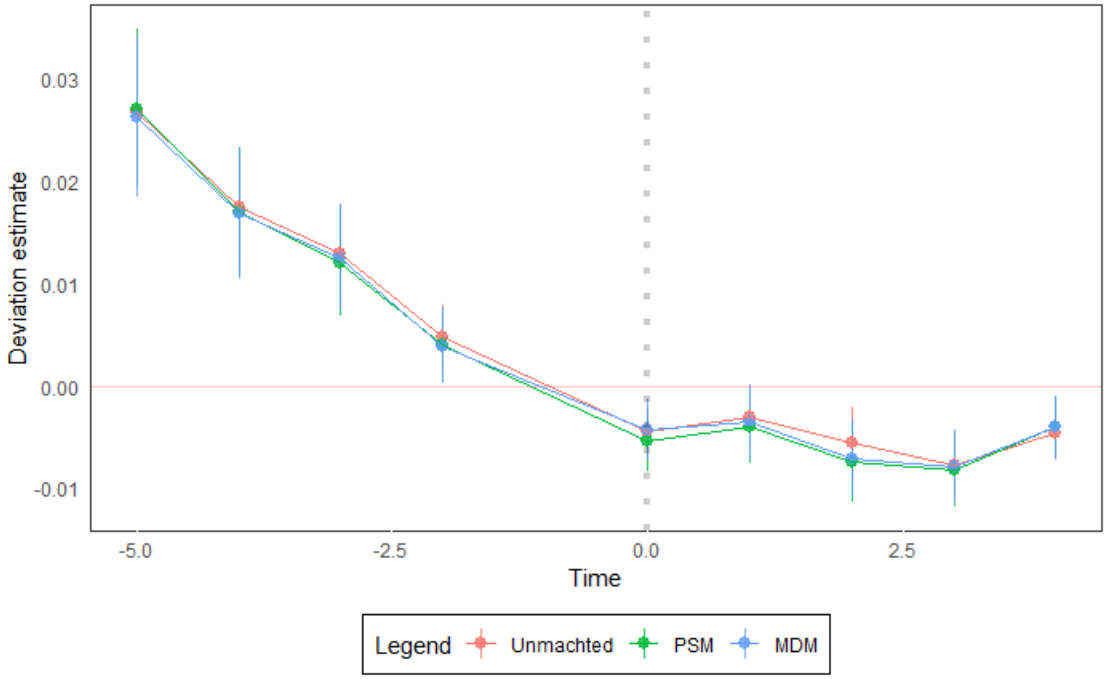
Variable	Reform
$Leverage$	-2.133***
	(0.366)
$Firm\ size\ (log)$	-0.046
	(0.040)
$Market-to-book$	-0.009
	(0.049)
$Tangibility$	0.527
	(0.335)
$Adjustment\ costs$	-0.105†
	(0.056)
$Profitability$	3.177**
	(1.030)
$Growth\ opportunities$	-0.001†
	(0.000)
$Effective\ tax\ rate$	0.308
	(0.222)
$Intercept$	-1.481***
	(0.307)
N	576

*† p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.000*

APPENDIX E

Figure E: Effect of increases in corporate governance on leverage deviation for treatment periods -5 till 4

The graph displays the effect of an increase in corporate governance on the leverage deviation from the optimal leverage ratio, relative to the benchmark year $t-1$, based on the values found in the models in table 5 panel B. The figure contains the relative deviation from the benchmark year $t-1$ for the unmatched, PSM, and MDM regression results for years t – 5 till t + 4. t + 5 is excluded due to perfect singularity.



APPENDIX F

Table F.1 Effect of increases in corporate governance reforms on leverage deviation for different samples

This table reports the results using the alternative samples of 1998 and 2001-2007 to test the anticipation effect of firms in different reform periods. The dependent variable is the absolute leverage deviation in year *t*. Panel A reports the overall effect of governance reforms on leverage deviation. Panel B reports the results of the effect of governance reforms on leverage deviation split for year t - 5 till t + 5. Both panels report the findings for three additional samples, namely, the major reform sample, the 1998 sample, and the 2001-2007 sample. All additional samples cover three subsamples, namely, the unmatched, PSM, and MDM sample. Control variables as defined in table 2, firm fixed effects, and year fixed effects are included. The samples of 1998 and 2000-2007 can have similar matched firms between them. The matched sample for 2000-2007 only excludes firms with reform year 1998. t-statistics are based on the standard errors clustered at the firm level. †, *, **, and *** indicate significance at the 0.10, 0.05, 0.01, and 0.000 two-tailed level, respectively.

Panel A: Reform effect on Leverage deviation for different reform samples

	Major reform			1998 sample			2001-2007 sample		
	Unmatched	PSM	MDM	Unmatched	PSM	MDM	Unmatched	PSM	MDM
Variable	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
$Reform$	-0.004*	-0.005*	-0.004*	0.001	0.004	0.007	-0.003*	-0.004*	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)	(0.002)	(0.002)	(0.002)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	36,388	25,259	25,156	19,157	3,051	3,039	33,507	23,056	23,193
R^2	0.024	0.019	0.021	0.023	0.018	0.019	0.023	0.018	0.019

Panel B: Reform effect on leverage deviation for year [-5,+5] for different reform samples

	Major reform			1998 sample			2001-2007 sample		
	Unmatched	PSM	MDM	Unmatched	PSM	MDM	Unmatched	PSM	MDM
Variable	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
$Reform_{t-5}$	0.027***	0.027***	0.026***	0.038***	0.042***	0.049***	0.022***	0.023***	0.022***
	(0.003)	(0.004)	(0.004)	(0.005)	(0.012)	(0.013)	(0.004)	(0.005)	(0.005)
$Reform_{t-4}$	0.017***	0.017***	0.017***	0.025***	0.035**	0.045***	0.013***	0.014***	0.013***
	(0.002)	(0.003)	(0.003)	(0.004)	(0.013)	(0.013)	(0.003)	(0.004)	(0.004)
$Reform_{t-3}$	0.013***	0.012***	0.013***	0.019***	0.020	0.036**	0.011***	0.01***	0.011***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.012)	(0.012)	(0.002)	(0.003)	(0.003)
$Reform_{t-2}$	0.005**	0.004*	0.004*	0.008***	0.003	0.003	0.004*	0.003	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.008)	(0.008)	(0.002)	(0.002)	(0.002)
$Reform_{t}$	-0.005***	-0.005***	-0.004**	-0.006***	0.001	0.011†	-0.003*	-0.005**	-0.003*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.007)	(0.006)	(0.001)	(0.002)	(0.002)
$Reform_{t+1}$	-0.003†	-0.004*	-0.004†	-0.004	0.004	0.011	-0.003†	-0.004†	-0.003
	(0.002)	(0.002)	(0.002)	(0.003)	(0.007)	(0.007)	(0.002)	(0.002)	(0.002)
$Reform_{t+2}$	-0.006**	-0.008***	-0.007***	-0.008†	-0.003	-0.009	-0.006**	-0.008***	-0.007***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.009)	(0.009)	(0.002)	(0.002)	(0.002)
$Reform_{t+3}$	-0.008***	-0.008***	-0.008***	-0.010†	-0.001	-0.002	-0.008***	-0.008***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.005)	(0.008)	(0.008)	(0.002)	(0.002)	(0.002)
$Reform_{t+4}$	-0.005***	-0.004**	-0.004**	-0.014***	-0.007	0.000	-0.004**	-0.003*	-0.004*
	(0.002)	(0.002)	(0.002)	(0.004)	(0.008)	(0.007)	(0.001)	(0.002)	(0.002)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	36,388	25,259	25,156	19,157	3,051	3,039	33,507	23,056	23,193
R^2	0.027	0.023	0.024	0.033	0.031	0.037	0.025	0.021	0.022

REFERENCES

Abel, A. B. (2018). Optimal debt and profitability in the trade-off theory. The Journal of Finance, 73(1), 95-143.

Abor, J. (2007). Corporate governance and financing decisions of Ghanaian listed firms. Corporate Governance: The international journal of business in society.

Abraham, S., & Sun, L. (2018). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. arXiv preprint arXiv:1804.05785.

Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. Journal of financial and quantitative analysis, 377-397.

Alshwer, A. A., Sibilkov, V., & Zaiats, N. S. (2011). Financial constraints and the method of payment in mergers and acquisitions. Available at SSRN 1364455.

Amihud, Y., Lev, B., & Travlos, N. G. (1990). Corporate control and the choice of investment financing: The case of corporate acquisitions. The Journal of Finance, 45(2), 603-616.

Antoniou, A., Guney, Y., & Paudyal, K. (2008). The determinants of capital structure: capital market-oriented versus bank-oriented institutions. Journal of financial and quantitative analysis, 59-92.

Austin, P. C. (2011). Optimal caliper widths for propensity-score matching when estimating differences in means and differences in proportions in observational studies. Pharmaceutical statistics, 10(2), 150-161.

Bae, K. H., El Ghoul, S., Kang, J., & Tsang, A. (2019). Why Are CEOs of Public Firms Paid More Than CEOs of Private Firms? Evidence from the Effect of Board Reforms on CEO Compensation. Evidence from the Effect of Board Reforms on CEO Compensation (March 2019).

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. The journal of finance, 57(1), 1-32.

Berger, P. G., Ofek, E., & Yermack, D. L. (1997). Managerial entrenchment and capital structure decisions. The journal of finance, 52(4), 1411-1438.

Bhagat, S., & Bolton, B. (2008). Corporate governance and firm performance. Journal of corporate finance, 14(3), 257-273.

Bhagat, S., & Bolton, B. (2013). Director ownership, governance, and performance. Journal of financial and Quantitative Analysis, 105-135.

Bharadwaj, A., & Shivdasani, A. (2003). Valuation effects of bank financing in acquisitions. Journal of Financial Economics, 67(1), 113-148.

Borusyak, K., & Jaravel, X. (2017). Revisiting event study designs. Available at SSRN 2826228.

Bowen, R. M., Rajgopal, S., & Venkatachalam, M. (2008). Accounting discretion, corporate governance, and firm performance. Contemporary accounting research, 25(2), 351-405.

Boyd, B. K. (1995). CEO duality and firm performance: A contingency model. Strategic management journal, 16(4), 301-312.

Bradley, M., Jarrell, G. A., & Kim, E. H. (1984). On the existence of an optimal capital structure: Theory and evidence. The journal of Finance, 39(3), 857-878.

Brown, L. D., & Caylor, M. L. (2004). Corporate governance and firm performance. Available at SSRN 586423.

Butt, S. A., & Hasan, A. (2009). Impact of ownership structure and corporate governance on capital structure of Pakistani listed companies. International Journal of Business & Management, 4(2).

Callaway, B., & Sant'Anna, P. H. (2018). Difference-in-differences with multiple time periods and an application on the minimum wage and employment. arXiv preprint arXiv:1803.09015, 1-47.

Chang, Y. K., Chou, R. K., & Huang, T. H. (2014). Corporate governance and the dynamics of capital structure: New evidence. Journal of Banking & Finance, 48, 374-385.

Clogg, C. C., Petkova, E., & Haritou, A. (1995). Statistical methods for comparing regression coefficients between models. American journal of sociology, 100(5), 1261-1293.

Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. Journal of financial economics, 51(3), 371-406.

Cotter, J., & Silvester, M. (2003). Board and monitoring committee independence. Abacus, 39(2), 211-232.

Cremers, K. M., & Nair, V. B. (2005). Governance mechanisms and equity prices. the Journal of Finance, 60(6), 2859-2894.

Dahya, J., McConnell, J. J., & Travlos, N. G. (2002). The Cadbury committee, corporate performance, and top management turnover. The Journal of Finance, 57(1), 461-483.

Danis, A., Rettl, D. A., & Whited, T. M. (2014). Refinancing, profitability, and capital structure. Journal of Financial Economics, 114(3), 424-443.

DeAngelo, H., DeAngelo, L., & Whited, T. M. (2011). Capital structure dynamics and transitory debt. Journal of Financial Economics, 99(2), 235-261.

Denis, D. K., & McConnell, J. J. (2003). International corporate governance. Journal of financial and quantitative analysis, 1-36.

Detthamrong, U., Chancharat, N., & Vithessonthi, C. (2017). Corporate governance, capital structure and firm performance: Evidence from Thailand. Research in International Business and Finance, 42, 689-709.

Faccio, M., & Lang, L. H. (2002). The ultimate ownership of Western European corporations. Journal of financial economics, 65(3), 365-395.

Faccio, M., & Masulis, R. W. (2005). The choice of payment method in European mergers and acquisitions. The Journal of Finance, 60(3), 1345-1388.

Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. The review of financial studies, 15(1), 1-33.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. The journal of law and Economics, 26(2), 301-325.

Fauver, L., Hung, M., Li, X., & Taboada, A. G. (2017). Board reforms and firm value: Worldwide evidence. Journal of Financial Economics, 125(1), 120-142.

Fischer, E. O., Heinkel, R., & Zechner, J. (1989). Dynamic capital structure choice: Theory and tests. The Journal of Finance, 44(1), 19-40.

Flannery, M. J., & Rangan, K. P. (2006). Partial adjustment toward target capital structures. Journal of financial economics, 79(3), 469-506.

Garvey, G. T., & Hanka, G. (1999). Capital structure and corporate control: The effect of antitakeover statutes on firm leverage. The Journal of Finance, 54(2), 519-546.

Ghosh, A., & Ruland, W. (1998). Managerial ownership, the method of payment for acquisitions, and executive job retention. The Journal of finance, 53(2), 785-798.

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. The quarterly journal of economics, 118(1), 107-156.

Graham, J. R. (1996). Debt and the marginal tax rate. Journal of financial Economics, 41(1), 41-73.

Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. Journal of financial economics, 60(2-3), 187-243.

Graham, J. R., & Leary, M. T. (2011). A review of empirical capital structure research and directions for the future.

Harford, J., Klasa, S., & Walcott, N. (2009). Do firms have leverage targets? Evidence from acquisitions. Journal of Financial Economics, 93(1), 1-14.

Harford, J., Mansi, S. A., & Maxwell, W. F. (2008). Corporate governance and firm cash holdings in the US. Journal of financial economics, 87(3), 535-555.

Harvey, C. R., Lins, K. V., & Roper, A. H. (2004). The effect of capital structure when expected agency costs are extreme. Journal of financial economics, 74(1), 3-30.

Heckman, J. J., Ichimura, H., & Todd, P. E. (1997). Matching as an econometric evaluation estimator: Evidence from evaluating a job training programme. The review of economic studies, 64(4), 605-654.

Hermalin, B. E., & Weisbach, M. S. (2001). Boards of directors as an endogenously determined institution: A survey of the economic literature (No. w8161). National Bureau of Economic Research.

Heron, R., & Lie, E. (2002). Operating performance and the method of payment in takeovers. Journal of Financial and quantitative analysis, 137-155.

Hirshleifer, D., & Thakor, A. V. (1992). Managerial conservatism, project choice, and debt. The Review of Financial Studies, 5(3), 437-470.

Hope, O. K., & Thomas, W. B. (2008). Managerial empire building and firm disclosure. Journal of Accounting Research, 46(3), 591-626.

Hovakimian, A., Opler, T., & Titman, S. (2001). The debt-equity choice. Journal of Financial and Quantitative analysis, 1-24.

Hsiao, C. (2014). Analysis of panel data (No. 54). Cambridge university press.

Huang, R., & Ritter, J. R. (2009). Testing theories of capital structure and estimating the speed of adjustment. Journal of Financial and Quantitative analysis, 237-271.

Huang, S., & Hilary, G. (2018). Zombie board: Board tenure and firm performance. Journal of Accounting Research, 56(4), 1285-1329.

Huang, Y. S., & Walkling, R. A. (1987). Target abnormal returns associated with acquisition announcements: Payment, acquisition form, and managerial resistance. Journal of financial economics, 19(2), 329-349.

Imbens, G. W., & Wooldridge, J. M. (2009). Recent developments in the econometrics of program evaluation. Journal of economic literature, 47(1), 5-86.

Israel, R. (1991). Capital structure and the market for corporate control: The defensive role of debt financing. The Journal of Finance, 46(4), 1391-1409.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. The American economic review, 76(2), 323-329.

Jenter, D. (2005). Market timing and managerial portfolio decisions. The Journal of Finance, 60(4), 1903-1949.

Jiraporn, P., & Gleason, K. C. (2007). Capital structure, shareholder rights, and corporate governance. Journal of Financial Research, 30(1), 21-33.

Jiraporn, P., Kim, J. C., Kim, Y. S., & Kitsabunnarat, P. (2012). Capital structure and corporate governance quality: Evidence from the Institutional Shareholder Services (ISS). International Review of Economics & Finance, 22(1), 208-221.

Junior, L. S., & Franca, I. D. P. (2012). Correlation of financial markets in times of crisis. Physica A: Statistical Mechanics and its Applications, 391(1-2), 187-208.

Kang, H., Cheng, M., & Gray, S. J. (2007). Corporate governance and board composition: Diversity and independence of Australian boards. Corporate Governance: An International Review, 15(2), 194-207.

Kayhan, A., & Titman, S. (2007). Firms' histories and their capital structures. Journal of financial Economics, 83(1), 1-32.

Kim, W. S., & Sorensen, E. H. (1986). Evidence on the impact of the agency costs of debt on corporate debt policy. Journal of Financial and quantitative analysis, 131-144.

King, G., & Nielsen, R. (2019). Why propensity scores should not be used for matching. Political Analysis, 27(4), 435-454.

Klein, A. (2002). Economic determinants of audit committee independence. The Accounting Review, 77(2), 435-452.

Kothari, S. P., & Warner, J. B. (2007). Econometrics of event studies. In Handbook of empirical corporate finance (pp. 3-36). Elsevier.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (1999). Corporate ownership around the world. The journal of finance, 54(2), 471-517.

Leary, M. T., & Roberts, M. R. (2005). Do firms rebalance their capital structures?. The journal of finance, 60(6), 2575-2619.

Lemmon, M. L., Roberts, M. R., & Zender, J. F. (2008). Back to the beginning: persistence and the cross-section of corporate capital structure. The journal of finance, 63(4), 1575-1608.

Long, J. S., & Long, J. S. (1997). Regression models for categorical and limited dependent variables (Vol. 7). Sage.

Marsh, P. (1982). The choice between equity and debt: An empirical study. The Journal of finance, 37(1), 121-144.

Martin, K. J. (1996). The method of payment in corporate acquisitions, investment opportunities, and management ownership. The Journal of finance, 51(4), 1227-1246.

Masulis, R. W., Wang, C., & Xie, F. (2007). Corporate governance and acquirer returns. The Journal of Finance, 62(4), 1851-1889.

Mishkin, F. S. (1999). Lessons from the Asian crisis. Journal of International Money and Finance, 18(4), 709-723.

Modigliani, F., & Miller, M. H. (1959). The cost of capital, corporation finance, and the theory of investment: Reply. The American Economic Review, 49(4), 655-669.

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: a correction. The American economic review, 53(3), 433-443.

Morellec, E. (2004). Can managerial discretion explain observed leverage ratios?. The Review of Financial Studies, 17(1), 257-294.

Morellec, E., Nikolov, B., & Schürhoff, N. (2012). Corporate governance and capital structure dynamics. The Journal of Finance, 67(3), 803-848.

Myers, S. C. (1984). Capital structure puzzle (No. w1393). National Bureau of Economic Research.

Officer, M. S. (2011). Overinvestment, corporate governance, and dividend initiations. Journal of Corporate Finance, 17(3), 710-724.

Paternoster, R., Brame, R., Mazerolle, P., & Piquero, A. (1998). Using the correct statistical test for the equality of regression coefficients. Criminology, 36(4), 859-866.

Pfeffer, J., & Salancik, G. R. (2003). The external control of organizations: A resource dependence perspective. Stanford University Press.

Porta, R. L., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. Journal of political economy, 106(6), 1113-1155.

Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. The journal of Finance, 50(5), 1421-1460.

Rechner, P. L., & Dalton, D. R. (1991). CEO duality and organizational performance: A longitudinal analysis. Strategic management journal, 12(2), 155-160.

Rosenstein, S., & Wyatt, J. G. (1990). Outside directors, board independence, and shareholder wealth. Journal of financial economics, 26(2), 175-191.

S&P Global. (2021, May 31). Essential tools for finance decision-makers. Retrieved from S&P Global: https://www.spglobal.com/marketintelligence/en/campaigns/finance-persona

Saad, N. M. (2010). Corporate governance compliance and the effects to capital structure in Malaysia. International journal of economics and finance, 2(1), 105-114.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. The journal of finance, 52(2), 737-783.

Shleifer, A., & Vishny, R. W. (2003). Stock market driven acquisitions. Journal of financial Economics, 70(3), 295-311.

Shyam-Sunder, L., & Myers, S. C. (1999). Testing static tradeoff against pecking order models of capital structure. Journal of financial economics, 51(2), 219-244.

Singh, M., & Davidson III, W. N. (2003). Agency costs, ownership structure and corporate governance mechanisms. Journal of Banking & Finance, 27(5), 793-816.

Smith Jr, C. W., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. Journal of financial Economics, 32(3), 263-292.

Swanstrom, M. (2006). Corporate governance and the abnormal returns to acquisition announcements. Journal of Business Strategies, 23(2), 115.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. The Journal of finance, 43(1), 1-19.

Trautwein, F. (1990). Merger motives and merger prescriptions. Strategic management journal, 11(4), 283-295.

Uysal, V. B. (2011). Deviation from the target capital structure and acquisition choices. Journal of Financial Economics, 102(3), 602-620.

Vafeas, N. (2003). Length of board tenure and outside director independence. Journal of Business Finance & Accounting, 30(7-8), 1043-1064.

Vandevelde, M. (2020, July 10). The leveraging of America: how companies became addicted to debt. Retrieved from Financial Times: https://www.ft.com/content/c732fded-5252-4333-a3f8-80b767508bbc

Wansley, J. W., Lane, W. R., & Yang, H. C. (1983). Abnormal returns to acquired firms by type of acquisition and method of payment. Financial management, 16-22.

Welch, I. (2004). Capital structure and stock returns. Journal of political economy, 112(1), 106-131.

Wilson, J. (2014). Essentials of business research: A guide to doing your research project. Sage.

Wooldridge, J. M. (2010). Econometric analysis of cross section and panel data. MIT press.