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Busy Boards, Cash Holdings and Corporate Liquidity: Evidence from UK Panel Data

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JEL Classification: G3, G32

Keywords: Corporate Governance, Board Effectiveness, Busy Directors, Cash Holdings, Corporate Liquidity.

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1 Introduction

A large body of literature focuses on the role of boards of directors in corporate governance (see Adams et al. (2010), Hermalin and Weisbach (2003) for comprehensive reviews of the literature). Recent theoretical and empirical research highlights the importance of busy directors for board process. Mace (1986), Rosenstein and Wyatt (1994), and Loderer and Peyer (2002), among others, argue that a presence of busy directors improves board advisory and monitoring functions. Harris and Shimizu (2004) find that busy directors are important source of knowledge and can, in particular, enhance acquisition performance. Field et al. (2011) argue that directors with multiple board seats (due to their experience and contacts) are excellent advisors and are on demand by IPO firms. Haunschild and Beckman (1998) document a positive effect of having busy directors on a company board, which is extended from a single company to an entire corporate system due to the innovation dissemination throughout a corporate network.

Some scholars, however, are more sceptical on the view that busy directors serve shareholders' interests and add value to the firm. Core et al. (1999), Shivdasani and Yermack (1999) and Falato et al. (2014) suggest that directors can become overcommitted when serving on multiple boards, rendering them unable to provide meaningful managerial monitoring. Fich and Shivdasani (2006), and Jiraporn et al. (2008) demonstrate that boards with busy directors are associated with lax corporate governance. Jiraporn et al. (2006) argue that busy boards lead to a weaker corporate performance and lower firm value.

The link between board busyness and corporate cash holdings/liquidity remains largely unexplored in empirical literature. In this paper, we hypothesize that board of directors plays an important role in a corporate cash management and explore whether multiple directorships held by board members affect corporate liquidity. Some of the main responsibilities of corporate board are to ensure the effective cash management and to designate the range of

cash reserves under the managerial control. Non-operational cash holding is a hedging mechanism against "future cash flow shocks in bad times" (Lins et al., 2010) and acts as a general corporate insurance policy[1]. Busy directors may significantly affect firm effective cash management and liquidity for the following reasons. First, there is a resource dependence role, directors with multiple directorships play when they use their reputation and external contracts for the advantage of the firm they serving (Means (1939), Pfeffer and Salancik (1978), Zahra and Pearce (1989)). Directors with good reputation may secure the competitive advantage of the company to access the required financing. Second, labour market creates strong incentives for directors to perform better within their "home" company, and as a result, to become better risk managers[2]. Third, executive directors with outside directorships, due to their experience and knowledge, are competitive substitutes for a current CEO and, consequently, increase CEO performance incentives, resulting in effective cash management and improved liquidity[3]. Fourth, these directors are less dependent on their "home" CEO for career progression and, hence, can enhance board effectiveness by providing all important information to the board of directors[4].

However, holding of multiple directorships might negatively affect monitoring and advisory capacity of the board for the following reasons. Directors with multiple seats "cater" to CEOs and multiple appointments correlate with excess CEO rent extraction (Shivdasani and Yermack (1999), Core et al. (1999), Falato et al. (2014)).

[1] Lins et al. (2010) found that companies hold excess cash "as a buffer against future cash flow shortfalls"; this is a general reason, which ranked as a very important by CFOs and "does not refer to any particular outcome stemming from future cash flows that might worry a firm" (p.166).

[2]Fama and Jensen (1983), Fich (2005), and Masulis and Mobbs (2011) argue that director will perform better due to the labour market incentives; however, since risk management represents an important task in overall directors' duties, better performance implies more careful risk consideration.

[3]Fich (2005), and Masulis and Mobbs (2011) advise that CEOs tend to perform better due to the internal competition.

[4] Fich (2005), and Masulis and Mobbs (2011) stress that directors with outside directorships will be inclined to provide information of good quality to the board regardless CEO's will; therefore, board will be better informed and will be able adequately assess risks and advise on effective cash management.

Second, busy directors often ignore board meetings by non-attending. By doing so, they neglect their duties by not taking part in the important strategic decision-making process process (Jiraporn et al., 2008, Falato et al. (2014)). Third, the number of board seats held by held by supervisory directors, is positively correlated with accounting fraud, which is an an indication to a lack of attention from these directors (Beasly, 1996). Fourth, busy directors directors tend to take care of their own reputation and to leave underperforming companies, companies, suggesting that the presence of overstretched directors at the board level depends on firm performance (Maloney, (1999), Fich and Shivdasani (2006)).

In this study, we attempt to provide insights into how board busyness affects cash, net cash and financial slack. We measure board busyness as a proportion of directors with three or more directorships. In our tests, we control for the important corporate governance characteristics (independence, board size, board tenure, proportion of "imported" CEOs, directors' age, and gender diversity) and for various firm characteristics (size, performance, dividends paid, and profitability). We use a large sample of 1,275 companies listed on the London Stock Exchange over the period 1997 - 2009. Our empirical methodology includes estimation of panel data by using a pooled OLS model, a fixed effects model with robust standard errors, a fixed effects model with robust standard errors clustered by industry affiliation, a Fama-MacBeth model, and a fixed effects model with Driscoll and Kray (1998) standard errors. Driscoll-Kraay standard errors are well calibrated when cross-sectional dependence is present (Hoechle, 2007). Throughout our analysis, we find consistent support for the proposition that relationship between busy boards and firm cash holdings and liquidity is non-linear. In particular, companies with board members that hold seats on other companies' boards, maintain a high level of cash, net cash, and financial slack, in line with *reputational effect*. However, when board busyness reaches a certain threshold, a further increase in board busyness has a negative effect on cash, net cash and financial slack.

Our findings contribute to the literature in the following key ways. First, this study corroborates earlier research establishing a link between firm cash holdings/liquidity and board busyness. Second, while many scholars explore the role of busy directors and their contribution to the different aspects of business, we are unaware of any published research that investigates a link between firm cash holdings/liquidity and board busyness using the UK-based sample. The UK is a particularly attractive setting to study the link between board busyness and firm cash holdings/liquidity. The recent financial crisis unsheathed shortcomings in the approach to the corporate risk management which is now addressed by the UK Corporate Governance Code 2010, pinning boards' responsibilities in relation to firms' risk oversight. Considering that companies with well managed cash reserves associated with lower cash flow volatility (see Froot et al. (1994) and Lins et al. (2010) among others), implies that these companies are less exposed to risk of underinvestment. Third, previous research almost exclusively focuses on impact of busy directors on firm performance and reputation. We add to this body of literature by showing that multiple directorships also affect company's cash holdings and liquidity. Finally, it has direct implication for the public debate on limitation of the number of directorships held by executives. The National Association of Corporate Directors (1996) put forward a threshold of three directorships, and the Council of Institutional Investors (2003) argues that directors with full-time jobs should not seat on more than two other boards. We argue that board effectiveness also depends on the overall level of board busyness.

The reminder of the paper is organised as follow. In Section 2 we review the related literature on corporate boards and cash holdings and liquidity and develop our hypotheses. Section 3 contains the sample description and summary statistics. Section 4 provides the results on the relationship between busy boards and corporate cash holdings and liquidity, and Section 5 concludes.

2 Literature Review and Hypothesis Development

We consider two alternative objective perspectives used by firms when they elect busy directors to the board. The first, referred to as the *reputational effect* (Jiraporn et al., 2009), originates from the resource dependence theory. It reflects the view that companies prefer to employ busy directors due to their exceptional advisory and monitoring ability, useful network and business contacts. External labour market acknowledges directors' superior managerial skills and talent. As a result, the number of external directorships serves as a proxy for director's reputation (Fama and Jensen (1983), Shivdasani (1993), Brown and Maloney (1999), Masulis and Mobbs (2011)). Multiple directorships are beneficial because they help executives to develop expertise, learn about different management styles and strategies (Bacon and Brown, 1974; Both and Deli, 1996), and build-up a professional network. Directors with multiple board seats may use their external contacts for reputational purposes (Pfeffer and Salancik (1978)), to open new markets (Means, 1939), and secure a competitive advantage in accessing funds (Zahra and Pearce, 1989).

Additionally, Fama (1980) and Fama and Jensen (1983) consider the *reputational effect* as an important incentive for directors themselves. Ferris et al. (2003) find a positive relationship between number of directorships and firm performance. These findings are reinforced in the recent study by Masulis and Mobbs (2011), which relates the presence of directors with outside directorships to superior board decision making and better company performance. Masulis and Mobbs (2011) contend that inside directors with multiple directorships serve a special role on their boards and put forward three reasons to support this argument. First, busy directors possess the experience and knowledge to become realistic candidates for replacing current CEO and consequently, enhance CEO's performance incentives. Second, additional directorships broaden executive's career opportunities and lessen dependence on "home" CEO for progression; consequently, it becomes easier to

express challenging views opposite to those of CEO's in the boardroom. Third, labour market motivates directors to perform better within "home" company, as poor performance ceases access to additional directorships, career and reputational benefits. Busy directors, by using experience from other companies, can recognise problems faster, minimise preparation time, and enhance performance in important corporate decisions, such as acquisitions (Harris and Shimizu, 2004). Field et al. (2012) provide evidence that reputable directors are preferred by newly public firms, which do not have market navigating experience, and rely heavily on expertise and contacts of busy directors. In addition to be beneficial to a single company, busy directors positively influence the entire corporate system by disseminating innovation through a corporate network (Haunschild and Beckman, 1998). In addition, Cook and Wang (2011) argue that multiple directorships signal an exceptional ability of the director. They investigate trading performance of the directors with multiple directorships and find that these directors significantly outperform their counterparts with a single directorship[5]. Considering the above arguments, we hypothesize that companies with busy boards are expected to have higher levels of cash holdings and better corporate liquidity.

Hypothesis 1: Companies with busy boards maintain a higher level of cash holdings and corporate liquidity, ceteris paribus.

The second view on the role of busy directors comes from the agency theory literature. directors who overstretch themselves and accept additional seats due to the extra available personal perquisites, have incentive to spend less time on each individual board, compromise

[5] Cook and Wang (2011) examine whether this superior performance depends on informativeness (by participating on the multiple boards, directors become better informed allowing them to use the obtained information and make better trading decisions) or personal ability of the directors. They find that directors' performance depends on the personal ability of individual.

their responsibilities and neglect their duties (Ferris et al., 2003)[6]. Studies such as Core, Holthausen and Larcker (1999), Shivdasani and Yermack (1999), Fich and Shivdasani (2006) criticise firms for appointing directors who hold multiple directorships and argue that such directors can become overcommitted and are unable effectively monitor management. Fich and Shivdasani (2006) establish the inverse relationship between the company's performance and board's busyness[7]. Shivdasani and Yermack (1999) argue that busy directors can "cater" for the CEO increasing an agency costs due to the lax monitoring. They state that busy directors are most likely to be chosen if CEO is involved in the selection process. Core et al. (1999) contend that busy directors set high compensation for the CEO, which can worsen firm performance. Perry and Peyer (2005) and Ferris, Jagannathan, and Pritchard (2003) find that directors view additional directorships as a good chance to improve their incomes before retirement. They are not usually penalised for the service of poor quality, and are not fired due to the close proximity to retirement. Beasly (1996) uncover a positive relationship between an accounting fraud and a number of directorships held by outside directors. Firms with busy boards are, on average, more diversified and suffer from diversification discount (Jiraporn et al., 2009). Jiraporn's et al. (2009) findings demonstrate that busy directors serve on fewer board committees with lack of committee work involvement causing decline in firm value. Cooper and Uzun (2012) provide consistent evidence showing the positive relation between busy directors and bank risk. Additionally, Christy et al., (2009) find a negative relationship between market risk of equity and multiple directorships held by independent board members. Fich and Shivdasani (2006) provide evidence that announcements about

[6] See also Gilson (1990), Lipton and Lorsch (1992), National Association of Corporate Directors (NACD) (1996), Beasly (1996), Cotter, Shivdasani and Zenner (1997), Core, Holthausen and Larcker (1999), Brown and Maloney (1999), Shivdasni and Yermack (1999), Miwa and Ramseyer (2000), Bohren and Strom (2001), Ferris, Jagannathan and Pritchard (2003), Fich and Shivdasani (2006), Cooper and Uzun (2012), and Falato et al. (2014) who challenge the wisdom of holding too many directorships by examining busy boards' effectiveness.

[7] Fich and Shivdasani (2006) argue that increasing number of busy directors leads to board destruction and subsequent decline in monitoring intensity. They also find that company's share price drops when executive directors overstretch themselves by accepting additional board seats.

departure of busy director[8] are welcomed by investors with high cumulative abnormal returns around the announcement day. Falato et al. (2014) examine the implication of director busyness on shareholder wealth and find the evidence that independent director busyness is detrimental to board monitoring ability.

Kaczmarek et al. (2012) adopted a notion of faultlines[9] from the social identity theory to their analyses of the board effectiveness. They find that faultlines deteriorate board performance, with the deterioration effect being magnified in the presence of busy boards. Directors on busy boards will have less time to spend on the important board's issues, and will pay less attention to these issues increasing "salience of divisions based on task-related attributes... Such a course of events is therefore additionally detrimental for the cohesiveness and communication of the board as a whole" (Kaczmarek et al., 2012: 341). Directors do not welcome multiple appointments, and believe that by being involved in too many boards, they do not have sufficient time to spend on their professional duties, and, as a result, quality of advice and monitoring suffers (Lipton and Lorsch, 1992; Korn/Ferry International, 1998).

Based on the above arguments, we hypothesise that busy boards might negative effect on corporate cash holdings and liquidity because monitoring and advisory ability of busy boards declines. This leads us to the following hypothesis:

Hypothesis 2: Companies with busy boards of directors maintain a lower level of cash/liquidity, ceteris paribus.

[8] Resignation of Elaine L. Chao who served as an outside director on boards of six companies due to the appointment to the cabinet of the President-elect George W. Bush is used as an example in this study.

[9] "Group faultlines are defined as hypothetical dividing lines that split a group into relatively homogeneous sub-groups based on group members' alignment along their multiple attribute (Bezrukova, Zanutto, & Thatcher, 2009; Lau & Murnighan, 1998, 2005) and are most likely to emerge when group diversity is moderate (Earley &Mosakokowski, 2000; Lau & Murninghan, 1998; Webber & Donahue, 2001)", Kaczmarek et al. (2012:338).

By simultaneously considering the *reputational effect* and *busyness effect*, we argue that the link between board busyness and level of cash holdings/liquidity may not be fully captured by the simple linear relation. We expect *reputational effect* to dominate first at a low level of board busyness. In line with the busyness effect, as board busyness increases beyond a certain threshold, it negatively affects corporate cash holdings and liquidity. This results in the following hypothesis:

Hypothesis 3: There is an inverted U-shaped relationship between board busyness and corporate cash holdings/liquidity.

3 Sample Selection and Data Description

3.1 Sample selection

Our analysis is based on a large sample of non-financial companies listed on the London Stock Exchange. We collect firms' financial and market information from Thomson Datastream, and directors' information from *BoardEx* database. The sample period is from 1997 to 2009 and includes all firms whose information is available from these two databases. We collect the following Thomson Datastream items at the end of each year: earnings before interest and taxes (EBIT), earnings before interests, taxes, depreciation and amortisation (EBITDA), cash, cash and marketable securities, accounts receivable, accounts payables, inventories, cash dividends paid (total), dividends provided/paid-common, preferred dividend requirement, differed taxes, total assets, market value, and value of common shareholders equity. *BoardEx* database provides information, such as director's name, age, gender, role title and role description, indication of whether he/she is an executive or supervisory director, and number of other directorships held. From this database we obtain information on 98,315 director-year observations for approximately 1,500 firms, or 12,432 firm-years, over our 13-

year sample. We merge Thomson Datastream and *BoardEx* data using company's ISIN identifier. We manually collect missing ISINs for some companies on *BoardEx*[10]. Then we exclude financial firms (Datastream ICBIC code 8000), which are highly regulated. We end up with an unbalanced panel of 1275 firms and 8296 firm-year observations over the 1997 to 2009 period.

We use cash, net cash, and financial slack, all normalised by book value of total assets to test the impact of board busyness on corporate cash holdings/liquidity. In particular, cash is the value of cash and short-term investments; net cash is a difference between value of cash and short-term investments and total company's debt, and financial slack measure is based on traditional credit line arrangements that enable firms to establish operating loans up to fifty per cent of inventories and seventy per cent of good accounts receivable (Cleary (1999)). We follow Ferris et al. (2003) in our definition of busy boards, and consider a director busy if he/she seats on three or more listed companies' boards. We compute board busyness as a proportion of busy directors at the board level (example of board busyness computation is provided in Table 2). We also control for firm size, dividend, profitability, and Tobin's Q in our analysis. We collect information about the governance structure of the firm, such as proportion of supervisory directors on the board, board duality or whether CEO and Chairman is the same person, board size, board tenure, proportion of "imported" CEOs, gender diversity, and directors' age to use as control variables in our study. We provide all variable definitions in Table 1. Table 2 gives a sample calculation example for Board Busyness.

Table 1 and Table 2 here

[10] ISINs were collected from Thomson Datastream, using company name as identifier in this case. All other relevant company information (market, stock exchange, delisting date, etc.) was taken into account and considered with high level of discretion in order to assign correct ISIN.

3.2 Data description and summary statistics

Summary statistics are reported in Table 3. We separate data into variables describing corporate cash holdings/liquidity (Panel A), director characteristics and board structure (Panel B), and firm characteristics (Panel C). Cash and short-term investments in average firm represent 17.37 percent of total assets, with some firms holding in cash equivalent of 100 percent of company value, and some with no cash at all. Net cash, on average, is negative 0.88 percent. Financial slack is 24 percent of total firm assets in an average firm. The directorships per director range from 1 to a maximum of 6.33, with the average of 1.87. This implies that on average, directors in our sample tend to have directorship responsibilities at 1.87 firms. The mean (median) percent of directors holding three or more directorships out of the total number of directors per board is approximately 21.73 percent (18.18 percent) and ranges from zero to a maximum of 100 percent. The average number of directors on the board is 7.90, with a minimum of 4 and maximum of 16 in our sample. The average board tenure is 5.47 years in the sample, with maximum of 17 years and minimum tenure of 0.3 years. On average, 58.17 percent of the board is made up of supervisory directors. Boards in our sample have on average 4 percent of "imported" CEOs with some companies employing about 67 percent of "imported" CEOs, and others have none of them at all. There are on average, 6 percent female directors on the boards in our sample, and this number varies from 0 to a maximum of 60 percent. Average director's age is 54.23 years old, whereas minimum age is 34 years and maximum is 69.80 years old. There are 13.22 percent of companies in our sample with the CEO and Chairman positions held by the same person.

Firm size is, on average, 12.52. Profitability is 0.09 on average, which implies that EBITDA is at 9 percent of the value of total assets; the average company in our sample pays dividends, which represent 2.1 percent of the value of total assets, and has an average Tobin's Q equals to 2.15.

Table 3 here

3.3 Univariate results

Table 4 presents univariate comparison of key descriptive variables by cash/net cash/slack quartiles. We are interested in the difference between firms in first and fourth quartiles. To test the hypothesis that the fourth-quartile firms are significantly different from the first quartile firms, we use a *t*-test.

Panels A, B, and C in Table 2 report results of key corporate governance and firm variables by *Cash* (Panel A), *Net Cash* (Panel B), and *Slack* (Panel C) quartiles. Firms with less cash/net cash/financial slack, i.e. in the first quartile, differ significantly from the firms with the most cash/net cash/ financial slack, i.e., in the fourth quartile. *Board Business* declines monotonically from the first quartile to the fourth quartile of *Net Cash/Slack.* Firms with the most *Net Cash/Slack* have the least busy boards. However, firms with the most *Cash* have boards that are only marginally busier than firms with the least cash in Panel A, as predicted by reputational theory and agency theory. These findings point out to a negative relation between board busyness and corporate cash holdings but do not rule out the possibility for a non-linear relationship.

Board size changes in line with the company size from first to fourth quartiles of cash holdings, and is not monotonic. Companies in the first quartile of *Cash, Net Cash* and *Slack* have boards that are substantially larger than the boards of companies in the fourth quartile. *Board tenure* declines monotonically from the first to fourth quartile of cash holdings in Panel A, and is not monotonic in Panels B and C. *Proportion of supervisory directors* on the board increases monotonically, which is consistent with the view that board independence (the higher proportion of supervisory directors on the board) could lower the agency costs, but it is a case only in Panel A. Panels B and C show mixed results with the *Board tenure* declining in Panel B, and remaining nearly the same in Panel C. Proportion of "imported"

CEOs increases gradually from the first to the fourth quartile in Panel A, suggesting that more experience directors at the board level are able to reduce agency costs associated with the high level of cash holdings. This proportion remains the same through the four quartiles in the Panels B and C. The difference in director's age between the firms in the first and fourth quartiles is marginal but statistically significant at 10% level in Panel A, at 5% level in Panel B, and insignificant in Panel C.

As expected, firms with the most cash (net cash/slack) are smaller than the ones with the least cash (net cash/slack). Firm size decreases gradually from first to fourth quartile of *Net Cash* in Panel B. However, the univariate relation between corporate cash holdings, liquidity and firm size is not monotonic in Panels A and C, with firms in the fourth quartile representing the smallest companies in the sample. The firm size declines gradually from the first to the fourth quartile of *Slack.* Firms in the first quartile of *Cash* pay more dividends than the firms in the fourth quartile. Firms pay approximately same dividends in all the quartiles of *Net Cash* and *Slack*. The *Tobin's Q* increase monotonically only in Panel A. Companies in the fourth quartiles of *Cash, Net Cash* and *Slack* have significantly lower profitability than companies in the first quartile.

Table 4 here

4 Methodology and Results

In this section we examine whether company cash holdings and liquidity are affected by the busyness of its board. We use three measures, namely *Cash, Net Cash, and Financial Slack*[11]. *Board Busyness* is measured as the proportion of directors with three or more directorships on the company board. We include a quadratic term of board busyness, *Board Busyness*^{2} to capture a potential non-linearity in the relationship between board busyness and

[11] We use annually industry-adjusted measures in our analysis (we compute each industry's mean per year and subtract it from the firm-level variable).

corporate cash holdings/liquidity. We include several control variables follow Fich and Shivdasani (2006), Bohren and Strom (2010), Masulis and Mobbs (2011) and Cooper and Uzun (2012). Thus, we include *Proportion of SD*, which is the proportion of supervisory directors on corporate board. Boards with higher proportion of supervisory directors are better monitors; consequently, they might inventively observe accumulation and utilisation of vital cash recourses. We include natural logarithm of board size (*Ln [Board Size]*) to control for board size. Based on resource dependence theory, it would be anticipated that larger boards will have more valuable connections and larger pool of expertise (Van den Berghe and Levrau, 2004). However, academics provide controversial evidence on the relation between board size and company performance, with some documenting positive (Pearce and Zahra (1992), Dalton et al. (1998), Jackling and Johl (2009)) while others - negative association (Yermack (1996), Van den Berghe and Levrau (2004)). We also include a variable indicating whether the CEO and Chairman is the same person (*Duality*), which is often used in the corporate governance literature. Masulis and Mobbs (2011) suggest that *Board Tenure* negatively impacts on firm performance. Accordingly, we consider this variable as a determinant of cash/liquidity in our study. We also consider *Imported CEO* variable in line with Bohren and Strom (2010) in the analysis. *Director's Age* is included as it might approximate the experience as well as useful networks director can bring to the company (Ferris et al. (2003)). Older directors might be better monitors but directors near retirement age are inclined to accept additional directorships at the expense of monitoring quality. Board diversity *(Gender)* measures a proportion of female directors on the board[12]. Carter et al. (2003) suggest that diversity at the board room increases independence and improves decision making process.

[12] The Higgs Report (2003), commissioned by the British Department of Trade and Industry, suggests that demographic diversity increases board effectiveness and recommends that more women should be included on boards. The UK Corporate Governance Code (2010) advises that "the search for board candidates should be conducted, and appointments made, on merit, against objective criteria and with due regard for the benefits of diversity on the board, including gender" (Principle B.2).

We also include natural the logarithm of total assets (*Ln[Total Assets]*) to control for firm size. Lins et al. (2010) argue that smaller firms due to the larger transactions' costs, higher level of information asymmetry, and poorer access to capital markets, might require higher level of cash. We also include *Dividend Payout* and two measures of profitability, *Tobin's Q* and a ratio of EBITDA to total assets *(Profitability)*, to control for the difference in management quality across firms, since high volatility in profitability may potentially signal poor management skills and competence (Faccio et al. (2011)). We include industry dummy variables using the FTAG3 industry code. The inclusion of these dummy variables is appropriate given the inherent variability in the cash/liquidity attributes across different industries.

4.1 Methodology

We use different estimation models in our analysis: a pooled OLS model, a fixed effects model, a Fama-MacBeth model, and a fixed effects model with Driscoll and Kray (1998) standard errors. The pooled OLS model (Model 1) can be expressed in the following form:

$$\begin{aligned} Cash/Liquid_{it} = {} & \beta_0 + \beta_1 BoardBusyness_{it} + \beta_2 BoardBusyness^2{}_{it} + \beta_3 Proportion\ of\ SD_{it} \\ & + \beta_4 BoardSize_{it} + \beta_5 Board\ Tenure_{it} + \beta_6 Director\ Age_{it} + \beta_7 Gender_{it} \\ & + \beta_8 Imported\ CEO_{it} + \beta_9 Duality_{it} + \beta_{10} Company\ Size_{it} \\ & + \beta_{11} Tobin'sQ_{it} + \beta_{12} Profitability_{it} + \beta_{13} Dividend_{it} \\ & + \sum_{j=2}^{13} \beta_j YearDummy_t + \sum_{k=2}^{15} \beta_k Industry\ Dummy_i + \varepsilon_{it} \end{aligned} \quad (1)$$

The *fixed effects* or within *estimator* technique, is based on a deviation from the companies' mean transformation (firm's mean for the sample interval is subtracted from each observation) and estimates all coefficients without estimating individual effects (Model 2).

Since we are interested only in slope coefficients, this transformation is a very convenient one.

$$\widetilde{Cash/Liquid}_{it} = \beta_0 + \beta_1 \widetilde{Board\ Busyness}_{it} + \beta_2 \widetilde{Board\ Busyness^2}_{it} + \beta_3 \widetilde{Proportion\ os\ SD}_{it} + + \beta_4 \widetilde{Board\ Size}_{it} + \beta_5 \widetilde{Board\ \ Tenure}_{it} + \beta_6 \widetilde{Dir\ Age}_{it} + \beta_7 \widetilde{Gender}_{it} + \beta_8 \widetilde{Imported\ CEO}_{it} + \beta_9 \widetilde{Duality}_{it} + \beta_{10} \widetilde{Company\ Size}_{it} + \beta_{11} \widetilde{Tobin'sQ}_{it} + \beta_{12} \widetilde{Profitability}_{it} + \beta_{13} \widetilde{Dividend}_{it} + \sum_{j=2}^{13} \beta_j YearDummy_t + \varepsilon_{it} \quad (\mathbf{2})$$

Where the "~" (tilde) notation is used to define demeaned variables. And

Cash/Liquid $_{it}$ is one of our proxies, i.e. *Cash/Net Cash/Slack*

All other variable definitions are in Table 1.

An important issue when dealing with the panel data sets is the estimation of robust standard errors. Ignoring correlation between residuals in the estimation process, results in bias and inconsistent conclusion. For example, if standard errors of the estimated coefficients are downward biased, the standard errors will be low, and statistical significance of the results may be overestimated (Petersen, 2009; Oikonomou, Brooks and Pavelin, 2012). To account for this, we perform pooled OLS and fixed effects models with robust standard errors, robust standard errors clustered by industry, as well as Driscoll and Kray (1998) standard errors. We also use Fama-MacBeth (1973) model that estimates cross-sectional regression each year and gives the average of time-series of coefficients from annual cross-sectional regressions. This method eliminates the problem of serial correlation in the residuals of a time-series cross-sectional regression.

4.2 Results

The results are reported in Tables 5, 6, and 7. Columns 1 through 5 report estimates from Model 1 (the pooled OLS model with robust standard errors), Model 2 (the fixed effects model with robust standard errors), Model 3 (the fixed effects model with robust standard

errors clustered by industry), Model 4 (the Fama-MacBeth model), and Model 5 (the fixed effects model with Driscoll and Kray (1998) standard errors). Looking at the results reported in Table 5, we observe that the coefficient on the linear term of board busyness is positive and highly statistically significant. The magnitude of coefficient estimate on board busyness ranges from 0.087 to 0.127. These results are consistent with univariate results in Table 4 and support the claim that board busyness improves cash holdings in line with *reputational hypothesis*. However, the quadratic terms of board busyness variables have negative (coefficient estimate of the quadratic term of board busyness ranges from -0.192 to -0.146) and statistically significant (at the 1% level) coefficient estimates, suggesting that impact of board busyness on corporate cash holdings is negative when board busyness reaches a certain threshold level[13]. This evidence supports the *reputation* and *busyness hypothesis*. The *reputation hypothesis* is supported as far as the proportion of busy directors at the board does not exceed a threshold level; beyond that, the *busyness hypothesis* comes into effect. In terms of economic significance, one standard deviation change in board busyness results in 0.11 standard deviations' change in corporate cash holdings, based on the coefficients from Models 1 - 5[14].

The results of the analyses of the relationship between firms' net cash (the difference between cash holding and total company debt) and board busyness are reported in Table 6. We find that the coefficients of the linear term of board busyness are positive and equal to 0.084, 0.136, 0.136, 0.175 and 0.135 in Models 1, 2, 3, 4, and 5 respectively and are significant at the 1% level. These results are consistent with the claim that board busyness improves net cash level, supporting the *reputation hypothesis*. However, the coefficients of

[13] We follow Jiraporn et al. (2009) for the estimation of the threshold level. The differentiation w.r.t. *Board Busyness* results in the following first derivative: $\beta_1 + 2 * \beta_2 Board\ Busyness$. The corresponding threshold level of *Board Busyness* is computed by setting this derivative equals to zero. The threshold level of *Board Busyness* in our sample ranges from 28% to 34%.

[14] We calculate the change in standard deviation of cash holdings in the following way: (regression coefficient for *Board Busyness* variable x standard deviation of *Board Busyness*)/standard deviation of the cash holdings.

the quadratic term of board busyness equal to -0.165, -0.232, -0.232, -0.272, and -0.219 in the Models 1, 2, 3, 4, and 5 respectively and are significantly negative at the 1% level. These results are similar to the results from Table 5, and suggest that initially net cash increases with board busyness, but after a threshold is reached, further increase in board busyness results in lower net cash level. We find that the turnaround values of the proportion of busy directors on the board are not very different from our results from Table 5. Turnaround values are in range 0.25 – 0.32. Hence, companies with busy boards are likely to increase their level of net cash initially until the proportion of busy directors on the firm board reaches the 25%-32% threshold level. Further increase in board busyness associates with decline in net cash level. This evidence, once again, supports the *reputation* and *busyness hypothesis*. In terms of economic significance, one standard deviation change in board busyness results in 0.06, 0.10, 0.10, 0.12, and 0.09 standard deviations change in net cash level, based on the coefficients from the Models 1, 2, 3, 4, and 5 respectively.

Table 7 reports results of the analyses of the relationship between firms' financial slack and board busyness. The results are similar to the results from Table 5 and Table 6 and provide clear indication to the existence of non-linear relationship between corporate liquidity and board busyness. The coefficient estimates on board busyness are positive and statistically significant at the 1% and the 10% levels. The coefficient estimates of the quadratic term of board busyness are negative and statistically significant at the 1% level. We find that the turnaround proportions of busy directors on the board are marginally different from our previous findings and equal to 0.25, 0.35, 0.35, 0.39, and 0.35 considering Models 1, 2, 3, 4 and 5 respectively. This evidence, once again, supports the reputation and *busyness hypothesis*. In terms of economic significance, a one standard deviation change in board busyness results in 0.06, 0.10, 0.10, 0.17, and 0.08 standard deviations change in financial slack level, based on the coefficients from the Models 1, 2, 3, 4, and 5 respectively.

Proportion of supervisory directors on the company board, enters the models with a positive sign and is statistically significant, supporting the view that higher level of board independence is beneficial to a company. *Board Size*, measured as a natural logarithm of the total number of directors on the company board, has intuitive negative coefficient estimates, supporting the view that bigger boards affect company cash holdings and liquidity in the adverse way. *Board tenure* has negative coefficient estimates, but statistically significant only in Models 1, 2, 3, and 5, indicating that companies with longer tenured boards hold less *Cash*, *Net Cash*, and have lower *Financial Slack*. We find a positive relationship between the CEO - Chairman *Duality* and *Cash*, *Net Cash* and *Slack*. CEO-Chairman duality results in the higher level of power concentration in the hands of one person, who can influence a board of directors. The reason for the positive relation between *Duality* and *Cash, Net Cash* and *Slack* can be explained by the fact that duality results in a better director's knowledge and expertise, and might affect director's level of risk aversion. More powerful directors safeguard higher levels of corporate cash holdings to protect a company and themselves from the future possible financial inconveniences. Imported CEOs might have good connections in addition to the expertise they can bring to the company. Our results show a positive relation between proportion of imported CEOs and firms' *Cash, Net Cash* and *Slack*. Imported CEOs will secure higher cash balances to safeguard future profitable investments and protect their own reputational capital. Director's age, a proxy for director's experience and reputation is positive in all models, but it is not statistically significant in *Cash* Model 4, *Net Cash* Models 2, 3, and 4, and Slack Models 3 and 4. The board diversity measure, a proportion of female directors on the board, exhibits positive coefficients, and statistically significant in *Cash* Model 4, all *Net Cash* models, which suggest that the presence of female directors is more likely to improve firms' cash holdings, and net cash level.

With respect to firm characteristics, firm *Size* (measured as natural logarithm of total assets) is negatively related to cash holdings, net cash, and financial slack with all coefficients being statistically significant at the 1% level. It might be difficult for large firms to accumulate a substantial level of cash, net cash and financial slack considering their level of financial commitment. There is a positive relation between a measure of performance, *Tobin's Q,* and corporate cash holdings and liquidity. Better performing companies are able to accumulate higher levels of cash reserves, manage their debts efficiently, and generate healthier financial slack. *Profitability* (measured as EBITDA/Total Assets) coefficient estimates are mixed. The Profitability has positive (negative) and statistically significant at the 1% level coefficient estimates in Models 2, 3, and 5 (Models 1 and 4). The negative relation can be explained by the necessity to invest more in order to generate higher *Profitability.* Consequently, companies with high *Profitability* will not be able to accumulate high cash and net cash balances, and keep high level of financial slack. These results complement results from the univariate analysis in Table 4, which provide a strong indication to the negative relation between *Profitability* and *Cash, Net Cash* and *Slack* with statistically significant difference in the *Profitability* associated with first (firms with least *Cash/Net Cash/Slack*) and fourth (firms with most *Cash/Net Cash/Slack*) quartiles of our cash holding/liquidity proxies. *Profitability* is higher in the first quartile of *Cash, Net Cash* and *Slack*, than in the fourth quartile. The relation between *Dividends* and our cash holdings/liquidity proxies is positive and statistically significant in all models except for Model 1 (*Cash* regressions), and Model 4 (*Net Cash* regression). Our findings with respect of effect of firm and governance characteristics have on corporate cash holdings/ liquidity are consistent with the findings in previous literature (see, for example, Opler et al. (1999)).

Our results clearly indicate that relationship between board busyness and corporate cash holdings/liquidity is non-linear. Corporate cash holdings increase with the increase in

corporate board busyness. As far as board busyness reaches the certain threshold level, its effect on corporate cash holdings/liquidity becomes negative. Given that high level of board busyness represents increase in the demands on directors' time, it is possible that the monitoring effectiveness of directors weakens, which in turn results in lower levels of corporate cash holdings/liquidity.

Tables 5, 6, and 7 here

5 Conclusions

We examine the relationship between board busyness and corporate cash holdings/liquidity. We offer new insights by evaluating two conflicting views regarding the role of busy directors in corporate decision making and by analysing a large sample of UK-listed companies over the period 1997 – 2009. One view claims that busy directors are good stewards and valuable assets for the companies due to their expertise, reputation and business contacts, who improve board decision making (reputational effect). The opposite view suggests that busy directors are "too busy to mind the business". Busy directors create serious agency problems and lead to suboptimal corporate policies (busyness effect).

Our analysis reveals that the relationship between the level of directors' busyness and corporate cash holdings/liquidity is an inverted U-shaped. Companies with busy boards have, on average, higher levels of cash, net cash and financial slack. However, value of corporate cash holdings/liquidity declines if board busyness increases beyond a certain threshold level. We interpret these results as consistent with both reputation and busyness effect. These results provide strong evidence that board busyness affects firms' cash holdings and cash management behaviour in a complex non-linear manner. To the extent that cash management is a key operational decision that affects a hedging against "future cash flow shocks in bad times" (Lins et al., 2010), our findings suggest an important mechanism for corporate governance to affect firm hedging strategy. The results also emphasize the importance of

establishing an optimal level of board busyness for mitigation of agency costs associated with excessive cash holdings. Specifically, board busyness affects cash holdings through the quality of directors' monitoring and advising ability. Previous literature has solely focused on individual director's busyness, and this paper augments the picture by considering the overall level of board busyness.

We add to the literature that considers boards as important contributors to the health and competitiveness of the firm (Falato et al. (2014), McNulty et al. (2013)). There is also a direct implication for the public debate on limitation of the number of directorships held by executives from our findings. While the National Association of Corporate Directors (1996) put forward a threshold of three directorships and the Council of Institutional Investors (2003) argues that directors with full-time jobs should not participate in more than two other boards in order to guarantee and adequate service, we argue that board effectiveness depends also on its overall level of busyness, i.e. on the proportion of the busy directors at the board level.

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Table 1. Variable Definitions

Below, the data variables refer to the corresponding corporate governance variable identifiers in the BoardEx annual database and to the corresponding corporate cash holding, liquidity and firm characteristics variables identifiers in the Thomson Datastream.

Variable	Definition
Corporate governance	
Board busyness	The proportion of board members holding three or more directorships on other quoted companies.
Supervisory directors	The proportion of supervisory directors on the board. Total number of supervisory directors divided by the total number of all directors on the board.
Board size	Natural logarithm of total number of directors on the board.
Board tenure	The average number of years directors have served on the board.
Duality	Indicator variable: equals one if CEO and Board Chair is the same person.
Imported CEO	The proportion of board members who are CEOs (present or retrospective) on other quoted companies. Total number of imported CEOs divided by the total number of all directors on the board.
Directors' age	The average age of board directors. The sum of all ages divided by the number of directors on the board.
Gender	The proportion of female directors on the board. Number of female directors divided by the total number of all directors.
Dependent variables	
Cash	Cash and short-term investments/ book value of total assets: *WC02001*/ *WC02999*
Net cash	(Cash and short-term investments – total debt)/book value of total assets: (*WC02001– WC03255*)/ *WC02999*
Slack	(Cash and marketable securities +0.7accounts receivable + 0.5inventories – accounts payable)/ book value of total assets: (*WC02001*+0.7**WC02051* + 0.5* *WC02101 – WC03040*)/ *WC02999*
Firm characteristics	
Size	Natural logarithm of book value of total assets: Ln (*WC02999)*
Profitability	EBITDA/ book value of total assets : *WC18198*/ *WC02999*
Tobin's Q	(Book value of assets – book value of common equity – balance sheet deferred taxes + market value of equity)/book value of total assets: (*WC02999– WC03501 – WC03263 + MV*)/ *WC02999*
Dividend	(Dividends provided/paid-common + Preferred dividend requirement)/ book value of total assets: (*WC 18192+ WC 01701)*/ *WC02999*

Table 2. Calculation of Board Busyness variables

This is an example calculation for our measures of director busyness using BoardEx database data for the SAFEWAY PLC (ISIN GB0000492412) for the year 1997. Total number of directorships counts the number of directorships (total number of current quoted boards including the "home" company) held by all directors serving on the board. Directorships per director are estimated as the total number of directorships held by the directors of the board divided by board size. Board Busyness is the number of directors holding three or more board seats divided by the board size.

Director	**Total Directorships**
Colin Deverell Smith	1
David Gordon Webster	3
Gordon Wotherspoon	1
Patricia (Pat) Anne O'Driscoll	1
Robert George Charters	1
Simon Timothy Laffin	1
Sir Alistair Grant	4
Doctor Neville Clifford Bain	4
Julia Ann Burdus	4
Michael John Allen	2
Total Directorships	22
Directorships per Director	22/10 = 2.2
Board Busyness	4/10 = 0.4 (40%)

Table 3
Summary Statistics

This table presents summary statistics for the sample of 1,275 firms' observations for 1997 – 2009 time period, excluding financial firms. Variable definitions are in the Appendix 1. Variables Size, Board Size, Board Tenure, Director's Age, Dividend, Profitability, and Tobin's Q are winsorised at 1% and 99%.

	Mean	Minimum	Maximum	Observations
Panel A: cash holding/Liquidity Characteristics				
Cash	0.17	0.00	1.00	8945
Net Cash	-0.01	-0.97	1.00	8920
Slack	0.24	-0.70	1.00	8751
Panel B: Director/board characteristics				
Directorships per director	1.87	1	6.33	8946
Board busyness	0.22	0.00	1.00	8946
Proportion of supervisory directors	0.58	0.00	1.00	8946
Board size	7.86	4.00	16.00	8946
Board tenure	5.47	0.30	16.69	8790
Director's age	54.23	34.00	71.09	8938
Imported CEO	0.04	0.00	0.67	8946
Gender	0.06	0.00	0.60	8943
Panel C: Firm characteristics				
Size	12.51	7.00	19.43	8911
Profitability	0.09	-0.99	1.00	8753
Tobin's Q	2.15	0.04	24.95	8753
Dividend	0.02	0.00	0.81	8806

Table 4
Firm characteristics by cash/net cash

This table presents univariate comparison of means and medians of measures of corporate governance and firm characteristics of 1,275 UK-based publicly traded firms excluding financial companies for the 1997-2009 time period. The director and board data comes from the *BoardEx* database, firm data is from Tomson Datastream. Busy boards are the boards where the percentage of directors with three or more directorships is greater than or equal to the sample median. Other variables definitions are in the Appendix 1. The table displays the means and medians (in parentheses) of various director, board, and firm characteristics for first, second, third, and fourth quartiles of cash (Panel A), net cash (Panel B), and slack (Panel C). The *t*-statistics is for a difference of means test from the first to the forth quartile of cash/net cash/slack. Each quartile contains approximately 2230 firm years. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Cash Quartiles						**Panel B: Net Cash Quartiles**				
	First quartile	**Second quartile**	**Third quartile**	**Fourth quartile**	***t*-stat (*p*-val)**	**First quartile**	**Second quartile**	**Third quartile**	**Fourth quartile**	***t*-stat (*p*-val)**
Corporate Cash holding/liquidity										
Cash/Net Cash range	0.00 to 0.04	0.04 to 0.10	0.10 to 0.24	0.24 to 1.00		-0.97to -0.22	-0.22 to -0.06	-0.06to 0.16	0.16 to 1.00	
Cash/Net Cash	0.018	0.069	0.158	0.450	111.32***	-0.30	-0.13	0.03	0.36	150.75***
	(0.018)	(0.067)	(0.152)	(0.394)	(0.000)	(-0.30)	(-0.16)	(0.01)	(0.34)	(0.000)
Director/board characteristics										
Board busyness	0.21	0.23	0.21	0.22	2.03**	0.24	0.23	0.21	0.19	-7.24***
	(0.17)	(0.2)	(0.18)	(0.20)	(0.042)	(0.23)	(0.2)	(0.17)	(0.17)	(0.000)
Proportion of supervisory directors	0.55	0.58	0.59	0.60	9.49***	0.60	0.59	0.57	0.56	-2.88***
	(0.55)	(0.57)	(0.57)	(0.60)	(0.000)	(0.60)	(0.58)	(0.57)	(0.57)	(0.004)
Board size	7.53	7.86	7.46	6.92	-8.75***	8.29	8.45	7.76	6.98	-20.62***
	(7.00)	(8.00)	(7.00)	(7.00)	(0.000)	(8.00)	(8.00)	(7.00)	(7.00)	(0.000)
Board tenure	5.94	5.46	5.36	5.12	-7.85***	5.53	5.63	5.60	5.13	-6.35***
	(5.30)	(4.88)	(4.84)	(4.44)	(0.000)	(4.96)	(5.03)	(5.00)	(4.39)	(0.000)
Director's age	54.18	54.62	54.18	54.94	-1.69*	54.47	54.66	54.25	54.57	-7.25***
	(54.34)	(54.77)	(54.25)	(54.00)	(0.091)	(54.64)	(54.88)	(54.33)	(53.67)	(0.000)
Imported CEO	0.03	0.04	0.05	0.05	7.51***	0.04	0.04	0.04	0.04	0.92
	(0.00)	(0.00)	(0.00)	(0.00)	(0.000)	(0.00)	(0.00)	(0.00)	(0.00)	(0.355)
Gender	0.056	0.061	0.060	0.061	2.13**	0.06	0.06	0.06	0.06	-0.53
	(0.00)	(0.00)	(0.00)	(0.00)	(0.033)	(0.00)	(0.00)	(0.00)	(0.00)	(0.595)
Firm characteristics										
Size	12.72	13.10	12.55	11.69	-14.12***	13.17	13.14	12.42	11.37	-30.48***
	(12.34)	(12.95)	(12.12)	(11.11)	(0.000)	(13.01)	(12.88)	(12.03)	(10.97)	(0.000)
Profitability	0.11	0.11	0.10	0.03	-13.01***	0.10	0.10	0.10	0.05	-12.48***
	(0.12)	(0.12)	(0.12)	(0.08)	(0.000)	(0.11)	(0.12)	(0.12)	(0.11)	(0.000)
Tobin's Q	1.55	1.66	2.13	3.28	23.40***	1.82	1.69	1.98	3.04	23.36***
	(1.23)	(1.38)	(1.63)	(2.33)	(0.000)	(1.42)	(1.36)	(1.48)	(2.11)	(0.000)
Dividend	0.021	0.023	0.023	0.015	-5.83***	0.02	0.02	0.02	0.02	-4.74***
	(0.017)	(0.019)	(0.014)	(0.00)	(0.000)	(0.014)	(0.017)	(0.016)	(0.00)	(0.000)

Table 4 (Continued)
Firm characteristics by slack quartiles

This table presents univariate comparison of means and medians of measures of corporate governance and firm characteristics of 1,275 UK-based publicly traded firms excluding financial companies for the 1997-2009 time period. The director and board data comes from the *BoardEx* database, firm data is from Tomson Datastream. Busy boards are the boards where the percentage of directors with three or more directorships is greater than or equal to the sample median. Other variables definitions are in the Appendix 1. The table displays the means and medians (in parentheses) of various director, board, and firm characteristics for first, second, third, and fourth quartiles of cash (Panel A), net cash (Panel B), and slack (Panel C). The *t*-statistics is for a difference of means test from the first to the forth quartile of cash/net cash/slack. Each quartile contains approximately 2230 firm years. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel C: Slack Quartiles

	First quartile	**Second quartile**	**Third quartile**	**Fourth quartile**	***t*-statistic (*p*-value)**
Corporate cash holdings/liquidity					
Slack range	-0.70 to 0.09	0.09 to 0.20	0.20 to 0.34	0.34 to 1.00	
Slack	0.08 (0.08)	0.14 (0.14)	0.24 (0.23)	0.50 (0.43)	136.56*** (0.000)
Director/board characteristics					
Board busyness	0.23 (0.20)	0.23 (0.2)	0.21 (0.18)	0.19 (0.17)	-3.99*** (0.000)
Proportion of supervisory directors	0.58 (0.57)	0.59 (0.57)	0.58 (0.57)	0.58 (0.57)	1.78* (0.075)
Board size	7.95 (7.00)	8.32 (8.00)	8.05 (8.00)	7.24 (7.00)	-10.39*** (0.000)
Board tenure	5.38 (4.86)	5.77 (5.13)	5.54 (4.99)	5.27 (4.56)	-2.00** (0.046)
Director's age	54.26 (54.36)	54.55 (54.63)	54.29 (54.50)	53.85 (54.00)	-2.42*** (0.020)
Imported CEO	0.04 (0.00)	0.04 (0.00)	0.04 (0.00)	0.04 (0.00)	4.03*** (0.000)
Gender	0.062 (0.00)	0.059 (0.00)	0.059 (0.00)	0.060 (0.00)	-2.21** (0.027)
Firm characteristics					
Size	12.81 (12.37)	13.01 (12.71)	12.72 (12.48)	11.66 (11.30)	-19.07*** (0.000)
Profitability	0.08 (0.11)	0.10 (0.12)	0.11 (0.12)	0.06 (0.12)	-7.12*** (0.000)
Tobin's Q	1.79 (1.41)	1.75 (1.35)	2.01 (1.51)	2.97 (2.03)	21.04*** (0.000)
Dividend	0.02 (0.01)	0.02 (0.02)	0.02 (0.024)	0.02 (0.00)	0.85 (0.395)

Table 5
Board Busyness and Cash Holdings

This table reports results from an analysis of cash holdings (dependent variables) in our sample of 1,275 firms from 1997 to 2009 time period. Model 1 is a pooled OLS model with year and industry dummy and robust standard errors. Model 2 is a fixed effects model with year dummy and robust standard errors. Model 3 is a fixed effects model with year dummy and robust standard errors clustered by industry (we use FTAG3 index for the industry affiliation). Model 4 is a Fama-MacBeth model. Model 5 is a fixed effects model with Driscoll and Kray (1998) standard errors. All variable definitions are in Appendix 1. Standard errors are in parentheses beneath each coefficient estimate. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Pooled OLS	**FE robust**	**FE robust clust**	**Fama-MacBeth**	**Driscoll-Kray**
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Board busyness	0.087***	0.101***	0.102**	0.127***	0.099***
	(0.024)	(0.030)	(0.044)	(0.034)	(0.032)
Board busyness^2	-0.156***	-0.152***	-0.152***	-0.192***	-0.146***
	(0.035)	(0.045)	(0.045)	(0.028)	(0.032)
Proportion of supervisory directors	0.122***	-0.005	-0.005	0.066***	-0.026
	(0.014)	(0.023)	(0.027)	(0.016)	(0.016)
Board size	0.015*	-0.029***	-0.029***	-0.008	-0.027***
	(0.008)	(0.114)	(0.011)	(0.013)	(0.005)
Board tenure	-0.002***	-0.002***	-0.002*	-0.000	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Duality	0.029***	0.002	0.002	0.018***	0.005
	(0.006)	(0.009)	(0.005)	(0.003)	(0.006)
Director's age	0.002***	0.001**	0.001*	0.001	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Imported CEO	0.116***	0.024	0.024	0.079***	0.010
	(0.021)	(0.028)	(0.012)	(0.023)	(0.013)
Gender	0.023	0.025	0.025	0.034**	0.018
	(0.020)	(0.020)	(0.019)	(0.016)	(0.011)
Size	-0.019***	-0.035***	-0.035***	-0.012***	-0.039***
	(0.001)	(0.006)	(0.007)	(0.003)	(0.005)
Profitability	-0.158***	0.064***	0.0642***	-0.157***	0.057***
	(0.017)	(0.018)	(0.012)	(0.003)	(0.018)
Tobin's Q	0.023***	0.003*	0.003***	0.023***	0.002
	(0.002)	(0.002)	(0.001)	(0.003)	(0.001)
Dividend	0.116	0.161***	0.161***	0.138**	0.146***
	(0.085)	(0.056)	(0.035)	(0.0634)	(0.048)
Constant	0.036	0.436***	0.436***	0.021	0.484***
	(0.031)	(0.076)	(0.089)	(0.042)	0.068
Year dummy	Yes	Yes	Yes	No	No
Industry dummy	Yes	No	No	No	No
R^2	0.17	0.04	0.04	0.17	0.06
Number of observations	8296	8296	8296	8296	8296

Table 6
Board Busyness and Net Cash

This table reports results from an analysis of net cash (dependent variable measured by the difference between firm's cash holdings and firm's total debt) in our sample of 1,275 firms from 1997 to 2009. Model 1 is a pooled OLS model with year and industry dummy and robust standard errors. Model 2 is a fixed effects model with year dummy and robust standard errors. Model 3 is a fixed effects model with year dummy and robust standard errors clustered by industry (we use FTAG3 index for the industry affiliation). Model 4 is Fama-MacBeth model. Model 5 is a fixed effects model with Driscoll and Kray (1998) standard errors. All variable definitions are in Appendix 1. Standard errors are in parenthesises beneath each coefficient estimate. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Pooled OLS	**FE robust**	**FE robust clust**	**Fama-MacBeth**	**Driscoll-Kray**
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Board busyness	0.0847***	0.136***	0.136***	0.175***	0.135***
	(0.036)	(0.045)	(0.055)	(0.065)	(0.046)
Board busyness^2	-0.165***	-0.232***	-0.232***	-0.272***	-0.219***
	(0.050)	(0.072)	(0.080)	(0.072)	(0.047)
Proportion of supervisory directors	0.106***	0.027	0.027	0.052*	-0.020
	(0.021)	(0.033)	(0.029)	(0.028)	(0.026)
Board size	0.027**	-0.046***	-0.046***	-0.007	-0.038***
	(0.012)	(0.017)	(0.019)	(0.021)	(0.010)
Board tenure	-0.002**	-0.003***	-0.003*	-0.000	-0.003***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Duality	0.046***	0.017	0.017	0.040***	0.022**
	(0.009)	(0.014)	(0.013)	(0.009)	(0.010)
Director's age	0.002**	0.001	0.001	0.002	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Imported CEO	0.192***	-0.017	-0.017	0.065	-0.047
	(0.034)	(0.052)	(0.041)	(0.055)	(0.031)
Gender	0.081***	0.055*	0.055*	0.154***	0.038***
	(0.031)	(0.030)	(0.029)	(0.042)	(0.012)
Size	-0.043***	-0.055***	-0.055***	-0.036***	-0.066***
	(0.002)	(0.009)	(0.007)	(0.002)	(0.012)
Profitability	-0.146***	0.172***	0.172***	-0.100***	0.164***
	(0.024)	(0.026)	(0.029)	(0.024)	(0.029)
Tobin's Q	0.028***	0.003***	0.003**	0.023***	0.002
	(0.002)	(0.002)	(0.001)	(0.005)	(0.002)
Dividend	0.461***	0.273***	0.273***	0.294	0.253**
	(0.110)	(0.101)	(0.098)	(0.201)	(0.112)
Constant	0.322***	0.757***	0.757***	0.284***	0.835***
	(0.049)	(0.116)	(0.083)	(0.071)	(0.106)
Year dummy	Yes	Yes	Yes	No	No
Industry dummy	Yes	No	No	No	No
R^2	0.18	0.09	0.09	0.17	0.09
Number of observations	8290	8290	8290	8290	8290

Table 7
Board Busyness and Financial Slack

This table reports results from an analysis of financial slack (dependent variable) in our sample of 1,275 firms from 1997 to 2009. Model 1 is a pooled OLS model with year and industry dummy and robust standard errors. Model 2 is a fixed effects model with year dummy and robust standard errors. Model 3 is a fixed effects model with year dummy and robust standard errors clustered by industry (we use FTAG3 index for the industry affiliation). Model 4 is Fama-MacBeth model. Model 5 is a fixed effects model with Driscoll and Kray (1998) standard errors. All variable definitions are in Appendix 1. Standard errors are in parenthesises beneath each coefficient estimate. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Pooled OLS	**FE robust**	**FE robust clust**	**Fama-MacBeth**	**Driscoll-Kray**
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Board busyness	0.060**	0.092***	0.092*	0.138***	0.089***
	(0.026)	(0.031)	(0.049)	(0.052)	(0.028)
Board busyness^2	-0.121***	-0.131***	-0.131***	-0.176***	-0.126***
	(0.036)	(0.046)	(0.055)	(0.037)	(0.030)
Proportion of supervisory directors	0.113***	0.008	-0.008	0.062***	-0.007
	(0.015)	(0.024)	(0.031)	(0.014)	(0.013)
Board size	0.040***	-0.019*	-0.019*	0.013	-0.019***
	(0.008)	(0.012)	(0.010)	(0.014)	(0.004)
Board tenure	-0.001	-0.002***	-0.002***	-0.001	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Duality	0.017***	0.002	0.002	0.012***	0.004
	(0.006)	(0.009)	(0.005)	(0.004)	(0.006)
Director's age	0.001***	0.001*	0.001	0.001	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Imported CEO	0.115***	0.032	0.032*	0.075***	0.020
	(0.022)	(0.028)	(0.020)	(0.025)	(0.012)
Gender	0.018	0.021	0.021	0.031	0.017
	(0.022)	(0.021)	(0.023)	(0.022)	(0.011)
Size	-0.0250***	-0.0396***	-0.0396***	-0.0183***	-0.042***
	(0.015)	(0.0058)	(0.0107)	(0.0030)	(0.004)
Profitability	-0.078***	0.098***	0.098***	-0.073***	0.090***
	(0.017)	(0.019)	(0.015)	(0.014)	(0.018)
Tobin's Q	0.021***	0.003*	0.003***	0.021***	0.002
	(0.002)	(0.002)	(0.001)	(0.003)	(0.002)
Dividend	0.380***	0.192***	0.192***	0.404***	0.176***
	(0.084)	(0.066)	(0.041)	(0.060)	(0.067)
Constant	0.072**	0.471***	0.471***	0.043	0.507***
	(0.035)	(0.075)	(0.115)	(0.033)	(0.057)
Year Dummy	Yes	Yes	Yes	No	No
Industry Dummy	Yes	No	No	No	No
R^2	0.14	0.06	0.05	0.16	0.07
Number of observations	8151	8151	8151	8151	8151