Control-ownership wedge, board of directors, and the value of excess cash*

Mohamed Belkhir

Department of Economics and Finance, College of Business and Economics, UAE University, Al-Ain, United Arab Emirates

Sabri Boubaker

Champagne School of Management, Groupe ESC Troyes, France

IRG, Université Paris Est, France

Imen Derouiche

DEFI, ESSEC Tunis, Tunisia

Abstract

This study investigates the effects of the separation of control and ownership on the value of cash holdings in publicly listed French firms. It also sheds light on the role of board independence in such a relation. Theory suggests that investors are more likely to discount the value of excess cash held by firms with low corporate governance. Using the valuation regression of Fama and French (1998), empirical results show that the value of excess cash holdings decreases dramatically with the separation of control and cash-flow rights of the controlling shareholder. This value discount is, however, less pronounced in firms with more independent boards (i.e., boards with more independent directors and separate chief executive officer and chair positions). Our empirical findings support the argument that excess cash contributes less to firm value when minority shareholders are more likely to be expropriated by controlling shareholders. Independent boards seem to be effective in mitigating investors' concerns about the use of excess cash. Overall, the results provide compelling evidence that cash valuation is largely influenced by corporate governance quality in a concentrated ownership setting.

JEL classification: G32; G34; M41

Keywords: Board of directors; Control-ownership wedge; Corporate governance; Firm value; Cash holdings

* Corresponding author: 217, Av. Pierre Brossolette, CS 20710, 10002 Troyes Cedx, France, Tel: +33 3 25 71 22 31; Fax: +33 3 25 49 22 17, email: sabri.boubaker@get-mail.fr (Boubaker), imen.derouiche@essec.rnu.tn (Derouiche), M.Belkhir@uaeu.ac.ae (Belkhir). The authors are grateful for the helpful comments and suggestions of Alexis Cellier, Pierre Chollet, Pascal Nguyen, seminar participants at the Institut de Recherche en Gestion (University of Paris Est), IESEG School of Management, Workshop on Ethics and Governance, IPAG Business School, Paris, France (2011), and the 10th International Conference on Governance, Montreal, Canada (2011). All errors are our own responsibility.

1. Introduction

In recent literature, the agency view of the firm has been dominated by the finding of La Porta et al. (1999) that throughout the world, firm control is typically concentrated in the hands of a few shareholders. Such shareholders tend to maintain control with a relatively small fraction of cash-flow rights. In such a controlling minority structure (CMS)[1], controlling shareholders are able to extract private benefits to the detriment of minority shareholders, who incur most of the implied agency costs. Hence, the relevant agency problem in CMS firms is between controlling shareholders and minority investors (type II agency problem), rather than the one between managers and all shareholders (type I agency problem) as suggested by Berle and Means (1932). The corporate governance literature documents that the likelihood of expropriation by controlling shareholders often increases with the control–ownership wedge. However, little is known about the expropriation activities in these firms. The present research explores this area by focusing on corporate cash holdings, a typical channel for extracting private rents in CMS firms.

Prior research on capital structure indicates that firms prefer using internally generated funds at the first-best level to undertake valuable investment opportunities since external financing usually entails additional costs due to asymmetric information as well as transaction costs (Myers and Majluf (1984)). Opler et al. (1999) argue that the level of cash holdings a firm maintains arises as a trade-off between the costs and benefits of keeping liquid assets within the firm. Hoarding cash provides a buffer against unexpected liquidity shocks and avoids the transaction costs of raising external funds (Kim et al. (1998)). The availability of huge amounts of cash can, however, provide insiders with strong incentives to siphon off these resources to restock themselves, especially in the context of weak investor protection. Dittmar et al. (2003) point out that important cash holdings are ubiquitous in countries with

[1] The term *controlling minority structure* was initially coined by Bebchuk et al. (2000).

poor investor protection, irrespective of ease of access to their capital markets. Harford et al. (2008) consistently show that cash exceeding optimal levels leads to inefficient capital investment and less valuable firms when internal governance mechanisms are not sufficiently effective to preserve shareholders' interests. In the same vein, Yun (2009) finds that cash holdings tend to increase relative to lines of credit when the market for corporate control does not effectively carry out its disciplinary role.

To the extent that agency problems affect corporate cash holding decisions, the value that investors assign to cash may depend on the firm's quality of corporate governance. Building on this reasoning, Pinkowitz et al. (2006) and Kalcheva and Lins (2007) acknowledge that minority shareholders respond to high expropriation risk by discounting the value of cash holdings in countries with poor investor protection. Similarly, Dittmar and Mahrt-Smith (2007) show that well-governed firms exhibit a higher value of cash holdings than poorly governed ones. Analyzing diversification strategies, Tong (2011) shows that, compared to stand-alone firms, investors assign a lower value to cash holdings in diversified firms due to substantial agency problems in conglomerates. Studying payout methods, Haw et al. (2011) show that, in countries with weak investor protection, resorting to stock repurchases contributes less to cash value than paying out dividends. They conclude that payouts via repurchases are less effective than payouts via dividends in alleviating the agency costs of free cash flow.

The present research extends the literature on the effects of corporate governance on cash holdings by examining how investors value excess cash held by CMS firms. We particularly address the following questions: Does the separation of control and cash-flow rights reduce the contribution of excess cash to firm value (i.e., the value of excess cash)? Do independent boards constrain the use of cash in CMS firms? We suggest that cash that exceeds a firm's needs facilitates self-serving activities, especially when large shareholders

enjoy more control rights relative to their cash-flow rights. We hence posit that investors' concerns about the use of such abnormally large cash stockpiles should be reflected in a lower value of the generated excess cash in CMS firms.

Severe agency problems arising from the control–ownership wedge make the role of internal corporate governance mechanisms, notably boards of directors, more important in curbing the opportunistic use of excess cash by controlling shareholders. Board independence is, in particular, considered to be essential to ensure high-quality governance. Researchers and practitioners consider that effective boards are those including independent members, who are deemed to act in the best interests of shareholders by providing active monitoring of managerial actions (e.g., Jensen and Meckling (1976); Rosenstein and Wyatt (1990)). Moreover, there is strong evidence that separating the chief executive officer (CEO) and chair positions indicates more effective board monitoring, since boards are deemed to exert more independent oversight over management when they are chaired by a person who is not involved in these managerial tasks (e.g., Daily and Dalton (1997); Bliss (2011)).[2]

Moreover, the various laws and corporate governance guidelines—including the Cadbury report (1992) in the United Kingdom, the Viénot reports (1995; 1998) and the Bouton report (2002) in France—are being constantly reviewed to promote greater board independence. The Viénot report (1995), for instance, recommends the appointment of at least two independent board members whereas the 1998 revised version of this report requires a minimum of one-third of independent directors on boards. The Bouton report (2002) calls for raising this proportion to a half of board members. Nonetheless, board effectiveness in firms with concentrated control remains questionable, given that large entrenched shareholders

[2] We refer to the combined role of CEO and chair as a dual leadership structure or CEO duality.

often tighten their control over firm resources by holding top executive positions or serving on boards (Faccio and Lang (2002); Anderson and Reeb (2004)).

In this paper, we address the question of whether boards of directors effectively carry out their governance role in CMS firms. More specifically, we investigate whether boards of directors affect the value of excess cash held by CMS firms by analyzing the effect of board independence and the separation of CEO and chair positions on the relation between control–ownership wedge and the value of excess cash.

We tackle these issues within the French context, where laws are less protective of outside investors and not well enforced as documented by La Porta et al. (1998) and control is typically concentrated through the use of a variety of control-enhancing mechanisms (Faccio and Lang (2002) and Boubaker (2007)). In such an environment, agency problems between controlling and minority shareholders (type II agency problem) can be important, which is potentially reflected in the valuation of excess cash holdings.

Our research extends existing studies in several ways. First, several studies including Harford (1999), Dittmar et al. (2003), and Dittmar and Mahrt-Smith (2007) examine the effects of agency relations on corporate cash policies. Our work provides new insights into the agency costs of cash by examining agency problems associated with the separation of control and cash-flow rights and the governance role of board independence. This study is among the first to focus on the management of cash policy in a context characterized by a large presence of dominant shareholders having control in excess of ownership. The role of boards of directors in shaping firms' cash policies in such a setting is also not yet explored in the prior literature.

Second, unlike existing relevant research linking ownership structure to the value of cash holdings, this study examines the issue in light of type II agency problems induced by

the control–ownership wedge. For example, using a broad cross-country sample, Kalcheva and Lins (2007) conclude that the concentration of control rights in managers' hands negatively affects the value of firms with important levels of cash holdings. The authors do not, however, explore the effect of the deviation of control rights from cash-flow rights for managers because of data limitations. [3] Kusnadi (2011) examines the effects of corporate governance on the market value of cash held by Singaporean and Malaysian firms without considering the implications of separating of control and cash-flow rights. Our work takes the control–ownership wedge of the controlling shareholders into account in gauging the severity of agency problems in CMS firms. We conduct a within-country analysis that overcomes the limitations of cross-country studies by taking advantage of a homogeneous cultural, legal, judicial, and economic environment, as argued by Bushman and Smith (2001). This study also adds to Masulis et al.'s (2009) work, which finds that insiders (i.e., officers and directors) holding more votes than equity rights significantly influences investment strategy, CEO compensation, and cash policy of U.S. dual-class firms. In a marked contrast to their study, we focus on type II agency problems, whereas they examine type I agency problems.

Third, despite the importance of corporate governance in a concentrated control setting, the role of boards of directors in CMS firms remains underexplored. Effective monitoring by independent boards can, in particular, be jeopardized by the power of controlling shareholders to appoint and replace board directors. To the best of our knowledge, our study is the first to investigate board effectiveness regarding the value of cash holdings in firms featuring an important separation of control and cash-flow rights and evolving in a weak legal investor protection environment.

[3] The authors use samples of Western European firms, emerging market firms, and East Asian firms from the datasets of Faccio and Lang (2002), Lins (2003), and Claessens et al. (2000), respectively, where cash flow rights are computed differently for each dataset.

Fourth, we extend the corporate finance literature by examining the implications of agency problems on cash holdings as a key financial policy. Hoarding cash is, indeed, predominantly ascribed to the transaction cost motive and/or the precautionary motive (Keynes (1936); Myers and Majluf (1984)). Our research provides original evidence on the prevalence of the agency motive behind excessive amounts of corporate cash holdings in the specific case of CMS firms. French firms are interesting objects of study in this regard, given that they have relatively high cash-to-net assets ratios, as documented by Dittmar et al. (2003). Controlling shareholders are hence provided with more opportunities to consume private benefits, notably through cash diversion.

Using a sample of 1901 firm–year observations of 398 publicly traded French firms during 2002–2007, we find that control-ownership wedge detrimentally affects the contribution of cash to firm value. More specifically, results indicate that the value of excess cash declines by about 87% at high levels of separation of control and cash-flow rights of the controlling shareholder. We further provide empirical evidence that the effectiveness of boards of directors in monitoring managerial actions tends to reduce the propensity of controlling shareholders for cash expropriation in CMS firms. We mainly find that the negative effect of control–ownership wedge is less pronounced in firms with independent boards than in their counterparts with non-independent boards. Results show that investors place a less substantial discount on the value of excess cash associated with a high control–ownership wedge in firms whose boards have a large number of independent members or a non-dual leadership structure.

Overall, our study provides empirical evidence that a substantial separation of control and cash-flow rights leads to a considerable decline in the value of excess cash that reflects the concern of minority investors about the way controlling shareholders use corporate cash holdings. Our findings also show that effective boards of directors contribute in reducing the

discount of the value of cash in CMS firms in the presence of independent boards and when the CEO is not the chairman of the board.

In sum, our findings support the argument that minority shareholders associate the inefficient use of excess cash to the ability of controlling shareholders to entrench themselves when their control rights exceed their cash-flow rights. Independent boards seem to play a disciplinary role in such instances by reducing investors' concerns about the misuse of cash holdings.

The remainder of the paper is organized as follows. Section 2 outlines the institutional context governing the ownership and control in France. Section 3 motivates and develops the hypotheses. Section 4 describes the data and the empirical methodology. Section 5 provides descriptive statistics. Section 6 reports the results of the multivariate analysis. Finally, section 7 concludes the paper.

2. The institutional context

Unlike the U.S., France has a civil-law legal tradition that is deemed to provide little protection to minority investors and poor law enforcement (La Porta et al. (1998)). Corporate ownership is widely diffused in the U.S. while it is typically concentrated in the hands of few dominant shareholders holding relatively small ownership stakes in France as in many other continental European countries (Faccio and Lang (2002)). This situation allows controlling shareholders to exert substantial control over firms while having much lower equity stakes, resulting in CMSs. CMSs are ubiquitous in France where firms are allowed to adopt a variety of ownership arrangements that lead to significant divergence between control and cash-flow

rights (e.g., non-traded double voting shares and traded non-voting shares such as preferred shares and investment certificates).

The separation of control and cash-flow rights is achieved differently in France than in other countries. First, despite the fact that the French law allows companies to issue a second class of non-voting shares, there are only very few firms that have adopted this type of share ownership (Faccio and Lang (2002)). Besides, these non-voting shares do constitute only a small part of the overall ownership of these firms.[4] Second, the French law allows firms to grant their faithful shareholders a second vote when they hold a registered stock beyond a given period. These double voting shares are a French specificity since they are not traded and are deprived from the second vote when they are sold.[5] Third, it is common, in France, that the controlling shareholder wields control over an entity through a cascade of several listed and unlisted intermediate firms, i.e. pyramiding. Boubaker (2007) consistently documents that one-third of publicly listed French firms are controlled through pyramiding and that control-ownership wedge inherent to this ownership structure is substantial. Fourth, more than 75% of French firms are controlled by families and nearly two-third of these firms have members of the controlling family among the top management team, which ostensibly reinforces their control (Faccio and Lang (2002)). This specific framework makes it interesting to study the agency implications of the separation of control and cash- flow rights in French listed firms.

[4] Examples of these firms are Bouygues, Casino Guichard, Essilor, Legrand, L'Oreal, Pechiney, Sagem and Société du Louvre

[5] The French law does not allow the creation of other types of dual-class shares rather than non-voting shares what it does exist in other European countries such as Sweden or Denmark where issuing multiple-class shares is possible. Hence, double voting shares cannot be considered as a second class of shares.

The legal context in France is also viewed as an environment that provides controlling shareholders with considerable opportunities for the occurrence of large related-party transactions (Djankov et al. (2008)). For example, the French legislation authorizes related-party transactions without the requirement of shareholders' approval when they are achieved under "normal" conditions, which increases the discretionary latitude of the controlling parties. France receives, indeed, the weak score of 0.38 of the anti-self-dealing index developed by Djankov et al. (2008), indicating that its legal system is prone to self-dealing transactions and indulgence in abuse of private benefits of control.[6]

Taken together, all these characteristics distinguish the French corporate environment from that of the U.S. and the U.K, and provide a unique setting for the analysis of agency costs incurred in CMS firms generating large cash balances.

3. Hypotheses development

a. Control–ownership wedge and the value of cash holdings

The presence of large shareholders mitigates the traditional agency problem between owners and managers (Jensen and Meckling (1976)). When such shareholders gain nearly full control of a firm, they tend, however, to expropriate minority shareholders and to consume private benefits at the cost of reduced firm value (Grossman and Hart (1988); Harris and Raviv (1988)). Accordingly, larger control-ownership wedge in CMS firms is often associated with greater expropriation by controlling shareholders, leading to severe agency costs (e.g., Claessens et al. (2002); Boubaker and Labégorre (2008); Hughes (2009); Boubaker et al. (2014)). In this vein, Burkart and Lee (2008) emphasize that separating control and ownership in dual-class firms deters hostile takeovers, which reduces the exposure of controlling

[6] The anti-self-dealing index developed by Djankov et al. (2008) ranges from zero to one, decreasing as the likelihood of expropriation by controlling shareholders increases.

shareholders to market discipline. Villalonga and Amit (2009) contend that firms are more likely to adopt a dual-class structure when the private benefits of control are relatively high and expropriation costs are low. More importantly, large shareholders of CMS firms have increased opportunities to expropriate resources that are easily diverted, such as cash holdings. That is, cash in excess of what is required for profitable projects can exacerbate agency costs unless firms disgorge it through dividends or share repurchases (Jensen (1986); Stulz (1990)). Entrenched controlling shareholders tend then to retain large cash holdings to divert these away from productive usage, especially since the abundance of cash allows greater freedom and less scrutiny from capital markets. In this line of reasoning, multiple studies (e.g., Blanchard (1994); Harford (1999); Harford et al. (2008)) highlight that cash-rich firms prefer to dissipate cash through value-decreasing projects so that they can prevent future payout commitments and divert the attention of potential raiders.

A high control–ownership wedge coupled with weak corporate governance often gives controlling shareholders important incentives and discretion to divert cash from CMS firms for their own benefit. The absence of profitable investment opportunities further increases the likelihood that controlling shareholders squander cash in empire building, negative net present value pet projects, excessive perquisites, and fringe benefits, thus deteriorating future firm profitability (Jensen (1986)). Inefficiency in the use of cash potentially incites minority shareholders to discount the value of cash holdings, particularly when investor protection is weak (Pinkowitz et al. (2006); Dittmar and Mahrt-Smith (2007)). In this line, Kalcheva and Lins (2007) find that the concentration of managers' control rights negatively affects the value of cash holdings and that this effect is more pronounced in countries with weak investor protection. Masulis et al. (2009) underline that insiders in U.S. dual-class firms opportunistically convert cash for private consumption, making cash less valuable to investors. Jiang et al. (2011) argue that separating control and cash-flow rights is conducive to

substantial monitoring costs by outsiders leading to sub-optimal investments and reduced learning from the stock market.

The presence of complex ownership structures are particularly reputed to intensify agency problems arising from control-ownership wedge (La Porta et al. (1999); Claessens et al. (2000)). For instance, controlling shareholders −located at the apex of complex ownership structures− often hold smaller cash-flow rights in lower-tier firms, which may give them incentives to internally relocate resources to higher-tier entities, where they have greater ownership interests (Bebchuk et al. (2000)). Accordingly, higher control–ownership wedge is conducive to tunneling activities in these structures, including through related-party transactions (Johnson et al. (2000)). Pinkowitz et al. (2006) argue that tunneling through cash transfer is particularly easy that controlling shareholders prefer to keep funds in liquid assets at the cost of reduced value of cash holdings. Likewise, the complexity of some ownership structures makes it extremely difficult for minority shareholders to assess cash expropriation risk, which may lower the value of corporate cash holdings.[7]

The above arguments advocate that cash holdings in CMS firms are expected to be less valuable to outsiders in the presence of high separation of control and cash-flow rights. Hence, we formulate the following hypothesis.

H_1: The value of excess cash decreases as the separation of control and cash-flow rights of the controlling shareholder increases.

[7] Outside shareholders may face difficulties in determining the identity and interests of controlling entities due to the opacity of some complex ownership structures such as sprawling pyramids and multiple control chains.

b. Control–ownership wedge, independent directors, and value of cash holdings

Conventional wisdom advocates that independent directors, − as opposed to directors who have personal or professional ties with firms' controlling shareholders (or managers) − are the most likely to provide active monitoring (Jensen and Meckling (1976); Rosenstein and Wyatt (1990); Adams et al. (2010)). The importance of the role of independent members on boards is basically ascribed to the lack of need or incentive to collude with management or to stay in its good graces. Independent board members are, instead, more willing to perform their fiduciary duties to develop their "reputational" capital as professional monitors, particularly when the labor market for outside directors is well functioning (Fama and Jensen (1983)).

As effective monitors, independent directors are expected to limit agency costs and safeguard minority shareholders' interests against the abuse of controlling parties and their tendency to consume private benefits (Raheja (2005)).[8] More interestingly, Dahya et al. (2008) stress that independent boards can provide more valuable monitoring in an environment that is highly conducive to self-dealing activities than in a context of strong investor protection, where the likelihood of expropriation is already low. For this purpose, many board interventions are regulated by legal provisions, such as those on related-party transactions, executive compensation, and disclosure practices.[9] Enriques and Volpin (2007)

[8] There is evidence from Ozkan and Ozkan (2004) in the United Kingdom and Harford et al. (2008) in the United States that board independence does not influence cash holdings in strong investor protection environments.

[9] French commercial law stipulates a special regime for related-party transactions involving executives, directors, and controlling shareholders holding more than 10% of voting rights. When such transactions are not qualified as routine, they must first be approved by the board of directors and then ratified by an ordinary shareholders' meeting. In practice, the interpretation of routine transactions is

consistently argue that these legal requirements are prone to exacerbate the costs of opportunistic wealth transfers, including those involving the diversion of firm cash resources.

Prior studies (e.g., Kim et al. (2007)) show that the appointment of independent directors per se is less likely in an environment where investor protection is weak and control is concentrated, as in France. One likely explanation is that controlling shareholders tend to reinforce their entrenchment by hiring more representatives on boards, enabling them to have authority over management, strategic operations, and voting agendas (Anderson and Reeb (2004). The existence of control-enhancing mechanisms as dual-class shares makes it easier for controlling shareholders to dominate the board, which reduces its independence (Villalonga and Amit (2009)). More broadly, Yeh and Woidtke (2005) argue that firms where control rights exceed cash-flow rights are less likely to include independent members on their boards of directors, hence exacerbating agency costs.

A wide range of studies on board structure provide strong evidence that the presence of more independent directors in firms with concentrated control is associated with lower agency costs. Board independence is shown to be important in enhancing firm value (e.g., Yeh and Woidtke (2005)), lessening earnings management (Jaggi et al. (2009)), improving earnings informativeness (Firth et al. (2007)), and increasing voluntary disclosure (Patelli and Prencipe (2007)).

A testable implication is that independent directors mitigate the agency costs associated with cash holding, given that entrenched controlling shareholders are less inclined to use excessive cash reserves in private rent-seeking activities in the presence of effective

---

subject to great debate: Enriques and Volpin (2007) contend that "judges and practitioners have traditionally provided a mild interpretation of this regime; for example, by classifying most transactions with companies of a same group as routine."

boards of directors. In other words, to the extent that the value of cash holdings decreases as the control–ownership wedge increases, we expect this value discount to be lower in the presence of a higher proportion of independent board directors. In light of this analysis, we formulate the following hypothesis.

> H_2: The negative association between a control–ownership wedge and the value of excess cash is less pronounced in the presence of a higher proportion of independent directors.

c. Control–ownership wedge, separation of CEO and chair positions, and value of cash holdings

Consistent with agency theory, combining management and monitoring activities is deemed to compromise the quality of corporate governance (Fama and Jensen (1983)). Most notably, the ability of boards to monitor CEO decisions tends to diminish in dual leadership firms. Central to this thesis is the fact that the CEO–chair of the board is increasingly able to dominate other board directors by capitalizing on specific knowledge and refraining from providing directors with the information necessary to effectively carry out their duties (Brickley et al. (1997)). The dominance of the CEO–chair can also be reinforced by his/her capability to influence the process of selecting and replacing board members (Dayton (1984)). As a result, CEO duality leadership typically jeopardizes board independence, thereby weakening its disciplinary role (Bliss (2011)). The CEO–chair hence has more opportunities to engage in opportunistic behavior while being insulated from effective board monitoring (Daily and Dalton (1997)).

The existing literature has advanced the importance of agency problems stemming from combined CEO–chair positions. Gul and Leung (2004) show that CEOs who jointly serve as board chairs are vested with the broadest powers and are hence less likely to adopt a voluntary disclosure policy. Chang and Sun (2009) argue that the market seems to perceive

CEO duality as impeding the monitoring of accounting quality, which lowers the stock price informativeness of earnings. Bliss et al. (2011) find that audit fees are deemed higher in firms where CEOs are also the chair of the boards due to their potentially important audit risk. Examining corporate diversification strategies, Kim et al. (2009) show that firms with CEO duality are the most likely to engage in value-destroying unrelated diversification.

The separation of the CEO and chair positions is considered a key element in increasing the accountability of directors to shareholders. It is more commonplace nowadays than it was a decade ago, thanks to codes of best practice for corporate governance. In this regard, Grinstein and Valles (2008) show that the number of cases in which firms opt to separate the CEO and chair roles is increasing, particularly because of pressure exerted by investors. As far as the separation of CEO and chair positions being associated with lower agency costs, we posit that controlling shareholders of firms with a non-dual leadership structure have fewer opportunities to expropriate wealth from other shareholders. We thus expect investors to be less concerned about the potential misappropriations of cash build up in CMS firms where the CEO is not also the chair of the board. Based on this analysis, we suggest that the decline in the value of cash caused by a substantial control–ownership wedge should be less severe in dual leadership firms. Therefore, we state our third hypothesis as follows.

> H_3: The negative association between control–ownership wedge and the value of excess cash is less pronounced when there is a separation of the CEO and chair positions.

4. Data and methodology

This section first describes the sample selection procedure and data sources. It then presents the approach adopted to gauge the wedge between the ultimate control and cash-flow

rights of the controlling shareholder. Next, it describes the methodology applied to compute excess cash holdings. Finally, it specifies the empirical model used to test research hypotheses.

a. Sample selection procedure and data sources

We initially consider all French listed firms on the Euronext over the period 2002–2007. We delete financial firms (with Standard Industrial Classification, or SIC, codes 6000–6999) from the sample because their liquid assets are not comparable to those in other industries. We exclude regulated utilities (SIC codes 4900–4999), since their cash holdings are very often subject to unique regulatory requirements. We also discard observations for which governance or financial data are missing. We are left with 2,494 firm–year observations. Consistent with prior work (e.g., Drobetz et al. (2010); Frésard and Salva (2010)), we omit 593 observations with negative excess cash, given the absence of theoretical background underlying the implications of corporate governance quality in firms with negative excess cash.

Our final sample consists of 1,901 firm–year observations of 398 firms covered over the period 2002–2007. Details on the sample selection criteria are provided in Table 1. Financial data are obtained from the Worldscope database. All of the variables used in the analysis are winsorized at the 1% and 99% levels to minimize the impact of outliers.

The corporate governance data of sample firms are gathered manually from their annual reports available on corporate websites and/or the website of the *Autorité des Marchés Financiers*.[10]

[10] The *Autorité des Marchés Financiers* is the French equivalent of the U.S. Securities and Exchange Commission.

b. Wedge between the ultimate control and cash-flow rights of the controlling shareholder

We follow the methodology of La Porta et al. (1999) and Claessens et al. (2000) to identify the ultimate controlling shareholders and measure their ultimate cash-flow (*UCF*) and ultimate control (*UCO*) rights. Control chains are computed at a 10% control threshold by taking into account all control-enhancing mechanisms that exist in France, namely, pyramid structures, non-voting shares, and double voting shares.[11]

Following the widely used weakest link principle, we compute *UCO* as the sum of the weakest links along the different control chains. *UCF* are computed as the sum of the products of the direct cash-flow stakes along these chains. The wedge between ultimate control and cash-flow rights is measured as the ratio (*UCO* - *UCF*)/*UCO*.

c. Excess cash estimation methodology

Consistent with trade-off theory, optimal levels of corporate cash holdings result from the equilibrium between the costs and benefits of hoarding cash. On the one hand, firms retain cash to prevent shortfalls in internal financing, which is required to undertake all positive net present value projects. This reduces financial distress costs associated with more expensive external funds, that is, fulfills a precautionary motive (Myers and Majluf (1984)). Moreover, firms with large cash reserves are better able to make payments in cash without incurring the transaction costs of raising non-cash assets. Keynes (1936) refers to this cost as the transaction cost motive for maintaining cash reserves. On the other hand, cash stockpiles often generate lower return rates than do investment projects; they can also imply important

[11] Using the 20 % thresholds does not affect our conclusions since it only slightly reduces the sample of controlled firms.

tax disadvantages, including the loss of debt tax shields and higher taxation (Opler et al. (1999)).

Building on this reasoning, Opler et al. (1999) empirically estimate the optimal level of cash holdings for firms as a function of their ability to access the capital market (proxied by firm size), the severity of financial constraints (cash flow), the availability of liquid asset substitutes (net working capital), hedging needs (cash flow volatility), investment opportunities (market-to-book ratio), and financial distress costs (research and development, or R&D, expenses). Cash in excess of predicted levels is the residual term in the fixed-effect model of Opler et al. (1999), presented as

$$Ln(Cash/NetAssets)_{i,t}=\beta_0+\beta_1 Ln(RealNetAssets)_{i,t}+\beta_2 CashFlow/NetAssets_{i,t}+\beta_3 NWC/NetAssets_{i,t}$$
$$+\beta_4 STD\ CF_i+\beta_5 MarketValue/NetAssets_{i,t}+\beta_6 R\&D\text{-}to\text{-}sales$$
$$+\ \alpha_{i,}+\mu_t+\varepsilon_{i,t}\,, \qquad \text{(Eq. (1))}$$

where *Ln(Cash/NetAssets)* is the natural logarithm of cash to net assets, *Cash* is cash and marketable securities, and *NetAssets* is non-cash assets, measured as the book value of total assets minus cash and marketable securities. *Ln(RealNetAssets)* is a proxy of firm size, computed as the natural logarithm of *NetAssets* in 2007 euros, adjusted for inflation using the French consumer price index series; *CashFlow* is cash flow, computed as operating income minus interest and taxes; *NWC* is net working capital, computed as current assets minus current liabilities minus cash; *STD CF* is the industry average of the prior five-year standard deviation of cash flow to net assets, where industry is defined according to Campbell's (1996) classification; and *MarketValue/NetAssets* is the market-to-book ratio, where *MarketValue* is computed as the market value of equity plus total liabilities. *MarketValue* is instrumented by the three-year lagged sales growth; *R&D-to-sales* is research and development expenses

deflated by *Sales*, where *Sales* is total sales; $\alpha_{i,}$ and μ_t refer to firm- and time- fixed effects, respectively; *i* and *t* are subscripts denoting firm and time, respectively.

Opler et al. (1999) extend their original model by considering the implications of financing hierarchy theory on cash holdings. Although this theory is based on the assumption of the absence of an optimal level of cash, it recognizes that information asymmetry often makes external funds so expensive that firms prefer retaining high cash holdings. That is, financial management decisions such as borrowing, investing, and paying dividends seem to directly influence changes in cash holdings. An extensive form of the model of Opler et al. (1999) takes into account financing hierarchy theory by integrating additional variables, including capital expenditures, leverage, and dividend payout. This extensive model is presented as the following OLS regression

$$Ln(Cash/NetAssets)_{i,t}=\beta_0+\beta_1 Ln(RealNetAssets)_{i,t}+\beta_2 CashFlow/NetAssets_{i,t}+\beta_3 NWC/NetAssets_{i,t}$$
$$+\beta_4 STD\ CF_i+\beta_5 MarketValue/NetAssets_{i,t}+\beta_6 R\&D\text{-}to\text{-}sales_{i,t}$$
$$+\beta_7 Leverage_{i,t}+\beta_8 CAPEX_{i,t}/NetAssets_{i,t}+\beta_9 Dividummy_{i,t}$$
$$+\beta_{10} Regulatedummy_{i,t}+\ Industrydum+\alpha_i+\varepsilon_{i,t}, \qquad \text{(Eq.(2))}$$

where *Leverage* is total debt scaled by the book value of total assets; *CAPEX* is capital expenditure; *Dividummy* is a dummy variable that equals one when the firm pays dividends, and zero otherwise; and *Regulatedummy* is a dummy variable that equals one when a firm belongs to a regulated industry, and zero otherwise;[12] *Industrydum* denotes industry dummy variables, following Campbell's (1996) classification; α_i refers to firm fixed effects.

An alternative measure of excess cash is given by Harford (1999), who estimates the optimal level of cash using firm characteristics and time-series changes in funding demand.

[12] Regulated industries comprise sectors such as railroads (SIC code 4011), trucking (SIC codes 4210, 4213), airlines (SIC code 4512), and telecommunications (SIC codes 4812, 4813).

His model is based on the view that managers are more inclined to hold large cash reserves as buffer stock against future cash flow fluctuations and unexpected losses, thus reducing the likelihood of financial distress. In the right-hand side of the cash model, the author therefore introduces proxies for the degree of information asymmetry (firm size), industry risk (cash flow volatility), and future liquidity shocks (changes in cash flow over the next two years). However, the free cash flow hypothesis of Jensen (1986) assumes that high levels of cash holdings enable self-interested managers to be insulated from monitoring by external capital providers. That is, cash reserves can be easily diverted to finance value-decreasing projects, especially in firms with relatively few investment opportunities. In consideration of this hypothesis, the model also encompasses the effects of free cash flow (cash flow net of investment) and investment opportunities (market-to-book ratio). The model specification suggested by Harford (1999) is

$$Cash_{i,t}/Sales_{i,t}=\beta_0+\beta_1 NetCFO/Sales_{i,t}+\beta_2 \Delta NetCFO/Sales_{i,t+1}+\beta_3 \Delta\ NetCFO/Sales_{i,t+2}$$

$$+\beta_4 MB_{i,t-1}+\beta_5 CFOVar_i+\beta_6 Ln(MV)_{i,t-1}+Industrydum_i+\alpha_i+\varepsilon_{i,t}\,, \qquad \text{(Eq.(3))}$$

where *Cash* is cash and marketable securities; *NetCFO* is operating cash flow net of investments; *MB* is the market-to-book value of assets; *CFOVar* is the coefficient of variation of cash flow to net assets; and *Ln(MV)* is a proxy for firm size, computed as the natural logarithm of the market value of the firm in 2007 euros, adjusted for inflation using the French consumer price index series. *Industrydum* denotes industry dummy variables following Campbell's (1996) classification, α_i refers to firm fixed effects, and *i* and *t* are subscripts denoting firm and time, respectively.

d. Model specification

The value of cash holdings reflects how cash balances influence investors' valuation of the expected cash flows (Faulkender and Wang (2006); Pinkowitz et al. (2006)). To

estimate the value of excess cash, we employ Fama and French's (1998) model linking firm value to some of its financial characteristics. This model includes financial variables that predominantly affect investors' expectations of future cash flows, namely, past and future changes as well as current levels of earnings, R&D expenses, dividends, and interest expenses. The model also includes past and future changes in net assets along with future changes in market value as determinants of firm value.

Following Pinkowitz et al. (2006) and Dittmar and Mahrt-Smith (2007), we modify the model of Fama and French (1998) by breaking out the total assets variable into cash and non-cash components.[13] Thus modified, the model considers the contribution of excess cash to firm value, which reflects the market value of an additional euro of excess cash. The value of cash holdings is deemed to be particularly affected by the presence of financial constraints. In this respect, Faulkender and Wang (2006) explain that financially constrained firms are often restricted to available internal funds when undertaking profitable projects, which make cash reserves even more valuable to them. We hence supplement the modified model of Fama and French (1998) with the interaction between excess cash and a proxy for financial constraints.

Consistent with theoretical analysis, the value of cash holdings can be affected by the corporate governance quality of CMS firms. To test the effects of the separation of control and cash-flow rights on the value of excess cash, we estimate the following model specification using fixed effects

$$V_{i,t}=\beta_0+\beta_1 ExCash_{i,t}+\beta_2 Wedge_{i,t}*ExCash_{i,t}+\beta_3 Wedge_{i,t}+\beta_4 ExCash_{i,t}*FC_{i,t}+\beta_5 Earnings_{i,t}$$
$$+\beta_6 \Delta Earnings_{i,t}+\beta_7 \Delta Earnings_{i,t+1}+\beta_8 R\&D_{i,t}+\beta_9 \Delta R\&D_{i,t}+\beta_{10} \Delta R\&D_{i,t+1}+\beta_{11} Dividends_{i,t}$$

[13] This approach is also adopted by many other studies on the value of cash holdings, including those of Drobetz et al. (2010) and Frésard and Salva (2010).

$$+\beta_{12}\Delta Dividends_{i,t}+\beta_{13}\Delta Dividends_{i,t+1}+\beta_{14}Interest_{i,t}+\beta_{15}\Delta Interest_{i,t}+\beta_{16}\Delta Interest_{i,t+1}+\beta_{17}\Delta V_{i,t+1}+\beta_{18}\Delta NetAssets_{i,t}+\beta_{19}\Delta NetAssets_{i,t+1}+\alpha_{i,}+\mu_t+\varepsilon_{i,t}, \quad \text{(Eq. (4))}$$

where *V* is the market value of the firm. *V* is computed as the market value of equity plus the book value of total debt. *Earnings* is earnings before interest and extraordinary items (after depreciation and taxes) deflated by *NetAssets*;[14] *R&D* is R&D expenses deflated by *NetAssets*; *Dividends* is common dividends deflated by *NetAssets*; ΔX_t is the change in variable *X* from year t-1 to year t, and ΔX_{t+1} is the change in variable *X* from year t to year t+1. *ExCash* is excess cash holdings, computed as the residuals of models predicting the normal level of cash holdings. *FC* is a dummy variable that equals one if the firm is financially constrained, and zero otherwise. A firm is financially constrained (unconstrained) when its payout ratio equals (differs from) zero. *Wedge* is a dummy that equals one if the control–ownership wedge is above the sample median, and zero otherwise. The control–ownership wedge is measured as the ratio (*UCO* - *UCF*)/*UCO*, where *UCF* (*UCO*) is the ultimate cash-flow (control) rights of the largest controlling shareholder. $\alpha_{i,}$ and μ_t refer to firm- and time- fixed effects, respectively.[15] *i* and *t* are subscripts denoting firm and time, respectively. The description of variables used in the analysis is portrayed in the Appendix.

The coefficient of the interaction term β_2 estimates the effect the control-ownership wedge on the market value of excess cash. Consistent with our first hypothesis, H_1, this coefficient should be negative, provided that a higher control–ownership wedge adversely affects investors' valuation of cash holdings in CMS firms. To test hypotheses H_2 and H_3, we rerun our model specification (4) according to whether or not boards of directors are

[14] See, e.g., Dittmar and Mahrt-Smith (2007).

[15] The results (not reported here) remain qualitatively unchanged when we use pooled ordinary least squares with a clustering effect at the firm level as an alternative estimation method. Results are available from the authors upon request.

considered independent. The coefficient β_2 is expected to be lower, in absolute value, for firms where boards have a larger proportion of independent directors (H_2) and for those with separate chair and CEO positions (H_3).

5. Descriptive statistics

Table 2 presents descriptive statistics of the variables used in the empirical analysis. Not surprisingly, statistics on ownership structure illustrate that control in French firms is often concentrated, with a mean (median) of *UCO* of 51.08% (52.77%), while the mean (median) value of *UCF* is only 41.50% (40.00%). Accordingly, the control–ownership wedge, appears to be relatively high, with a mean (median) value of 20.72% (17.05%), suggesting that the sample firms are predominantly controlled by shareholders with substantial control-ownership wedge. As for the cash variable *ExCash*, the mean and median values amount to, respectively, 7.72% and 4.16% of net assets, indicating that French firms exhibit relatively important levels of excess cash holdings. Frésard and Silva (2010), for instance, show that excess cash holdings represent, on average, a fraction of only 2.9% of net assets held by non-U.S. firms that cross-list in the U.S.

6. Multivariate analysis

In this section, we first report the results of predicting the normal level of cash holdings. We next present the results of the estimation of the effects of the control−ownership wedge on the value of excess cash. We finally explore such effects in light of the board of directors' independence.

a. Predicting the normal level of cash holdings

We estimate the normal level of cash holdings to obtain excess cash. Table 3 reports the results of the models predicting normal levels of cash holdings. The estimation of the

reduced ((Eq. (1)) and the extended form (Eq. (2)) of the model of Opler et al. (1999) is presented in columns (1) and (2) of Panel A (Table 3), respectively.

We note that introducing market-to-book ratio in the models of Opler et al. (1999) may induce an endogeneity problem since the level of cash can, in turn, determine the importance of firms' investment opportunities. Following Dittmar and Mahrt-Smith (2007), we employ an instrumental variable approach by using the three-year lagged sales growth in the model of Opler et al. (1999) as an instrument for the market-to-book ratio.[16]The first-stage estimation of the reduced model consistently shows a strong statistically positive effect of the instrument −three-year sales growth− on the market-to-book ratio. In the second-stage, results reassuringly show that instrumented investment opportunities have a significant positive effect on cash holdings. Considering the extended form of Opler et al.'s (1999) model, we find that the level of cash increases with cash flow, standard deviation of cash flow and R&D expenses while it decreases with firm size, net working capital, leverage, capital expenditure and dividends. The effects of explanatory variables are qualitatively the same when we estimate the reduced form of the model. These results are similar to those of previous studies focusing on corporate cash holdings (Opler et al. (1999), Dittmar et al. (2003) and Harford et al. (2008), among others).

We also use the predictive model of Harford (1999) as an alternative approach to estimate the level of excess cash. The corresponding results are displayed in Panel B of Table 3. We particularly notice that corporate cash holdings increase significantly with present and future net operating cash flow, in accordance with the findings of Harford (1999). We also report that firms hold more cash when they have higher growth opportunities and when they are smaller, which corroborates the results from Opler et al.'s (1999) model

[16] Drobtz et al. (2010) and Frésard and Salva (2010) adopt a similar approach.

estimation (Table 3, Panel A). Overall, the findings indicate that predictive models used to obtain excess cash estimates are statistically robust.

b. Effects of the control–ownership wedge on the value of excess cash

In what follows, we investigate how the presence of controlling shareholders with control rights in excess of cash-flow rights affects cash valuation. Given the importance of agency costs induced by the control–ownership wedge, one may expect that investors assign a lower value to excess cash held by CMS firms. Table 4 reports the results from the fixed effect estimation of the model specified in Eq. (4) using excess cash as residuals of the reduced form (Eq. (1)) and extended form (Eq. (2)) of the model of Opler et al. (1999), as well as Harford's (1999) cash model (Eq. (3)).

Taken alone, the effect of excess cash on firm value is strongly positive and statistically significant across all regressions, with a coefficient β_1 of 1.328, 1.307, and 2.320 for models (1), (2), and (3), respectively. This finding suggests that, at low levels of control–ownership wedge (*Wedge* = 0), excess cash positively contributes to firm value. However, when the control–ownership wedge is high (*Wedge* = 1), excess cash decreases firm value. The coefficient β_2 of the interaction term *ExCash*Wedge* amounts to -1.189, -1.137, and -2.201 in, respectively, models (1), (2), and (3). The estimated coefficient β_2 is found to be strongly significant at the 1% statistical level across all regressions. In light of this, our findings reveal that the contribution of excess cash to firm value declines significantly with greater separation of control and cash-flow rights of the controlling shareholder, which is consistent with Masulis et al. (2009) for the US dual-class companies.

In terms of economic magnitude, the value of an additional euro of excess cash –estimated from Opler et al.'s (1999) reduced form model (Eq. (1))– falls, on average, from 1.328 to 0.139 euro (= 1.328 - 1.189) when control–ownership wedge increases from low to

high levels. Such decline is from 1.307 to 0.170 euro (= 1.307 - 1.137) when excess cash is derived from the extended form (Eq. (2)) of Opler et al. (1999) model for cash holdings. Thus, a high control–ownership wedge lowers the value of the marginal euro of excess cash by more than 80%.[17] Using Harford's (1999) model (Eq. (3)), this decline reaches the level of 95%, since we find that the value of an additional euro of cash falls from 2.320 to 0.118 (= 2.320 - 2.202) when the control–ownership wedge becomes relatively important.

Control variables are found to have significant effects on firm value. Thus, the results of Table 4 show that variables measuring current levels and future changes of earnings, R&D expenses, and dividend payout exhibit positive coefficients, suggesting that better profitability, higher R&D expenses, and more important distributions to shareholders contribute to enhance firm value. The variable measuring future changes in firm value, ΔV_{t+1}, captures unexpected effects of omitted variables and consistently exhibits a negative coefficient estimate, as suggested by Fama and French (1998). In line with the findings of these authors, past and future growth rate in net assets is found to have a positive effect on firm value. Taken together, these findings are consistent with those of previous studies related to the value of cash holdings (e.g., Drobetz et al. (2010); and Haw et al. (2011)).

Empirical results reported in Table 4 also suggest that financial constraints make excess cash more valuable to investors, as argued by Faulkender and Wang (2006). The coefficient of the interaction term *ExCash*FC* is, in fact, positive and statistically significant in models (1) and (2).

It is also noteworthy that, similar to related studies, the explanatory power of our model specification is strong across all regressions of Table 4, as shown by the relatively high

[17] This decline is 87% [(1.328 - 0.139)/1.328] for model (1) and 89.5% [(1.307 - 0.170)/1.307] for model (2) (Table 4).

R-squared value (within), which is 27.48%, 26.87%, and 29.86% for, respectively, models (1), (2), and (3).[18]

In sum, results from the different estimations reported in Table 4 are in favor of our first hypothesis, H_1, suggesting that the value of cash holdings decreases with the separation of control and cash-flow rights. Investors seem to be increasingly concerned about the availability of large cash holdings at the free disposal of entrenched controlling shareholders.

c. Control–ownership wedge, independent directors, and value of excess cash

This section focuses on testing how the presence of independent directors influences the value of excess cash, depending on the importance of the control–ownership wedge. To this end, we divide our sample in two subgroups according to whether the proportion of independent board members is below (*Independent boards*=0) or above (*Independent boards*=1) the sample median. We then examine the effects of the control–ownership wedge and independent directors on the value of excess cash and perform a Chow-test of difference to examine whether (*ExCash + ExCash*Wedge*) is significantly different between the two subgroups. We expect that a greater presence of independent directors should reduce the discount in the value of cash of CMS firms. The empirical results are reported in Table 5.

Our results reported in Table 4 show that a greater separation of control and cash-flow rights induces more discount in the value of excess cash. The results reported in Table 5 indicate that this value discount is less pronounced for firms with more independent directors sitting on their boards. The estimation of model (1) of Table 5 yields a coefficient β_2 of the

[18] The number of observations varies from one regression to another depending on data availability and the number of observations with positive excess cash.

interaction term *ExCash*Wedge* of -0.922 (with t-statistic = -2.90) for the subgroup of firms with a high proportion of independent directors on the board (*Independent boards*=1); such coefficient is -1.352 (with t-statistic = -2.75) for the subgroup of firms with a low proportion of independent members (*Independent boards*=0). In terms of economic magnitude, the value of an additional euro of excess cash is 0.820 euro (= 1.742 - 0.922) in independent-board firms with a high control–ownership wedge. This value of cash declines to 0.270 euro (= 1.622 - 1.352) when boards include a low number of independent members. The Chow test of comparison for the sum *ExCash* + *ExCash*Wedge* supports the statistically significant difference –at the 1% level– in the value of cash between the two subgroups of independent and non-independent boards.

Additionally, the estimation of model (2) of Table 5 shows that the coefficient β_2 is negative across the two sub-samples, but is larger –in absolute value– for boards with few independent members compared to those with many independent directors (a coefficient of -1.270 versus -0.885). As far as the economic magnitude is concerned, investors of firms featuring an important control–ownership wedge tend to value a marginal euro of excess cash to 0.823 euro (= 1.708 - 0.885) when boards contain a large number of independent members, whereas this value falls to only 0.320 (= 1.590 - 1.270) euro when the board is less independent. Results of the Chow-test show that the difference in the value of excess cash across the two sub-samples is statistically significant at the 1% level.

The results of the estimation of model (3) of Table 5 are closely akin to those derived from models (1) and (2). As such, we find that an additional euro of excess cash lowers firm value by 0.671 euro (= 2.097 - 2.768) when few independent directors sit on the board of a CMS firm with a large control–ownership wedge. In the alternative case of the high presence of independent directors, the value of a marginal euro of excess cash increases to 1.550 euro

(= 3.938 - 2.388). The difference in the value of excess cash between the two subgroups is again statistically significant at the 1% level.

Taken together, our results highlight the crucial role of independent directors in limiting the discount in the value of excess cash, particularly when the control rights of controlling shareholders substantially exceed their cash-flow rights. Overall, we find support for the second hypothesis, H_2, suggesting that high-quality monitoring by independent directors reduces the likelihood of expropriation by controlling shareholders in CMS firms.

d. Control–ownership wedge, separation of CEO and chair positions, and value of excess cash

To capture the effect of separating CEO and board chair positions on cash valuation, we split our sample according to whether or not the CEO of the firm is also the chair of the board of directors ((CEO duality=1) or (CEO duality=0). The estimation results of models (1), (2), and (3) are reported in Table 6. Overall, the separation of CEO and chair positions is found to be associated with better valuation of excess cash compared to when these positions are held by the same person. Hence, the contribution of excess cash to firm value is higher in the absence of a leadership structure centered around only one person. In instances of a high control–ownership wedge, (Wedge = 1), the coefficient β2 is negative, -2.466 (with t-statistic = -3.92), for firms with CEO duality, while this coefficient is only -0.646 (with t-statistic = -2.76) in cases of non-CEO duality. Both coefficients are statistically significant at the 1% level. The decline in the value of excess cash arising from important control−ownership wedge seems to be accentuated when the CEO of the firm is also the chairperson of the board. With respect to economic magnitude, we find that an additional euro of cash reduces firm value by 0.534 euro (= 1.932 - 2.466) in the sub-sample of firms where a large control–ownership wedge is coupled with a dual leadership structure. Separating CEO and chair

positions, however, largely improves the value of one marginal euro of excess cash to 1.713 euro (= 2.359 - 0.646). This difference in the value of excess cash between dual and non-dual leadership firms is statistically significant at the 5% level.

The results of models (2) and (3) of Table 6 offer a similar picture. When the control–ownership wedge is substantial, the value of an additional euro of excess cash is 1.319 euro (=1.861-0.542) for model (2) and 0.522 euro (= 2.474 - 1.952) for model (3) in the absence of CEO duality. Looking at firms with CEO duality, results of model (2) and model (3) of Table 6 show that one marginal euro of excess cash decreases firm value by, respectively, 0.484 euro (= 1.410 - 1.894) and 0.212 euro (= 1.984 - 2.196). The difference in the value of excess cash between the two subgroups is significant at the 5% statistical level. These results suggest that the adverse effect of the control−ownership wedge on the value of excess cash is magnified by the combination of the CEO and chair positions. The results provide empirical evidence that the magnitude of agency costs related to dual leadership structure negatively affects the valuation of excess cash held by CMS firms. The separation of CEO and chair positions seems, however, to limit such decline in the value of excess cash, which corroborates our third hypothesis, H3. In summary, the absence of CEO duality appears to constrain the opportunistic behavior of controlling shareholders, particularly those wielding excessive control rights relative to cash-flow rights.

7. Conclusion

The valuation of corporate excess cash is based on how investors expect this cash to be used. Empirical evidence suggests that cash holdings are more valuable in firms with profitable growth opportunities, particularly when facing severe financial constraints (Faulkender and Wang (2006)). Nonetheless, increasing levels of cash holdings lead to a discount in firm value when investors perceive that excess cash is likely to be converted into

private benefits. Based on this argument, the present research examines how investors value excess cash held by CMS firms.

In response to the questions raised in the introduction, the findings of this study suggest that investors are more concerned about the use of excess cash when controlling shareholders have a greater ability to entrench themselves. More specifically, investors tend to reduce the value of excess cash by more than 80% in the case of CMS firms featuring high separation of control and cash-flow rights.

Empirical findings show that the discount in the value of excess cash in CMS firms is less pronounced when boards are more independent. Besides, the separation of CEO and chair positions appears to reinforce board effectiveness in the eyes of investors, who assign higher value to the excess cash of non-dual leadership CMS firms.

Overall, the present research emphasizes the relevance of board independence in reducing controlling shareholders' impetus for private benefits consumption. Such a disciplinary role of boards of directors is basically reflected in better market valuation of corporate cash holdings. Although compelling, the evidence in favor of the board of directors' effectiveness is still underexplored in a concentrated ownership setting where the interference of controlling shareholders in the selection and the compensation of directors may jeopardize the board's monitoring role.

References

Adams, R., Hermalin, B., Weisbach, M., 2010. The role of boards of directors in corporate governance: A conceptual framework and survey. Journal of Economic Literature 48, 58-107.

Anderson, R., Reeb, D., 2004. Board composition: Balancing family influence in S&P 500 firms. Administrative Science Quarterly 49, 209-237.

Bebchuk, L., Kraakman, R., Triantis, G., 2000. Stock pyramids, cross-ownership, and dual class equity: The creation and agency costs of separating control from cash flow rights. In: Morck RK (ed.) Concentrated Corporate Ownership. University of Chicago Press, Chicago, I1.

Berle, A., Means, G., 1932. The modern corporation and property. New York: MacMillan

Blanchard, O., 1994. Lopez-de-Silanes, F., Shleifer, A., 1994. What do firms do with cash windfalls. Journal of Financial Economics 36, 337-360.

Bliss, M.A., 2011. Does CEO duality constrain board independence? Some evidence from audit pricing. Accounting and Finance 51, 361–380.

Bliss, M.A., Gul, F.A., Abdul Majid , 2011. Do political connections affect the role of independent audit committees and CEO Duality? Some evidence from Malaysian audit pricing. Journal of Contemporary Accounting & Economics 7, 82–98.

Boubaker, S., 2007. Ownership-control discrepancy and firm value: Evidence from France. Multinational Finance Journal 11, 211-252.

Boubaker, S., Labégorre, F., 2008. Ownership structure, corporate governance and analyst following: A study of French listed firms. Journal of banking & finance 32, 961-976.

Boubaker, S., Mansali, H., Rjiba, H., 2014. Large controlling shareholders and stock price synchronicity. Journal of Banking & Finance 40, 80-96.

Brickley, J.A., Coles, J.L., Jarrell, G., 1997. Leadership structure: separating the CEO and chairman of the board. Journal of Corporate Finance 3, 189–220.

Burkart, M., Lee, S., 2008. One Share-One Vote: the Theory. Review of Finance 12, 1-49.

Bushman, R. M. and A. J. Smith., 2001. Financial accounting information and corporate governance. Journal of Accounting and Economics 32, 237-333.

Campbell, J. 1996. Understanding risk and return. Journal of Political Economy 104, 298–345.

Chang, J.C., Sun, H.L., 2009. Crossed-listed foreign firms, earnings informativeness, earnings management and disclosures of corporate governance information under SOX The International Journal of Accounting 44, 1–32.

Claessens, S., Djankov, S., Lang, L., 2000. The separation of ownership and control in East Asian corporations. Journal of Financial Economics 58, 81-112.

Claessens, S., Djankov, S., Fan, J., Lang, L., 2002. Disentangling the incentive and entrenchment effects of large shareholdings. The Journal of Finance 57, 2741-2771.

Dahya, J., Dimitrov, O., McConnell, J., 2008. Dominant shareholders, corporate boards, and corporate value: A cross-country analysis. Journal of Financial Economics 87, 73-100.

Daily, C. M., Dalton D. R., 1997. CEO and board chair roles held jointly or separately: Much ado about nothing?. Academy of Management Executive 11, 11-20.

Dayton, K.N. 1984. Corporate governance: The other side of the coin. Harvard Business Review 62, 34-37.

Dittmar, A., Mahrt-Smith, J., 2007. Corporate governance and the value of cash holdings. Journal of Financial Economics 83, 599-634.

Dittmar, A., Mahrt-Smith, J., Servaes, H., 2003. International corporate governance and corporate cash holdings. Journal of Financial and Quantitative Analysis 38, 111-133.

Djankov, S., R. La Porta, F. Lopez–de–Silanes, Shleifer,A., 2008. The Law and Economics of Self–Dealing. Journal of Financial Economics 88, 430–65.

Drobetz, W., Grüninger, M., Hirschvogl, S., 2010. Information asymmetry and the value of cash. Journal of Banking and Finance 34, 2168-2184.

Enriques, L., Volpin, P., 2007. Corporate governance reforms in Continental Europe. Journal of Economic Perspectives 21, 117-140.

Faccio, M., Lang, L., 2002. The ultimate ownership of Western European corporations. Journal of Financial Economics 65, 365-395.

Fama, E., Jensen, M., 1983. Separation of ownership and control. The Journal of Law and Economics 26, 301-325.

Fama, E., French, K, R., 1998. Taxes, Financing Decisions, and Firm Value. The Journal of Finance 53, 819-843.

Faulkender, M., Wang, R., 2006. Corporate financial policy and the value of cash. The Journal of Finance 61, 1957-1990.

Firth, M., Fung, P., Rui, O., 2007. Ownership, two-tier board structure, and the informativeness of earnings–Evidence from China. Journal of Accounting and Public Policy 26, 463-496.

Frésard, L., Salva, C., 2010. The value of excess cash and corporate governance: Evidence from US cross-listings. Journal of Financial Economics 98, 359-384.

Grinstein, Y., Valles, Y., 2008. Separating the CEO from the chairman position: determinants and changes after the new corporate governance regulation. Working paper, Cornell University.

Grossman, S., Hart, O., 1988. One-share, one-vote, and the market for corporate control. Journal of Financial Economics 20, 175-202.

Gul, F.A., Leung, S., 2004. Board leadership, outside directors' expertise and voluntary corporate disclosure. Journal of Accounting and Public Policy 23, 351–379.

Harford, J., 1999. Corporate cash reserves and acquisitions. The Journal of Finance 54, 1969-1997.

Harford, J., Mansi, S., Maxwell, W., 2008. Corporate governance and firm cash holdings in the US. Journal of Financial Economics 87, 535-555.

Harris, M., Raviv, A., 1988. Corporate governance: Voting rights and majority rules. Journal of Financial Economics 20, 203-235.

Haw, I., M., Simon, S.,M., Bingbing, H., Zhang, X., H., 2011. The contribution of stock repurchases to the value of the firm and cash holdings around the world. Journal of Corporate Finance 17, 152–16.

Hughes, P., 2009. Corporate value, ultimate control and law protection for investors in Western Europe. Management Accounting Research 20, 41-52.

Jaggi, B., Leung, S., Gul, F., 2009. Family control, board independence and earnings management: Evidence based on Hong Kong firms. Journal of Accounting and Public Policy 28, 281-300.

Jensen, M., 1986. Agency costs of free cash flow, corporate finance, and takeovers. The American Economic Review 76, 323-329.

Jensen, M.C., Meckling, W.H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics 3, 305-360.

Jiang, L., Kim, J.,B., Pang,L., 2011. Control-Ownership Wedge and Investment Sensitivity to Stock Price. Journal of Banking and Finance 35, 2856-2867.

Johnson, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 2000. Tunneling. The American Economic Review 90, 22-27.

Kalcheva, I., Lins, K., 2007. International evidence on cash holdings and expected managerial agency problems. Review of Financial Studies 20, 1087-1112.

Keynes, J.M., 1936. The general theory of employment, interest and money. Harcourt Brace, London.

Kim, C., Mauer, D., Sherman, A., 1998. The determinants of corporate liquidity: Theory and evidence. The Journal of Financial and Quantitative Analysis 33, 335-359.

Kim, K., Kitsabunnarat-Chatjuthamard, P., Nofsinger, J., 2007. Large shareholders, board independence, and minority shareholder rights: Evidence from Europe. Journal of Corporate Finance 13, 859-880.

Kim, K., Al-Shammari, H., Kim, B., Lee, S., 2009. CEO Duality Leadership and Corporate Diversification Behavior. Journal of Business Research 62, 1173–1180.

Kusnadi, Y., 2011. Do Corporate Governance Mechanisms Matter for Cash Holdings and Firm Value?, Pacific-Basin Finance Journal 19, 554-570.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. Law and finance. The Journal of Political Economy 106, 1113-1155.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1999. Corporate ownership around the world. The Journal of Finance 54, 471-517.

Lins, K., 2003. Equity ownership and firm value in emerging markets. The Journal of Financial and Quantitative Analysis 38, 159-184.

Masulis, R., Wang, C., Xie, F., 2009. Agency Problems at Dual-Class Companies. The Journal of Finance 64, 1697-1727.

Myers, S.C., Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13, 187–221.

Opler, T., Pinkowitz, L., Stulz, R., 1999. R. Williamson, 1999. The determinants and implications of corporate cash holdings. Journal of Financial Economics 52, 3-46.

Ozkan, A., Ozkan, N., 2004. Corporate cash holdings: An empirical investigation of UK companies. Journal of Banking and Finance 28, 2103-2134.

Patelli, L., Prencipe, A., 2007. The relationship between voluntary disclosure and independent directors in the presence of a dominant shareholder. European Accounting Review 16, 5-33.

Pinkowitz, L., Stulz, R., Williamson, R., 2006. Does the contribution of corporate cash holdings and dividends to firm value depend on governance? A cross-country analysis. The Journal of Finance 61, 2725.

Raheja, C., 2005. Determinants of board size and composition: A theory of corporate boards. Journal of Financial and Quantitative Analysis 40, 283-306.

Rosenstein, S., Wyatt, J., 1990. Outside directors, board independence, and shareholder wealth. Journal of Financial Economics 26, 175-191.

Stulz, R., 1990. Managerial discretion and optimal financing policies. Journal of Financial Economics 26, 3-27.

Tong, Z., 2011. Firm diversification and the value of corporate cash holdings. Journal of Corporate Finance 17, 741–758.

Villalonga, B., Amit, R., 2009. How are US family firms controlled?. Review of Financial Studies 22, 3047-3091.

Yeh, Y., Woidtke, T., 2005. Commitment or entrenchment?: Controlling shareholders and board composition. Journal of Banking and Finance 29, 1857-1885.

Yun, H., 2009. The choice of corporate liquidity and corporate governance. Review of Financial Studies 22, 1447-1475.

Appendix. Variables and definitions

Variable	Definition
ExCash	Excess cash holdings, computed as the residuals of models predicting the normal level of cash holdings.
Wedge	Dummy variable that equals one if the control-ownership wedge is above the sample median, and zero otherwise. Control-ownership wedge is measured as the ratio (*UCO-UCF*)/*UCO* where *UCF* (*UCO*) is the ultimate cash-flow (control) rights of the largest controlling shareholder.
Independent boards	Dummy variable that equals one if the proportion of independent directors on the board is above the sample median, and zero otherwise.
CEO duality	Dummy variable that equals one if the CEO is also the chair of the board of directors, and zero otherwise.
V	Market value of the firm. It is computed as the market value of equity plus book value of total debt.
Cash	Cash and marketable securities.
NetAssets	Non-cash assets. It is measured as the book value of total assets minus cash and marketable securities.
Earnings	Earnings before extraordinary items (after depreciation and taxes) deflated by *NetAssets*.
R&D	Research and Development expenses deflated by *NetAssets*.
Interest	Interests on debts deflated by *NetAssets*.
Dividends	Common dividends deflated by *NetAssets*.
FC	Dummy variable that equals one if the firm is financially constrained, and zero otherwise. A firm is financially constrained (unconstrained) when its payout ratio equals (differs from) zero.
Ln(realNetAssets)	Firm size. It is the natural logarithm of the book value of total assets minus cash and marketable securities in 2007 euros, adjusted for inflation using the French consumer price index (CPI) series.
CashFlow	Cash flow. It is computed as operating income minus interest and taxes.
NWC	Net working capital. It is computed as current assets minus current liabilities minus cash.
STD CF	Standard deviation of cash flows. It is computed as industry average of prior 5 year standard deviation of cash flow to net assets, where industry is defined according to Campbell's (1996) industry classification.
MarketValue/ NetAssets	Market-to-book ratio where *MarketValue* is market value computed as market value of equity plus total liabilities. It is instrumented by *Three-year Sales Growth* computed as three-year lagged sales growth.
Sales	Total sales.
R&D-to-sales	Research and development expenses deflated by *Sales*.
Leverage	Total debt scaled by book value of total assets.
CAPEX	Capital expenditure.
Dividummy	Dummy that equals one when a firm pays dividends, and zero otherwise.
Regulatedummy	Dummy that equals one when a firm belongs to a regulated industry, and zero otherwise.
NetCFO	Operating cash flow net of investments.
MB	Market-to-book value of assets.
CFOVar	Coefficient of variation of cash flow to net assets.

Ln(MV)	Firm size. It is computed as the natural logarithm of the market value of the firm in 2007 euros, adjusted for inflation using the French consumer price index (CPI) series.
ΔX_t (ΔX_{t+1})	Change in variable *X* from year t-1 (t) to year t (t+1).

Table 1. Procedure of sample selection

This table illustrates the procedure of sample selection. We start with a total of 3,831 publicly listed French firms on the Euronext over the period from 2002 to 2007. We discard firms belonging to financial and utilities industries and those with missing financial and governance data. After excluding observations with negative excess cash (using excess cash as residual from the extended form of the model of Opler et al.'s (1999) (Eq.(2)), we are left with 1,901 observations of 398 firms.

Description	Number of observations
Publicly listed French firms on the Euronext	3,831
Financial firms (SIC 6000-6999)	(592)
Utilities (SIC 4900-4999)	(80)
Observations with missing financial data	(502)
Observations with missing ownership data	(163)
Observations with negative excess cash	(593)
Final sample	1,901

Table 2. Descriptive statistics

This table provides descriptive statistics of the sample of firms with positive excess cash. Control-ownership wedge is measured as the ratio (*UCO*-*UCF*)/*UCO* where *UCF* (*UCO*) is the ultimate cash-flow (control) rights of the largest controlling shareholder. A fraction of 21.46% of the sampled firms does not exhibit a separation of control and cash-flow rights. *ExCash* is excess cash holdings. It is the residual of Eq. (2) in Table 3. *V* is market value of the firm. It is computed as the market value of equity plus book value of total debt. *NetAssets* is non-cash assets. It is measured as the book value of total assets minus cash and marketable securities. *Earnings* is earnings before interest and extraordinary items (after depreciation and taxes) deflated by *NetAssets*. *R&D* is research and development expense deflated by *NetAssets*. *Interest* is interest expense deflated by *NetAssets*. *Dividends* is common dividends deflated by *NetAssets*. ΔX_t is the change in variable *X* from year t-1 to year t. ΔX_{t+1} is the change in variable *X* from year t to year t+1.

Variable	25th percentile	Mean	Median	75th percentile	Standard deviation
Ownership structure					
UCF (%)	20.58	41.50	40.00	60.68	25.09
UCO (%)	31.12	51.08	52.77	70.84	25.04
(*UCO*-*UCF*)/*UCO* (%)	1.09	20.72	17.05	31.55	21.55
Firm Characteristics					
ExCash	0.0201	0.0772	0.0416	0.0827	0.1098
V_t	1.1216	1.8254	1.4128	1.9308	1.4062
$Earnings_t$	0.0108	0.0255	0.0370	0.0711	0.12701
$\Delta Earnings_t$	-0.0075	0.0153	0.0067	0.0241	0.12036
$\Delta Earnings_{t+1}$	-0.0138	0.0097	0.0054	0.0251	0.1106
$\Delta NetAssets_t$	-0.0357	0.0506	-0.0357	-0.0357	-0.0357
$\Delta NetAssets_{t+1}$	-0.0281	0.1121	-0.0281	-0.0281	-0.0281
$R\&D_t$	0.0000	0.0169	0.0000	0.0064	0.0493
$\Delta R\&D_t$	0.0000	0.0012	0.0000	0.0000	0.0151
$\Delta R\&D_{t+1}$	0.0000	0.0020	0.0000	0.0000	0.0161
$Interest_t$	0.0057	0.0136	0.0057	0.0057	0.0057
$\Delta Interest_t$	-0.0020	0.0002	-0.0020	-0.0020	-0.0020
$\Delta Interest_{t+1}$	-0.0019	0.0011	-0.0019	-0.0019	-0.0019
Dividends	0.0000	0.0137	0.0083	0.0176	0.0197
$\Delta Dividends_t$	0.0000	0.0015	0.0000	0.0000	0.0000
$\Delta Dividends_{t+1}$	0.0000	0.0022	0.0000	0.0000	0.0000
ΔV_{t+1}	-0.1627	0.1380	-0.1627	-0.1627	-0.1627

Table 3. Results of regressions predicting the normal level of cash holdings

This table reports the regression results for the level of cash holdings. In Panel A, we estimate the reduced form (Eq.(1)) and the extended form (Eq.(2)) of Opler et al.'s (1999) model. Dependent variable for Eq. (1) and Eq. (2) is the level of cash. It is measured as the natural logarithm of cash-to-net assets (*Ln(Cash/NetAssets)*). *Cash* is cash and marketable securities. *NetAssets* is non-cash assets. It is measured as the book value of total assets minus cash and marketable securities. The regressors include *Ln(realNetAssets)* which proxies for firm size. It is the natural logarithm of the book value of total assets minus cash and marketable securities in 2007 euros, adjusted for inflation using the French consumer price index (CPI) series; *CashFlow/Net Assets* is cash flow computed as operating income minus interest and taxes, deflated by *NetAssets*; *NWC/NetAssets* is net working capital computed as current assets minus current liabilities minus cash, deflated by *NetAssets*; *STD CF* is standard deviation of cash flow computed as industry average of prior 5 year standard deviation of cash flow to net assets, where industry is defined according to Campbell's (1996) industry classification; *MarketValue/NetAssets* is market-to-book ratio where *MarketValue* is market value computed as market value of equity plus total liabilities. *R&D-to-sales* is research and development expenses deflated by *Sales*, where *Sales* is total sales; *Leverage* is total debt scaled by book value of total assets; *CAPEX/NetAssets* is capital expenditure, deflated by *NetAssets*; *Dividummy* is a dummy that equals one when a firm pays dividends, and zero otherwise. *Regulatedummy* is a dummy that equals one when a firm belongs to a regulated industry, and zero otherwise. Eq (1) is estimated as a fixed effect panel. Eq (2) is estimated as OLS regression with industry dummies and robust standard errors. Eqs. (1) and (2) are estimated using an instrumental variable approach with three-year lagged sales growth (*Three-year Sales Growth)* as an instrument for *MarketValue/NetAssets*. The results of the first stage of the instrumental variable model (*MarketValue/NetAssets* as dependent variable) are reported in the right side of Panel A. In panel B, we estimate the model of Harford (1999) (Eq. (3)) as OLS regression with industry dummies and robust standard errors. The Dependent variable is cash-to-sale ratio (*Cash/Sales*). The regressors include $NetCFO/Sales_{i,t}$, $\Delta NetCFO/Sales_{i,t+1}$, $\Delta NetCFO/Sales_{i,t+2}$, where *NetCFO* is operating cash flow net of investments; $MB_{i,t-1}$, *where MB* is the market-to-book value of assets; $CFOVar_i$ is the coefficient of variation of cash flow to net assets; $Ln(MV)_{i,t-1}$, where *Ln(MV)* is firm size, computed as the natural logarithm of market value in 2007 euros, adjusted for inflation using the French consumer price index (CPI) series. All models include year dummies. [a], [b] and [c] denote two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses next to the estimated coefficients.

Panel A: Model of Opler et al. (1999)

Variable	Reduced form Eq.(1)		Extended form Eq.(2)		First-stage		
Ln(realNetAssets)	-0.3773	(-10.64)[a]	-0.3774	(-10.63)[a]	*Ln(realNetAssets)*	-1.1191	(-18.72)[a]
CashFlow/NetAssets	0.5845	(6.43)[a]	0.6762	(6.72)[a]	*CashFlow/ NetAssets*	1.7871	(9.61)[a]
NWC/NetAssets	-0.0909	(-3.12)[a]	-0.1126	(-3.62)[a]			
STD CF	0.5052	(4.80)[a]	0.4649	(4.37)[a]	*NWC/NetAssets*	-0.9534	(-19.22)[a]
MarketValue/NetAssets	0.0535	(3.23)[a]	0.0507	(3.06)[a]	*STD CF*	0.6547	(3.41)[a]
R&D-to-sales	2.4133	(8.24)[a]	2.5172	(8.53)[a]	*Three-year Sales Growth*	0.0203	(29.58)[a]
Leverage	-	-	-0.2090	(-2.69)[a]			
CAPEX/NetAssets	-	-	-1.0611	(-3.23)[a]	*R&D-to-sales*	1.9233	(3.22)[a]
Dividummy	-	-	-0.1412	(-2.11)[a]	Intercept	22.3168	(18.36) [a]
Regulatedummy	-	-	-0.1067	(-0.14)			
Intercept	15.375	(21.13)[a]	1.1518	(2.63)[a]			
Year dummies	Yes		Yes			Yes	
Industry dummies	No		Yes			No	
Nb.observations	2,657		2,657		Nb.observations	2,657	
R-squared	18.48%		19.01%		*R*-squared	63.61%	

Panel B: Model of Harford (1999)

Variable	Eq.(3)	
$NetCFO/Sales_{i,t}$	1.6841	(11.61)[a]
$\Delta NetCFO/Sales_{i,t+1}$	1.1635	(11.61)[a]
Δ $NetCFO/Sales_{i,t+2}$	0.6323	(3.66)[a]
$MB_{i,t-1}$	0.1090	(4.38)[a]
$CFOVar_i$	-0.0185	(-0.42)
$Ln(MV)_{i,t-1}$	-1.3458	(-18.68)[a]
Intercept	22.316	(18.36)[a]
Year dummies	Yes	
Industry dummies	Yes	
Nb.observations	2,040	
R-squared	14.77 %	

Table 4. Control-ownership wedge and value of excess cash

This table reports results of fixed effect regressions of the control-ownership wedge on the value of excess cash. The sample consists of firms with positive excess cash. The dependent variable in all models is the market value of the firm, denoted as V_t. It is computed as the market value of equity plus book value of total debt. *NetAssets* is non-cash assets. It is measured as the book value of total assets minus cash and marketable securities. *Earnings* is earnings before interest and extraordinary items (after depreciation and taxes) deflated by *NetAssets*. *R&D* is research and development expense deflated by *NetAssets*. *Interest* is interest expense deflated by *NetAssets*. *Dividends* is common dividends deflated by *NetAssets*. ΔX_t is the change in variable *X* from year t-1 to year t. ΔX_{t+1} is the change in variable *X* from year t to year t+1. *FC* is a dummy that equals one if the firm is financially constrained, and zero otherwise. A firm is financially constrained (unconstrained) when its payout ratio equals (differs from) zero. *ExCash* is excess cash holdings. Models (1), (2) and (3) use ExCash as the residual of, respectively, the reduced form of model of Opler et al., (1999), the extended form of model of Opler et al., (1999), and the model of Harford (1999). *Wedge* is a dummy that equals one if the control-ownership wedge is above the sample median, and zero otherwise. Control-ownership wedge is measured as the ratio (*UCO*-*UCF*)/*UCO* where *UCF* (*UCO*) is the ultimate cash-flow (control) rights of the largest controlling shareholder. [a], [b] and [c] denote two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively. The t-statistics are reported in parentheses next to the estimated coefficients.

Variable	(1)		(2)		(3)	
$ExCash_t$	1.3287	(4.03)[a]	1.3078	(3.99)[a]	2.3204	(2.71)[a]
$ExCash_t*Wedge_t$	-1.1897	(-3.72)[a]	-1.1374	(-3.59)[a]	-2.2012	(-2.64)[a]
$Wedge_t$	-0.1839	(-1.47)	-0.1819	(-1.46)	0.0592	(0.32)
$ExCash_t*FC_t$	1.4948	(3.72)[a]	1.4561	(3.64)[a]	0.1383	(0.66)
$Earnings_t$	4.1800	(10.70)[a]	4.1097	(10.47)[a]	4.4209	(8.26)[a]
$\Delta Earnings_t$	-0.3572	(-1.51)	-0.3762	(-1.58)	-0.7982	(-2.43)[b]
$\Delta Earnings_{t+1}$	2.4830	(9.58)[a]	2.4151	(9.33)[a]	2.6076	(7.19)[a]
$\Delta NetAssets_t$	0.3192	(3.62)[a]	0.3238	(3.68)[a]	0.1549	(1.35)
$\Delta NetAssets_{t+1}$	0.2231	(5.74)[a]	0.2261	(5.82)[a]	0.3329	(4.85)[a]
$R\&D_t$	3.8065	(3.55)[a]	3.8539	(3.61)[a]	11.5409	(9.30)[a]
$\Delta R\&D_t$	-0.7701	(-0.76)	-0.7531	(-0.74)	-0.5874	(-0.52)
$\Delta R\&D_{t+1}$	2.4991	(3.10)[a]	2.4977	(3.10)[a]	5.5758	(5.90)[a]
$Interest_t$	13.4777	(4.39)[a]	13.2689	(4.32)[a]	20.0441	(5.01)[a]
$\Delta Interest_t$	-2.7850	(-1.02)	-2.9819	(-1.10)	-1.1483	(-0.32)
$\Delta Interest_{t+1}$	9.9824	(4.24)[a]	9.5582	(4.08)[a]	11.9612	(4.19)[a]
Dividends	5.6837	(3.41)[a]	5.4235	(3.23)[a]	-0.8108	(-0.26)
$\Delta Dividends_t$	-2.2431	(-2.59)[b]	-2.1709	(-2.50)[b]	4.0861	(1.51)
$\Delta Dividends_{t+1}$	1.1191	(1.23)	0.9885	(1.08)	2.4367	(1.60)
ΔV_{t+1}	-0.1847	(-10.13)[a]	-0.1874	(-10.29)[a]	-0.1740	(-6.98)[a]
Intercept	1.2517	(11.42)[a]	1.2603	(11.53)[a]	0.9278	(8.88)[a]
Nb.observations	1,888		1,901		1,190	
R-squared	27.48%		26.87%		29.86%	

Table 5. Control-ownership wedge, independent directors and value of excess cash

This table reports results of fixed effect regressions of the control-ownership wedge on the value of excess cash depending on board independence. The sample consists of firms with positive excess cash. Dependent variable is the market value of the firm, denoted as V_t. It is computed as the market value of equity plus book value of total debt. *NetAssets* is non-cash assets. It is measured as the book value of total assets minus cash and marketable securities. *Earnings* is earnings before interest and extraordinary items (after depreciation and taxes) deflated by *NetAssets*. *R&D* is research and development expense deflated by *NetAssets*. *Interest* is interest expense deflated by *NetAssets*. *Dividends* is common dividends deflated by *NetAssets*. ΔX_t is the change in variable *X* from year t-1 to year t. ΔX_{t+1} is the change in variable *X* from year t to year t+1. *FC* is a dummy that equals one if the firm is financially constrained, and zero otherwise. A firm is financially constrained (unconstrained) when its payout ratio equals (differs from) zero. *ExCash* is excess cash holdings. Models (1), (2) and (3) use *ExCash* as the residual of, respectively, Eq.(1), Eq.(2) and Eq.(3) in Table 3. *Wedge* is a dummy that equals one if the control-ownership wedge is above the sample median, and zero otherwise. Control-ownership wedge is measured as the ratio *(UCO-UCF)/UCO* where UCF (UCO) is the ultimate cash-flow (control) rights of the largest controlling shareholder. *Independent boards* is a dummy that equals one if the proportion of independent directors on the board is above the sample median, and zero otherwise. The t-statistics are reported in parentheses next to the estimated coefficients. The Chow-test tests whether the sum $ExCash_t+ExCash_t*Wedge_t$ is significantly different between groups of independent and non-independent boards. Chi-square statistics (χ^2) with one degree of freedom are reported. [a], [b] and [c] denote two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)				(2)				(3)			
	Independent boards				*Independent boards*				*Independent boards*			
Variable	*0*		*1*		*0*		*1*		*0*		*1*	
$ExCash_t$	1.6220	(3.29)[a]	1.7425	(4.72)[a]	1.5909	(3.27)[a]	1.7086	(4.65)[a]	2.0977	(2.28)[b]	3.9380	(3.39)[a]
$ExCash_t*Wedge_t$	-1.3526	(-2.75)[a]	-0.9224	(-2.90)[a]	-1.2704	(-2.62)[a]	-0.8850	(-2.80)[a]	-2.7682	(-3.19)[a]	-2.3884	(-2.19)[b]
$Wedge_t$	-0.2945	(-1.20)	0.0252	(0.22)	-0.2913	(-1.20)	0.0267	(0.24)	0.0832	(0.14)	-0.0923	(-0.17)
$ExCash_t*FC_t$	1.4480	(2.45)[b]	-0.8481	(-1.77)[c]	1.4562	(2.50)[b]	-0.8782	(-1.84)[c]	0.0722	(0.72)	0.0869	(0.64)
$Earnings_t$	3.6710	(6.77)[a]	4.3201	(8.51)[a]	3.4408	(6.28)[a]	4.3278	(8.53)[a]	2.9429	(3.89)[a]	1.0897	(2.48)[b]
$\Delta Earnings_t$	-0.8367	(-2.34)[b]	-0.3937	(-1.36)	-0.8242	(-2.30)[b]	-0.3856	(-1.33)	0.2927	(0.54)	0.3271	(1.09)
$\Delta Earnings_{t+1}$	2.3587	(7.48)[a]	2.2589	(6.90)[a]	2.2599	(7.24)[a]	2.2338	(6.84)[a]	2.4930	(4.90)[a]	2.4202	(6.78)[a]
$\Delta NetAssets_t$	0.3011	(2.82)[a]	0.2317	(2.07)[b]	0.3121	(2.97)[a]	0.2298	(2.05)[b]	0.0310	(0.18)	0.2792	(1.93)[c]
$\Delta NetAssets_{t+1}$	0.0917	(2.08)[b]	0.6277	(10.30)[a]	0.0937	(2.16)[b]	0.6341	(10.42)[a]	0.3346	(5.05)[a]	0.2753	(3.43)[a]
$R\&D_t$	2.9857	(1.81)[c]	7.5561	(5.99)[a]	2.9061	(1.79)[c]	7.6879	(6.12)[a]	16.7869	(10.42)[a]	12.2460	(7.04)[a]
$\Delta R\&D_t$	-0.6175	(-0.48)	-1.3907	(-1.16)	-0.6605	(-0.51)	-1.2911	(-1.08)	6.6392	(4.45)[a]	-7.5459	(-5.46)[a]
$\Delta R\&D_{t+1}$	3.4074	(2.86)[a]	1.0966	(1.42)	3.2687	(2.80)[a]	1.1050	(1.43)	1.5948	(1.46)	2.3396	(3.14)[a]
$Interest_t$	4.3857	(1.28)	16.9501	(5.12)[a]	4.9206	(1.12)	16.7059	(5.05)[a]	10.9857	(2.16)[b]	7.1390	(1.24)
$\Delta Interest_t$	-6.983	(-1.15)	-1.5440	(-0.55)	-4.2839	(-1.15)	-1.3390	(-0.47)	4.3825	(1.22)	0.5579	(0.10)
$\Delta Interest_{t+1}$	0.0841	(1.92)[c]	9.8002	(4.16)[a]	5.8721	(1.63)	9.8031	(4.16)[a]	7.8844	(2.79)[a]	0.7848	(0.15)
Dividends	5.0811	(2.81)[a]	8.1695	(3.09)[a]	4.6040	(2.53)[b]	8.0105	(3.04)[a]	8.5959	(1.98)[c]	4.7435	(1.03)
$\Delta Dividends_t$	-2.1970	(-2.40)[b]	-1.1534	(-0.50)	-1.9847	(-2.17)[b]	-1.2391	(-0.54)	1.4537	(0.43)	10.6554	(3.06)[a]
$\Delta Dividends_{t+1}$	0.8212	(0.90)	3.3567	(1.75)[c]	0.7118	(0.78)	3.0252	(1.58)	6.4487	(2.86)[a]	1.5211	(0.83)
ΔV_{t+1}	-0.0986	(-4.10)[a]	-0.4188	(-4.19)[a]	-0.0826	(-4.05)[a]	-0.4271	(-14.58)[a]	-0.2197	(-7.29)[a]	-0.1505	(-8.37)[a]
Intercept	1.6665	(8.07)[a]	0.9109	(8.81)[a]	1.6843	(8.24)[a]	0.9144	(8.85)[a]	0.7198	(3.17)[a]	1.3061	(8.20)[a]
Nb.observations	938		950		943		958		595		595	
R-squared	26.30%		46.49%		25.12%		46.64%		54.14%		42.29%	
Chow-test	χ^2 (1) = 10.75[a]				χ^2 (1) = 9.36[a]				χ^2 (1) = 7.55[a]			

Table 6. Control-ownership wedge, separation of CEO and chair positions and value of excess cash

This table reports results of fixed effect regressions of the control-ownership wedge on the value of excess cash depending on CEO duality. The sample consists of firms with positive excess cash. Dependent variable is the market value of the firm, denoted as V_t .It is computed as the market value of equity plus book value of total debt. *NetAssets* is non-cash assets. It is measured as the book value of total assets minus cash and marketable securities. *Earnings* is earnings before interest and extraordinary items (after depreciation and taxes) deflated by *NetAssets*. *R&D* is research and development expense deflated by *NetAssets*. *Interest* is interest expense deflated by *NetAssets*. *Dividends* is common dividends deflated by *NetAssets*. ΔX_t is the change in variable *X* from year t-1 to year t. ΔX_{t+1} is the change in variable *X* from year t to year t+1. *FC* is a dummy that equals one if the firm is financially constrained, and zero otherwise. A firm is financially constrained (unconstrained) when its payout ratio equals (differs from) zero. *ExCash* is excess cash holdings. Models (1), (2) and (3) use *ExCash* as the residual of, respectively, Eq.(1), Eq.(2) and Eq.(3) in Table 3. *Wedge* is a dummy that equals one if the control-ownership wedge is above the sample median, and zero otherwise. Control-ownership wedge is measured as the ratio (*UCO*-*UCF*)/*UCO* where *UCF* (*UCO*) is the ultimate cash-flow (control) rights of the largest controlling shareholder. *CEO duality* is a dummy variable that equals one when the CEO is also the chair of the board of directors, and zero otherwise. The t-statistics are reported in parentheses next to the estimated coefficients. The Chow-test tests whether the sum $ExCash_t+ExCash_t*Wedge_t$ is significantly different between groups of CEO duality and non-CEO duality. Chi-square statistics (χ^2) with one degree of freedom are reported. [a], [b] and [c] denote two-tailed statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)				(2)				(3)			
	CEO duality				*CEO duality*				*CEO duality*			
Variable	*0*		*1*		*0*		*1*		*0*		*1*	
$ExCash_t$	2.3598	(7.18)[a]	1.9316	(3.01)[a]	1.8611	(6.82)[a]	1.4104	(2.31)[b]	2.4741	(3.14)[a]	1.9847	(1.74)[c]
$ExCash_t*Wedge_t$	-0.6469	(-2.76)[a]	-2.4660	(-3.92)[a]	-0.5426	(-2.27)[b]	-1.8945	(-3.17)[a]	-1.9519	(-2.30)[b]	-2.1961	(-2.07)[b]
$Wedge_t$	-0.0787	(-1.35)	-0.1039	(-1.23)	0.0422	(0.26)	-0.1821	(-1.21)	0.1835	(1.69)[c]	0.0038	(0.04)
$ExCash_t*FC_t$	-0.9110	(-2.18)[b]	1.6402	(2.95)[a]	-0.9745	(-2.34)[b]	1.7849	(3.24)[a]	0.4252	(0.90)	0.2050	(0.38)
$Earnings_t$	1.7443	(5.04)[a]	5.7682	(8.26)[a]	1.7868	(5.18)[a]	5.5587	(7.93)[a]	1.2133	(1.67)[c]	2.4779	(5.56)[a]
$\Delta Earnings_t$	0.3177	(1.57)	-1.3433	(-3.30)[a]	0.7971	(1.49)	-1.2354	(-3.02)[a]	0.4283	(1.22)	0.3320	(0.97)
$\Delta Earnings_{t+1}$	1.5413	(6.97)[a]	3.3190	(7.84)[a]	1.5082	(6.83)[a]	3.2522	(7.63)[a]	0.9086	(2.59)[b]	3.4906	(8.98)[a]
$\Delta NetAssets_t$	0.0144	(0.13)	0.3241	(2.91)[a]	0.0154	(0.14)	0.3277	(2.93)[a]	0.1716	(1.01)	0.0346	(0.25)
$\Delta NetAssets_{t+1}$	0.6029	(8.29)[a]	0.1226	(2.59)[b]	0.6256	(8.68)[a]	0.1253	(2.63)[a]	0.4985	(4.25)[a]	0.1828	(3.33)[a]
$R\&D_t$	4.1221	(3.31)[a]	4.1178	(2.72)[a]	4.0492	(3.24)[a]	4.1097	(2.71)[a]	3.0842	(1.42)	12.6020	(7.76)[a]
$\Delta R\&D_t$	-0.5691	(-0.66)	0.2387	(0.15)	-0.7425	(-0.86)	0.1599	(0.10)	2.1262	(1.76)[c]	-3.2440	(-1.92)
$\Delta R\&D_{t+1}$	3.2552	(4.22)[a]	1.7717	(1.09)	3.3579	(4.35)[a]	1.6834	(1.03)	3.2964	(2.92)[a]	5.5291	(3.10)[a]
$Interest_t$	6.8867	(2.69)[a]	1.4429	(0.37)	6.4343	(2.57)[b]	0.9207	(0.24)	9.2922	(2.45)[b]	8.9038	(1.88)[c]
$\Delta Interest_t$	-1.7491	(-0.48)	5.4570	(1.13)	-1.9390	(-0.54)	4.6010	(0.95)	9.2102	(1.60)	-7.7112	(-1.35)
$\Delta Interest_{t+1}$	6.1327	(2.18)[b]	10.6418	(3.37)[a]	5.7950	(2.13)[b]	10.3069	(3.24)[a]	16.8245	(3.87)[a]	7.8817	(2.31)[b]
Dividends	11.7595	(4.40)[a]	0.7156	(0.28)	11.9055	(4.54)[a]	0.6418	(0.25)[a]	7.4957	(1.08)	3.9232	(1.07)
$\Delta Dividends_t$	-2.2208	(-1.17)	-0.5179	(-0.47)	-2.6183	(-1.40)	-0.6353	(-0.57)	-3.0987	(-0.96)	6.0509	(1.90)[c]
$\Delta Dividends_{t+1}$	5.4369	(3.64)[a]	-0.2704	(-0.23)	5.1062	(3.40)[a]	-0.5804	(-0.49)	17.4801	(4.07)[a]	1.4653	(0.77)
ΔV_{t+1}	-0.3325	(-10.18)[a]	-0.1312	(-5.28)[a]	-0.3493	(-11.60)[a]	-0.1333	(-5.32)[a]	-0.2840	(-5.05)[a]	-0.1579	(-7.68)[a]
Intercept	1.4078	(19.14)[a]	1.3528	(1303)[a]	1.3511	(8.86)[a]	1.4570	(9.81)[a]	1.2177	(7.38)[a]	1.6601	(8.59)[a]
Nb. observations	733		1,155		753		1,148		318		872	
R-squared	49.86%		20.79%		49.77%		20.48%		74.27%		24.80%	
Chow-test	χ^2 (1) = 5.46[b]				χ^2 (1) = 4.86[b]				χ^2 (1) = 4.45[b]			