ESSAYS ON CORPORATE GOVERNANCE OF FINANCIAL AND NON-FINANCIAL FIRMS

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ABSTRACT

Corporate governance of financial and non-financial firms is critical in modern corporations with diffuse stock ownership, which deals with the agency conflicts between managers and shareholders. Corporate governance has a profound impact on various corporate policy, and firm value in the end. This study examines the importance of corporate governance and its influences on various corporate policy and firm value and risks for both financial and non-financial firms.

Chapter 1 investigates the association between the firm's liquidity level and liquidity mix on the one hand and CEO entrenchment on the other. CEO entrenchment may distort the firms' liquidity policy because managers and shareholders may have conflicting preferences between cash and lines of credit. Using lines of credit data from 1996 to 2008, we find five main results. First, entrenched CEOs hold more liquidity as measured by the sum of cash and lines of credit. Second, entrenched managers have a preference for cash over lines of credit because while cash gives them flexibility, lines of credit are accompanied with bank restrictions and monitoring. Third, entrenched CEOs also use more lines of credit because of the extra liquidity it provides, despite the associated bank monitoring. Fourth, entrenched CEOs in smaller and opaque firms tend to hold more liquidity. Five, entrenched CEO's preference for cash versus lines of credit is stronger for large and transparent firms, compared to small and opaque firms. These findings imply that firms should better align the interests of the entrenched managers with those of the shareholders in order to limit the excessive liquidity holding of firms when CEOs are entrenched and to thereby increase firms' profitability.

Chapter 2 examines the relationship between bank holding company (BHC) performance, risk and "busy" board of directors, an overlooked dimension of corporate governance in the banking literature. Busy directors are defined as directors with three or more directorships. The sample covers the 2001-2010 period. We employ a simultaneous equation framework and estimate the models employing the three stage least square (3SLS) technique in order to account for endogeneity. Several interesting results are obtained. First, BHC performance, as measured by return on assets (ROA), Tobin's Q and earnings before interest and taxes (EBIT) over total assets is positively associated with busy directors. Second, BHC total risk (standard deviation of stock returns), market risk (market beta), idiosyncratic risk (standard errors of the CAPM model) credit risk (percentage of non-performing assets over total assets) and default risk (HigherZ-Score) are inversely related to it. Third, busy directors are not more likely to become problem directors, in the sense of failing the meeting-attendance-criterion (75% attendance). Fourth, the benefits of having busy directors in terms of performance improvement strengthened but the benefits of risk reduction declined during the recent financial crisis These findings partially alleviate concerns that when directors become too busy with multiple directorships, they shirk their responsibilities. Major implications for investors, regulators, and firm managers are drawn.

Chapter 3 investigates the effect of CEO entrenchment on the loan syndication structure. Over the past decade, syndicated loans have played an increasingly important role in corporate financing. Unlike a traditional bank loan with only a single creditor, a syndicated loan involves a group of lenders: a lead arranger and a number of participant lenders. The syndication process, therefore, generates an additional dimension of agency

problem between the lead arranger and the participant lenders, besides the traditional agency cost of debt between the borrowing firm and the lender (Diamond, 1984; Holmstrom and Tirole, 1997). Several results are obtained about syndicated loans made to firms with more entrenched CEOs. First, in these loans the number of participant lenders and their share in the loan are smaller; the lead arranger retains a larger loan share. Second, these loans are more closely held resulting in a higher Herfindahl index of loan concentration. Third, foreign lenders are less involved in these loans. Specifically, the number of foreign lenders and the percentage of loans held by foreign lenders are both smaller. Our findings shed light on the two types of agency problems associated with the syndicated loans, and have great implication for the firms' shareholders, creditors and regulators.

Dedicated to my family.

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CHAPTER 1

CEO ENTRENCHMENT AND CORPORATE LIQUIDITY MANAGEMENT

1.1 Introduction

In a perfect capital market, corporate liquidity management is not an issue since firms have a frictionless access to capital market to finance their projects or to meet their contractual obligations. In the real world, however, capital markets are subject to frictions. As a consequence, firms cannot always obtain financing on a timely basis, if at all. Under these circumstances, liquidity management is an important component of the overall corporate policy, especially for firms facing greater market frictions, such as younger, smaller and opaque firms (Almeida *et al.* 2004).

There are two main sources of liquidity: cash (Cash) and lines of credit (LC). LC is a commitment granted by a bank to a borrower with a loan over a certain period of time at predetermined terms (Demiroglu & James 2011). According to Sufi (2009), Demiroglu et al. (2009), and Demiroglu and James (2011), 87% of public firms and 64% of large private firms use LCs.[1] Despite the popularity and importance of LCs as a source of corporate liquidity in the U.S., the extant literature has, until very recently, largely ignored it, focusing instead on the role of cash[2].

According to the agency theory, managers in corporations with diffused ownership tend to pursue their own interest, instead of maximizing shareholders' wealth

[1] Regulation S-K of the U.S. Securities and Exchange Commission requires firms to explicitly discuss their liquidity and capital resources in their annual 10-K SEC filings (Kaplan and Zingales (1997).

[2] Sufi (2009) is the first to study the determinants of the use of LCs. Yun (2009) studies the effect of changes in anti-takeover provisions on the ratio of LC over the sum of cash and LCs. Demiroglu (2010) reviews empirical evidence on the use of cash versus LCs.

(Jensen and Meckling, 1976). The conflict of interest between managers and shareholders becomes particularly severe when the managers become entrenched (Pan, 2007). Most previous studies on the effect of agency conflict on corporate liquidity policy are largely focused on the cash component of corporate liquidity in isolation, with complete disregard of the variations in the LCs and total liquidity. The overall findings in these studies suggest that entrenched managers tend to hold more than optimal levels of cash[3] and are likely to misuse the cash for own purposes (Jensen 1986; Dittmar *et al.* 2003; Chen & Chuang 2009).

Corporate liquidity policy needs to be investigated in two dimensions: the level of total liquidity and the composition (mix) of liquidity between cash and LC. We argue that, firms' decision on total liquidity is of greater importance than that on the composition of liquidity. To elaborate, composition of corporate liquidity mainly affects the firm's cost of liquidity (the cost of holding a given level of liquid assets), including foregone interest on cash and commitment fees and interest paid on LCs; but it is unlikely to affect firms' ability to undertake new investment projects or to satisfy their short-term liquidity needs, given that total liquidity is sufficient overall. In contrast, the total liquidity held by the firm will affect both. Total liquidity affects a firm's default probability as it may have to default on its debt if it does not have enough liquidity to make interest payment, or to pay off its debt at maturity. As an example, Acharya et al. (2007) have shown that liquidity can affect a firm's level of investment. Besides, liquidity level also affects other important corporate policies such as firm's payout policy through dividend or share repurchase and capital structure choice (Jaggannathan et al. (2000); Almeida et al (2004);

[3] Cash is usually defined as the ratio of cash and cash equivalents to non-cash total assets as in Opler et al. (1999) and Dittmar et al. (2003).

Denis and McKeon (2012)). Finally, liquidity affects firm value as shown by Faulkender and Wang (2006), Pinkowitz and Williamson (2006). We intend to fill this gap by investigating the effect of CEO entrenchment on both total liquidity of the firm (measured by the sum of cash and LC divided over asset) and the composition of corporate liquidity (measured by the proportions of cash and LC in the total cash and LC).

Several main results are obtained. First, we find that firms' total liquidity is positively associated with the level of CEO entrenchment as measured by CEO entrenchment index designed by Bebchuk et.al, (2009). This indicates that entrenched CEOs hold greater amounts of total liquidity as a percentage of their assets in order to be exposed to a lower level of liquidity risk and to facilitate their consumption of personal benefits. Second, we find that the proportion of total LC over the sum of cash and total LC (LC/(Cash +LC)), and the proportion of unused line of credit over the sum of cash and unused line of credit (ULC/(Cash + ULC)), are negatively related to CEO entrenchment. These results indicate that entrenched CEOs prefer cash to LCs, perhaps because LCs are associated with bank monitoring. Third, using the ratio of cash over assets (Cash/(Non-Cash Assets)) and the ratio of lines of credit over assets (LC/(Non-Cash Assets)) and (ULC/(Non-Cash Assets)) as the main variables of interest, we find that the latter ratios are both positively related to CEO entrenchment. This indicates that while entrenched CEOs dislike the associated constraints and monitoring from the banks providing LCs, they still hold greater amounts of LCs because of the extra liquidity they provide.

We contribute to the literature in, at least, three ways. First, we are the first to study the effect of CEO entrenchment on the total liquidity of firms with LCs included.

Previous studies on the effect of corporate governance on the firms' liquidity are mainly focused on the cash components of corporate liquidity (Jensen 1986; Dittmar *et al.* 2003; Chen & Chuang 2009). However, according to Sufi (2009), almost 85% of firms in his sample utilize LCs to manage their liquidity needs, and LCs account for over 50% of firms' total liquidity (the sum of cash and LCs). This figure demonstrates the important role of LCs as an alternative source of liquidity besides cash. It follows that extant studies on the effect of corporate governance on liquidity failing to account for LCs are incomplete and may lead to erroneous policy conclusions. Second, we shed light on CEO's preferences for cash and LCs and provide important evidence that entrenched CEOs could potentially distort the composition of liquidity against the interests of the shareholders. Third, to our knowledge, we are the first to study the effect of CEO entrenchment on the ratio of LCs scaled by assets (LC/Non-Cash Assets), and find that this ratio increases with entrenchment, indicating that firms with entrenched CEOs actually increase the use the LCs, despite the fact that LCs are associated with bank monitoring. The impact of CEO entrenchment on the firms' uses of LCs is directly revealed for the first time.

Our findings have important implications for the firms' shareholders and creditors. The excess liquidity associated with CEO entrenchment is costly for the firm in the sense that it leads to foregone interest income with holding of cash and payment of additional fees to obtain the LCs as well as interest payment on the funds once the LCs are exercised. In addition, excess liquidity heightens the agency costs because it facilitates entrenched managers' use of funds for personal purposes such as consuming more personal perks, and even theft. The findings of the paper highlight the importance of

reducing the influence of CEO entrenchment on the liquidity policy through corporate governance mechanisms. It will help to reduce both the direct cost and agency cost of holding liquidity and increase profitability. Our result also shows that entrenched CEOs have a tendency to increase liquidity through both cash holdings and LCs, despite the fact that the latter is accompanied with bank monitoring. According to our findings, creditors will actually benefit from the distorted liquidity policy due to CEO entrenchment because firms with entrenched CEOs hold more cash and have a larger liquidity base, increasing their ability to service their debt.

The rest of the paper is organized as follows. Section 1.2 includes a brief review of the literature. Section 1.3 presents the hypothesis, Section 1.4 describes the data and estimation procedures and Section 1.5 discusses the results. Section 1.6 and 1.7 include the robustness checks and the conclusions.

1.2 Literature Review

Extant empirical literature on corporate liquidity policy focuses mainly on the role of cash (Opler *et al.* 1999; Almeida *et al.* 2004; Faulkender & Rong 2006). The main result from this literature is that firms with external financing constraints, such as lack of good access to the market, retain more cash out of their cash flows (Almeida *et al.* 2004). Sufi (2009) is the first paper to integrate LCs with cash in the study of corporate liquidity. He empirically examines the factors that affect firms' decision on the use of LCs or cash to manage liquidity. A main dependent variable in Sufi's model is a dummy variable indicating whether the firm has access to LCs. He finds that the ability to maintain a high cash flow is an important determinant of whether and to what extent a firm uses LCs versus cash to manage liquidity needs. Specifically, it is less likely for firms with low

cash flow to have access to LCs, who have to rely heavily on cash in their liquidity management.

Several studies extend Sufi (2009) to examine the determinants of cash versus LCs in liquidity management. Acharya et al. (2010) propose a model in which a firm's systematic risk exposure (market beta) is a key determinant of firms' choice of cash versus LCs. In his model, a firm's systematic risk is measured as the risk that the firm' liquidity needs highly correlate with the liquidity needs of other firms in the economy. Acharya et al. (2010) find that firms with high asset beta (equity beta adjusted for leverage) use relatively more cash compared to LCs after controlling for other determinants of liquidity policy including firm size, profitability, industry sales volatility, firm sales volatility, market to book ratio etc.

The effect of CEO entrenchment on firms' liquidity policy with LCs accounted for is rarely examined in the literature. For example, Sufi (2009) and Acharya et al. (2010) do not address this issue. To our knowledge, Yun (2009) is the only paper related to our study. Yun investigates how external corporate governance, that is the takeover market, influences the choice between cash and LC by the firms. The main finding of Yun (2009) study is that the proportion of unused lines of credit in the total cash and unused lines of credit (ULC/ (ULC + Cash)) decreases with stronger anti-takeover protection. However, Yun (2009) does not explore the underlying channel of this effect. The decrease in the ratio ULC/ (ULC + Cash)), in response to stronger anti-takeover protection, may occur at least under three different scenarios. First, this proportion may decrease when ULC is unaffected by the increase in anti-takeover protection while cash is increasing with it. Second, the proportion may decrease when ULC is decreasing with increasing anti-

takeover protection and the level of cash is increasing with it. Third, the proportion may decrease while ULC and cash are both increasing with increasing anti-takeover protection, but the increase in ULC is smaller than the increase in cash. The varieties of these scenarios are not studied in Yun (2009).

1.3 Hypothesis Development

There are two main sources of corporate liquidity; cash and LC. Entrenched CEOs like to hold more liquidity because it can facilitate their consumption of luxury perks, empire building investments and value-destroying acquisitions. Myers and Rajan (1998) suggest that entrenched managers prefer to hold liquid assets, because they can more easily steal these assets from the firm, compared to fixed assets such as land and equipments. Opler et al. (1999) also argue that entrenched managers may hold cash to pursue their own objectives such as empire building and perk consumption at the shareholders' expense. As an example, when liquidity is available, managers can make investments that the capital market would be unwilling to finance. Dittmar (2003) argues that entrenched managers would like to hold excess liquid asset, because liquid assets including cash provide managers with greater opportunities to engage in wasteful capital expenditure, and acquisitions. In the extreme cases, entrenched mangers may be involved in direct theft of corporate assets. In addition, entrenched CEOs like more liquidity because higher total liquidity is associated with lower liquidity risk and lower default risk. In the case of a default of debt obligations due to insufficient liquidity, CEO's compensation will be significantly reduced, and creditor intervention will step in (Mao, Gu (2012)). This gives entrenched CEOs an incentive to hold more liquidity. The above discussion leads to our first hypothesis:

H_1: The total liquidity of the firm (Cash +LC/assets) is positively related to the level of CEO entrenchment.

A remarkable difference between cash and LC is that LC is often associated with financial covenants, e.g. coverage and debt-to-cash flow limitations. Coverage covenants specify the minimum coverage ratio (EBITDA/interest expense) while debt-to-cash flow covenants set a maximum for the ratio of (debt/cash flows) for the borrowing firms (Demiroglu & James 2011). If the borrower violates a financial covenant, the lender has the right to refuse to provide the unused portion of the LCs, to require faster payments of the used portion, or to require a renegotiation of the lending contract including amount, interest rate, maturity and/or collateral (Demiroglu & James 2011). In addition, the use of LCs is associated with bank monitoring which will restrict the freedom of entrenched CEOs over the use of funds for self-purposes. Compared to LC, cash gives entrenched CEOs more freedom over its usage. Thus, we expect that entrenched CEOs will prefer cash to LCs because cash gives them more flexibility while LCs are associated with bank monitoring. Based on the above discussion, we expect that entrenched CEOs will hold a greater proportion of cash in total liquidity in their liquidity management scheme. Hence, we propose the following hypothesis:

H_2: The proportion of LC in the total liquidity of the firm (LC/ (Cash +LC)), is negatively related to the level of CEO entrenchment. The reverse holds for the Cash ratio (Cash/ (Cash + LC)).

Our third hypothesis concerns the mechanism underlying the negative relationship between the proportion of LC in total liquidity (LC/(LC + Cash)) and CEO entrenchment. As discussed earlier, corporate cash holdings is positively related to CEO entrenchment

(Dittmar *et al.* 2003; Dittmar & Mahrt-Smith 2007; Chen & Chuang 2009). Two opposite forces are working concerning the effect of entrenchment on LC; entrenched CEOs do like the liquidity provided by LC but dislike the associated financial covenants and bank monitoring. The relationship observed between the level of LC and entrenchment depends on the net power of these conflicting forces. We expect that entrenched CEOs would hold more LCs if the monitoring associated with LCs is not effective, or when they have great power in the firm and worry less for the monitoring from the LC issuers. Under this condition, although the ratio (LC/ (LC + Cash)) is decreasing with entrenchment, the level of LC scaled by assets can still increase with it. Hence, we propose:

H_3: LC as a proportion of assets (LC/Non-cash assets) is positively associated with the level of CEO entrenchment.

1.4 Data and Summary Statistics

Data on firms' use of LCs are available from their SEC 10-K reports. Sufi (2009) collects LC data for a randomly selected sample of 300 firms over the 1996-2003 period. We manually update this data set to 2008.[4] The data collection process is discussed in Sufi (2009) in detail. We use the entrenchment index (E-index), designed by Bebchuk et.al, (2009) as our measure of CEO entrenchment[5]. Bebchuk et.al (2009) examine the relative importance of the twenty-four provisions followed by the Investor Responsibility Research Center (IRRC) and constructs the index based on six of these provisions. The IRRC provisions are also used in the construction of the corporate governance index (G-index) originated by Gompers, Ishii, and Metrick (2003). The six provisions include:

[4] According to the website of IRRC, the CEO entrenchment data (E-index) ends in 2008 with no plans to continue these data afterwards. Hence, our sample ends in 2008.

[5] For detailed information on the design of the E-index, please refer to Bebchuk et. al (2009) The E-index data is available on the website: http://www.law.harvard.edu/faculty/bebchuk/.

staggered boards, limits to shareholder bylaw amendments, supermajority requirement for mergers and charter amendments, poison pills, and golden parachutes. The first four provisions serve as constitutional limitations that restrict shareholders' voting power. The last two provisions are directly related to takeover prospects (Bebchuk *et al.* 2009). An increase in the entrenchment index indicates a higher level of CEO entrenchment. Bebchuk et.al, (2009) find that firm value as measured by Tobin's Q is negatively associated with increases in the entrenchment index level for the 1990-2003 periods. They do not find any relationship between reduced firm valuation or negative abnormal return and the other eighteen IRRC provisions which are not included in the construction of entrenchment index.

The six provisions included in the entrenchment index (E-index) serve to strengthen the power of management by limiting the power of shareholders and providing the management with stronger anti-takeover protection. The provisions in the E-index are also provisions that receive most shareholder opposition according to the leading proxy solicitation firm Georgeson Shareholder (Bebchuk *et al.* 2009). The entrenchment index is widely used in the literature that examines the relation between shareholder rights and various corporate decisions and outcomes (Bates, Becher, and Lemmon, 2008; Brown and Caylor, 2006; Cai, Garner and Walkling, 2008; Dittmar and Smith, 2007); Bebchuk *et al.* 2009).

The dataset on CEO entrenchment covers all the companies whose information was available in one of the volumes published by the Investor Responsibility Research Center (IRRC), which includes detailed information on the corporate governance arrangements of firms (Bebchuk *et al.* 2009).

We merge Sufi's (2009) LC dataset and Bebchuk et.al (2009) CEO entrenchment dataset with the COMPUSTAT data for firms' financial information. The merged dataset has data on entrenchment index, lines of credit and firms' financial information for 128 firms from 1996 to 2008, altogether 1382 firm-year observations. Following Acharya et al. (2010), we define our variables as follows. Total liquidity is defined as the sum of cash and total LCs over assets[6] and Total unused liquidity as the sum of cash and ULCs over assets. Assets are measured as book value of total assets deducting the amount of cash holdings (cash and short-term investments) and constitute a measure of non-cash assets. Following Sufi (2009), we use this variable to scale other variables including cash and LCs.

Sufi (2009) argues that firms are likely to jointly determine cash holdings and LC usage. This will lead to a mechanical negative correlation between any measure scaled by total assets, e.g., cash/assets and the use of LCs. Cash is given by the item "*che"* in COMPUSTAT. It includes cash and short term investments. It is commonly used in the literature as a measure of corporate cash holdings (Sufi 2009; Yun 2009; Acharya *et al.* 2010). Tangibility is proxyed by the item "*ppent"* scaled by assets. It is total property, plant and equipment scaled by assets. Size is defined as the log of assets. Tobin's Q is defined as a cash-adjusted, market-to-book asset ratio computed using Compustat items according to the formula (assets+prcc_f*csho-ceq)/assets. Net Worth is defined as (*ceq-che*)/assets, or assets deducting total liabilities scaled by assets. Profitability is defined as the ratio of EBITDA over assets. Net Working Capital is the ratio of net working capital

[6] We will use the concepts non-cash assets and "Assets" interchangeably. This measure is defined as: the book value of total assets deducting the amount of cash and short-term investments. Sufi (2009), Yun (2009) and Acharya (2010) all employ the sum of cash and LC as a measure of total liquidity in their design of the main dependent variable. For a detailed discussion about reasons to use non-cash assets as a scaling factor, instead of just assets, refer to Sufi (2009).

over assets, according to Opler et al. (1999), where net working capital is given by wcap. Leverage is the sum of long term debt and short term debt dividend by assets. Industry sales volatility (Ind_sale_vol) is calculated as the 3-digit SIC industry median value of the within-year standard deviation of quarterly changes in firm sales (*saleq* minus its lagged value) scaled by the average asset value (*atq*) in the year. Profit volatility (Profit_Vol) defined as the standard deviation of annual changes in firm's EBITDA is calculated using four lags, and scaled by average assets in the lagged period. Detailed definitions of these variables are included in the appendix. All the COMPUSTAT variables are winsorized at 5^{th} and 95^{th} percentiles to avoid the influence of large outliers. Summary statistics for the data are provided in Table 1.1. The average asset value is 2,023.109 million dollars. Firms in the sample hold 33.4% of their assets in the form of tangible assets, on average, with a standard deviation of 21.6%. The average net worth of the firms in the sample is 39.8% of assets. The average cash-adjusted market-to-book ratio (M/B) is 2.931 indicating that many of the firms are growth firms. The average profit (EBITDA/assets) is 14.4%. The average industrial sales volatility measured by the 3-digit SIC industry median value of the within-year standard deviation of quarterly changes in firm sales (*saleq* minus its lagged value) scaled by the average asset value (*atq*) in the year is about 6.4%, with a standard deviation of 4.9%. The average firm profit volatility as defined above is about 4.3%. The average entrenchment index for our sample is 2.623, with a standard deviation of 1.247.

Table 1.1 Summary Statistics of Sample Firms with Line of Credit

Variables	Obs	Mean	Std. Dev.	Min	Max
E-index	1380	2.623	1.247	0.000	6.000
Unused lines of credit ($m)	1382	275.841	748.496	0.000	1040.000
Total lines of credit ($m)	1382	350.298	881.805	0.000	1467.000
Size	1382	6.448	1.603	3.282	9.523
Assets ($m)	1382	2023.109	3392.916	266.340	13668.000
Cash ($m)	1382	185.889	295.879	2.188	1193.859
Tangibility	1382	0.334	0.216	0.059	0.797
Tobin's Q	1382	2.931	2.927	0.909	12.598
Net Worth	1382	0.398	0.249	-0.264	0.790
Profitability	1382	0.144	0.170	-0.397	0.436
Profit Volatility	1309	0.043	0.037	0.008	0.144
Industry Volatility	1382	0.064	0.049	0.014	0.187
Leverage	1381	0.213	0.189	0.000	0.622
Net working Cap ($m)	1369	0.414	0.498	-0.056	1.942
R&D ($m)	1382	-0.991	6.474	-56.000	0.000

1.5 Model Specification

1.5.1 The Effect of CEO Entrenchment on the Total Liquidity of the Firm

There are possible endogeneity issues between firms' liquidity policy and CEO entrenchment because entrenchment may co-vary with unobserved heterogeneous firm characteristics (e.g., unobserved investment opportunities) which also affect firms' liquidity policy (Yun, 2009). To control for this endogeneity issue, we employ a two stage least squares (2SLS) estimation technique. In the first stage, we use CEO tenure as an instrumental variable for CEO entrenchment, and use the predicted value of the entrenchment index so derived as our independent variable in the second stage regressions. In this stage, the dependent variable in the model is total liquidity, or alternatively, the total unused liquidity. Total liquidity is measured by the sum of cash

and total lines of credit over assets (LC + Cash/Assets). Total unused liquidity is the sum of cash and unused lines of credit over assets (ULC + Cash/Assets). The other variables were defined earlier. The control variables used in equations 1-2, described below, are based on the determinants of LCs employed by Sufi (2009) and Acharya (2010) and determinants of cash holding used by Opler et al. (2009):

$$\text{(Cash+ LC)/Assets} = \beta_1 * \text{E-Index} + \beta_2 * \text{size} + \beta_3 * \text{tangibility} + \beta_4 \text{net worth} + \beta_5 * Q + \beta_6 \text{profit Volatility} + \beta_7 * \text{Industry Volatility} + \beta_8 \text{Profitability} + \beta_9 \text{leverage} + \beta_{10} R\&D + \beta_{11} \text{net working capital} + \beta_{12} \text{dividend\_dummy} + \beta_{13} \text{Capital expenditure} + \varepsilon \quad (1)$$

$$\text{(Cash+ULC)/Assets} = \beta_1 * \text{E-Index} + \beta_2 * \text{size} + \beta_3 * \text{tangibility} + \beta_4 \text{net worth} + \beta_5 * Q + \beta_6 \text{profit Volatility} + \beta_7 * \text{Industry Volatility} + \beta_8 \text{Profitability} + \beta_9 \text{leverage} + \beta_{10} R\&D + \beta_{11} \text{net working capital} + \beta_{12} \text{dividend\_dummy} + \beta_{13} \text{Capital expenditure} + \varepsilon \quad (2)$$

The main variable of interest in the model is the entrenchment index (E-index). The coefficients β_1 in the model captures the relationship between the total liquidity of the firm and the level of CEO entrenchment (E-Index). All the control variables are defined as in the data section. The control variable size potentially captures firms' ability to access the capital market for financing (Opler *et al.* 1999). Tangibility helps to control for firms' capability of obtaining LCs because tangible assets can be more easily used as collateral. Tobin's Q controls for firms' growth options. Therefore, firms with greater growth options will need more liquidity to undertake the new investment projects. R&D is also used to control for firms' growth opportunities; firms with greater R&D expenses tend to have a larger liquidity demand. Leverage is included in the model to control for firms' debt capacity and also firms' need for liquidity to service their debt payments.

Profit volatility (Profit-Volatility) and industry-sales-volatility (Industry volatility) provide controls for firms' demand for liquidity as we expect firms with more volatile profits to need more liquidity.

1.5.2 Proportion of LCs in Total Liquidity and CEO Entrenchment

Corporate liquidity policy has two important dimensions: one is the level of total liquidity and the other is proportion of each liquidity component in the total liquidity. Our first hypothesis (H_1) deals with the relationship between total liquidity and the level of CEO entrenchment while our second hypothesis (H_2) deals with the association between liquidity mix and CEO entrenchment. Following Sufi (2009), we define the total liquidity ratios as:

$$\text{LC ratio} = \frac{\text{Line of credit (LC)}}{\text{Line of credit (LC)} + \text{Cash}}$$

$$\text{Unused LC ratio} = \frac{\text{Unused Line of credit (ULC)}}{\text{Unused Line of credit (ULC)} + \text{Cash}}$$

The LC ratio, defined above, can demonstrate the relative importance of cash and LC in the firms' total liquidity. The ULC ratio reveals the proportion of unused (available) lines of credit (ULC) in available total liquidity. Liquidity mix, in terms of the proportions of cash and LCs in total liquidity, matters for the firm because these two components are not pure substitutes (Sufi, 2009, Acharya, 2010 and Demiroglu, 2011). Cash is unconditional liquidity, while LCs provide conditional liquidity with the conditioning variable being the compliance of the firm with all financial covenants associated with the LCs agreements. Besides, cash and LC are associated with different costs. The cost of holding cash is foregone interest while that of the LC is the

commitment fees and interest paid on the utilized portion of the LCs. The agency costs associated with holding cash and LC are also different. Cash can be more easily wasted by managers while LC is monitored by the lending bank and, hence, it is associated with less agency cost. This renders the liquidity mix an important component of the firms' liquidity policy. We design the LC and ULC ratios to measure the proportion of lines of credit in total liquidity. These ratios equal 1 minus the proportion of cash in total liquidity and unused liquidity, respectively.

The average LC ratio (LC/ (LC + cash)) in the sample is 55.2% with a standard deviation of 37.0%. This indicates that, on average, firms manage more than half (55.2%) of their liquidity needs using LC, suggesting that LC plays an important role in firms' liquidity management. Hence, neglecting LC in the study of firms' liquidity management is inappropriate and likely to lead to misleading conclusions. The average ULC ratio (ULC/ (ULC + cash)) in the sample is 48.3% with a standard deviation of 36.1%, indicating that ULC, which may be considered precautionary demand for liquidity, is also considerably high. As discussed by Sufi (2009), while some firms may have higher demand for total liquidity due to better or less predictable investment opportunities, these LC ratios should isolate the relative usage of LC versus cash in corporate liquidity management from firms' total demand for liquidity (Sufi, 2009). This is the same measure of LC ratio used in Sufi (2009) and Yun (2009). Our model can be analytically formulated as follows:

$$LC/(LC+cash) = \beta_1 * \text{E-Index} + \beta_2 * \text{size} + \beta_3 * \text{tangibility} + \beta_4 \text{net worth} + \beta_5 * Q + \beta_6 \text{profit Volatility} + \beta_7 * \text{Industry Volatility} + \beta_8 \text{Profitability} + \beta_9 \text{leverage} + \beta_{12} \text{dividend\_dummy} + \varepsilon \quad (3)$$

ULC/ (ULC +cash) = β_1*E-Index+β_2*size+ β_3*tangibility+ $\beta_4$net worth+ β_5*Q+ $\beta_6$profit Volatility+ β_7*Industry Volatility+ β_8Profitability + $\beta_9$leverage+ β_{12}dividend_dummy +ε (4)

According to our second hypothesis (H_2), we expect the entrenchment coefficient β_1 in equations (3) and (4) to be negative displaying an inverse relationship between the proportion of LC in corporate liquidity management and the level of CEO entrenchment. The control variables size, tangibility, net worth, Tobin's Q, profit volatility (Profit-Volatility), industry-sales-volatility (Industry-Volatility) and firm profitability are as defined in the data section and they are commonly used as control variables in the study of determinants of LC (Sufi, 2009; Acharya, 2010). We estimate the above two equations using the 2SLS to control for possible endogeneity of CEO entrenchment.

1.5.3 The Effect of CEO Entrenchment on LC over Assets

In this section we model the effect of CEO entrenchment on LC as a ratio of assets (LC/assets), instead of LC as a ratio of total liquidity (LC/ (LC + Cash)), used in Yun (2009), because it is superior to the latter measure as detailed below. Yun (2009) finds that the share of LC in total liquidity (LC/(LC + Cash)) declines with increasing anti-takeover protection, namely that when CEOs are more protected from takeover, they hold less LC and more cash because they can abuse it without worrying about being taken over (to avoid market discipline). However, Yun (2009)'s measure cannot uniquely delineate the relation between corporate governance and LC as it can be seen from the following scenarios. First, in this set up it is possible that the share of LC in total liquidity (LC/(LC + Cash)) declines with an increase in anti-takeover protection when LC is totally unassociated with changes in anti-takeover protection and only cash is increasing.

Second, it is possible that the (LC/(LC + Cash)) ratio declines when LC is decreasing and Cash is increasing such that the ratio falls. Third, it is possible that the LC/(LC + Cash) ratio declines but both LC and cash increase with changes in anti-takeover protection, but the increase in LC is smaller than the increase of cash. Accordingly, if we use the LC/(LC + Cash) ratio as the dependent variable, the source or the channel of the relationship between LC and CEO entrenchment cannot be exactly identified. Instead, our use of LC as a share of assets as the main dependent variable will help to reveal the relation between the LC and the level of CEO entrenchment, which has not yet been examined in the literature yet. Our regression model can be described as follows:

$$\text{LC/Assets} = \beta_1 * \text{E-Index} + \beta_2 * \text{size} + \beta_3 * \text{tangibility} + \beta_4 \text{net worth} + \beta_5 * Q + \beta_6 \text{profit Volatility} + \beta_7 * \text{Industry Volatility} + \beta_8 \text{Profitability} + \beta_9 \text{leverage} + \beta_{12} \text{dividend\_dummy} + \varepsilon \quad (5)$$

$$\text{ULC/Assets} = \beta_1 * \text{E-Index} + \beta_2 * \text{size} + \beta_3 * \text{tangibility} + \beta_4 \text{net worth} + \beta_5 * Q + \beta_6 \text{profit Volatility} + \beta_7 * \text{Industry Volatility} + \beta_8 \text{Profitability} + \beta_9 \text{leverage} + \beta_{12} \text{dividend\_dummy} + \varepsilon \quad (6)$$

Equation (5) captures the relation between the total LC (sum of used and unused) over assets and the level of CEO entrenchment. According to our third hypothesis (H_3), the sign of the entrenchment coefficient β_1 is expected to be positive as managers like the additional liquidity provided by the LC, despite the associated bank monitoring. The dependent variable in equation (6) is unused lines of credit (ULC/Assets). It is the amount of the LC available to the firm as a percentage of the firm's assets.

1.6 Empirical Results and Discussion

1.6.1 Total Liquidity and CEO Entrenchment

Table 1.2 column (1) reports the regression results of the association between unused liquidity as a percentage of assets (ULC + cash)/Assets and CEO entrenchment. The coefficient (β_1) of the entrenchment measure (the E-Index), is positive and significant at 1% level, indicating that entrenched CEOs tend to hold a greater percentage of their assets in the form of unused lines of credit (ULC) and cash as sources of liquidity. Thus, our first hypothesis (H_1) purporting that firms with entrenched CEOs hold more total liquidity is supported by the data. As pointed out in the introduction, two rationales can be offered for this finding. First, liquidity can help reduce the firm's liquidity risk, and, thus, allow entrenched CEOs to enjoy a "quiet life" and avoid creditor intervention due to default of debt obligations. Second, entrenched CEOs have strong incentives to hold excess liquidity because it is easy for them to use liquid assets for personal benefits such as perks and empire building, compared to other assets (Myers & Rajan 1998; Opler *et al.* 1999; Dittmar *et al.* 2003). In Table 1.2, column (2), consistent with the result found on unused liquidity of the firm, we find that firms' total liquidity ratio as a percentage of assets ((LC + cash)/Assets) is also positively related to the level of CEO entrenchment as the coefficient (β_1) of CEO entrenchment measure is positive and significant at the 1% level. It indicates that entrenched CEOs prefer to hold a great percentage of their assets in the form of lines of credit and cash which supports our first hypothesis (H1) too. The evidence here shows that entrenched CEOs would like to hold more total liquidity as measured by total line of credit and cash as well as unused liquidity as measured by unused line of credit and cash.

Table 1.2. Liquidity and CEO Entrenchment: 2SLS

Variables	(1) (ULC+ cash)/ Assets	(2) (LC +cash)/ Assets	(3) ULC/ (ULC + cash).	(4) LC/ (LC + cash).	(5) ULC/ Assets	(6) (LC)/ Assets	(7) Cash/ Assets
E-index	0.250***	0.255***	-0.169***	-0.168***	0.057***	0.065**	0.202***
	(0.063)	(0.061)	(0.047)	(0.046)	(0.021)	(0.027)	(0.055)
Size	-0.196***	-0.208***	0.087***	0.113***	-0.037***	-0.031**	-0.177***
	(0.035)	(0.034)	(0.026)	(0.025)	(0.011)	(0.015)	(0.030)
Tangibility	0.225	0.112	0.102	0.169	0.037	0.139**	0.078
	(0.157)	(0.153)	(0.109)	(0.106)	(0.048)	(0.062)	(0.137)
Tobin's Q	0.061***	0.058***	-0.003	-0.006	0.004*	0.005*	0.058***
	(0.006)	(0.006)	(0.005)	(0.005)	(0.002)	(0.003)	(0.006)
Net worth	-0.297***	-0.338***	-0.014	-0.017	-0.026	0.014	-0.315***
	(0.074)	(0.073)	(0.057)	(0.056)	(0.025)	(0.033)	(0.065)
Profitability	0.356***	0.379***	-0.240***	-0.291***	0.051	0.038	0.266***
	(0.113)	(0.110)	(0.086)	(0.084)	(0.038)	(0.049)	(0.099)
Industry	-1.197***	-1.136***	0.860***	0.812**	-0.235*	-0.316*	-0.890**
volatility	(0.425)	(0.414)	(0.326)	(0.317)	(0.143)	(0.187)	(0.373)
Profit	0.196***	0.172***	-0.001	0.002	-0.012	0.000	0.169***
volatility	(0.030)	(0.029)	(0.021)	(0.021)	(0.009)	(0.012)	(0.026)
Leverage	0.024	-0.115***	0.025	0.088***	0.002	0.171***	-0.115***
	(0.023)	(0.023)	(0.018)	(0.017)	(0.008)	(0.010)	(0.020)
Dividend	0.113***	0.106***	0.014	0.009	0.019	0.048***	0.085**
	(0.040)	(0.039)	(0.031)	(0.030)	(0.013)	(0.018)	(0.035)
Constant	0.925***	1.036***	0.308**	0.150	0.209***	0.089	0.861***
	(0.168)	(0.164)	(0.126)	(0.123)	(0.055)	(0.072)	(0.147)
Observations	933	933	933	933	933	933	933

These findings have important implications for the firm's shareholders and creditors. Our evidence shows that firms with entrenched CEOs are more likely to have excess liquidity, compared to what is needed for the firm's operation, because entrenchment per se does not raise the firm's need for liquidity. This excess liquidity is costly for the shareholders for several reasons. First, in general, liquid assets such as cash earn a lower return compared to other interest bearing and fixed assets of the firm. Second, excess cash can lead to free cash flow effects due to the agency problem between managers and shareholders. Entrenched managers tend to waste excess cash to pursue personal benefits such as perks and wasteful acquisitions for the purpose of empire building. Third, excessive use of LC is also not free to the firm as they need to pay an up-front commitment fee and also to pay interest on any used portion of the funds. To minimize the cost of holding excess liquidity, shareholders should better incentivize the management to reduce the effect of entrenched CEOs on firm liquidity e.g., by employing incentive-based compensation.

According to our findings, creditors of the firm seem to benefit from the excess liquidity associated with CEO entrenchment because it helps reduce the firm's liquidity risk and enable it to better service its debt obligation. It is notable, however, that creditors do not necessarily benefit from management entrenchment overall, though they benefit from the excess liquidity generated due to CEO entrenchment, because entrenched managers may take other actions, such as consuming high level of personal perks and wasting corporate cash, to destroy the value of creditors claims. The latter is a separate question and beyond the scope of the current research.

1.6.2 The Proportion of LC and CEO Entrenchment

Results on the association between the firm's unused lines of credit, as a proportion of total unused liquidity (ULC/ (ULC + cash)), and CEO entrenchment are presented in Table 1.2, column (3). According to the figures in this table, the proportion of the firms' unused lines of credit to total unused liquidity (ULC/ (ULC + cash)) is negatively related to the CEO entrenchment measure (E-Index), and the relationship is significant at 1% level. This finding shows that firms with entrenched CEOs tend to hold a greater proportion of their total unused liquidity in cash and a smaller proportion in ULC. This is consistent with the findings of Yun (2009) and supports our second hypothesis (H_2). As stated earlier, the rationale for entrenched CEO's preference for cash is that cash gives them more discretion over the use of it, while LCs are constrained by financial covenants and associated with bank monitoring. The result of the effect of CEO entrenchment on firms' LC ratio in total liquidity (LC/ (LC + cash)) is similar and it is shown in Column (4) Table 1.2.

Demiroglu et al. (2011) consider U.S. firms' holding of significant amount of cash puzzling because LCs have several advantages over cash as a liquidity source. First, since LCs are associated with financial covenants and bank monitoring, they can help to reduce the agency problems associated with holding cash. Second, LCs enjoy a tax benefit, compared to holding cash, because interest paid on LCs is tax-deductible (Demiroglu & James 2011). Our finding provides a partial solution to this puzzle as it attributes, at least some of this cash holding to CEO entrenchment.

1.6.3 Lines of Credit Scaled by Assets and CEO Entrenchment (LC/assets)

After establishing the negative relationship between the proportion of lines of credit in total liquidity (LC/(LC + cash)) and CEO entrenchment, we investigate which of the two components of liquidity, namely cash and LCs scaled over assets, is the source of this negative relationship (channel of the effect). To this end, we explore the relationship between each of the two components of liquidity (cash/assets, LC/assets) and CEO entrenchment, separately. Results are reported in Table 1.2 column (5)-(7). First, consistent with previous literature (Dittmar *et al.* 2003; Dittmar & Mahrt-Smith 2007; Chen & Chuang 2009), we find that the (cash/assets) ratio is positively related to the level of CEO entrenchment (column (7)). We also find that both total lines of credit ratio (LC/assets) and unused lines of credit ratio (ULC/assets) are positively associated with CEO entrenchment. The coefficients (β_1) of E-index, a measure of CEO entrenchment, are found to be positive and significant, in Table 1.2 columns (5)-(6), indicating that entrenched CEOs use more LCs, as well as more cash, despite the fact that LCs are associated with bank monitoring. Moreover, in terms of magnitude of the effect, we find that the effect of CEO entrenchment on cash is much larger than that on the LCs as seen by the magnitudes of the coefficients of E-index in column (7) and column (5)-(6). This result helps explain our finding that the proportion of LC in total liquidity (LC/ (LC + Cash)) is decreasing with CEO entrenchment, because the effect of CEO entrenchment on cash is much bigger than on LCs.

Our results provide significant insight into the findings of Yun (2009). While Yun (2009) documents that weaker external corporate governance is associated with lower share of LCs in total liquidity, we help to show where this negative relationship comes from. Our findings suggest that the level of CEO entrenchment, a flip side of corporate

governance, is positively associated with LCs and cash holdings. Thus, the proportion of LCs decreases with the entrenchment, because the increase in cash associated with entrenchment is much bigger than the increase in LCs. These findings are consistent with our results in section 6.1 that the firms' total liquidity is positively associated with entrenchment.

1.7 Robustness Checks

1.7.1 CEO Entrenchment and Corporate Liquidity: Panel Data Technique

We re-estimate equations (1)-(2) using the panel data technique with firm fixed effects as a robustness check. This technique controls for possible unobservable firm characteristics that affect the total liquidity ((LC + cash) /assets) and vary over time. The regression results are shown in Table 1.3. The coefficients of E-index are positive and significant in column (1)-(2), indicating that the unused liquidity of the firm (column 1) and total liquidity ((LC + cash)/assets) (column 2) are positively related to CEO entrenchment. This further confirms our result based on the 2SLS technique.

In Table 1.3 columns (3)-(4), we report our regression results for models (3)-(4) using the panel data procedure, controlling for firm fixed effects. According to the results in Table 1.3, the relation between the proportion of unused lines of credit (ULC/ (ULC +cash)) and the level of CEO entrenchment and the relation between the proportion of total lines of credit (LC/ (LC + cash)) and the level of CEO entrenchment is negative, which confirms the 2SLS results. As a robustness check, we also use the panel data technique with firm fixed effect to study the effect of CEO entrenchment on lines of credit over assets (LC/assets).

Table 1.3. Liquidity and CEO Entrenchment: Panel Technique with Firm Fixed Effect

Variables	(1) (ULC+ cash)/ Assets	(2) (LC+cash)/ Assets	(3) ULC / (ULC + cash)	(4) LC / (LC + cash)	(5) ULC/ Assets	(6) LC/ Assets
E-index	0.071*	0.073*	-0.035***	-0.030***	0.002	0.005
	(0.039)	(0.038)	(0.010)	(0.009)	(0.006)	(0.005)
Size	-0.110**	-0.122**	0.045***	0.056***	0.009	-0.003
	(0.048)	(0.048)	(0.012)	(0.012)	(0.008)	(0.006)
Tangibility	1.125***	1.055***	0.116	0.170**	0.088*	0.029
	(0.296)	(0.295)	(0.072)	(0.071)	(0.047)	(0.034)
Tobin's Q	0.155***	0.154***	-0.003	-0.006*	0.006***	0.005***
	(0.014)	(0.014)	(0.004)	(0.004)	(0.002)	(0.002)
Net worth	-0.896***	-0.951***	0.061*	0.029	0.029	-0.027
	(0.158)	(0.157)	(0.036)	(0.035)	(0.026)	(0.019)
Profitability	-1.070***	-1.002***	-0.157***	-0.211***	-0.057	0.011
	(0.240)	(0.239)	(0.060)	(0.059)	(0.039)	(0.028)
Industry	-0.453	-0.358	0.366	0.329	-0.105	-0.015
volatility	(1.025)	(1.019)	(0.256)	(0.251)	(0.168)	(0.121)
Profit volatility	1.510***	1.484***	0.004	0.010	0.011	-0.011
	(0.090)	(0.090)	(0.021)	(0.021)	(0.014)	(0.010)
Leverage	-0.406***	-0.493***	0.052	0.034	0.084***	-0.004
	(0.052)	(0.052)	(0.081)	(0.052)	(0.008)	(0.006)
Constant	0.864**	0.957***	0.233***	0.196**	0.033	0.115***
	(0.365)	(0.363)	(0.090)	(0.088)	(0.059)	(0.043)
Observations	1,290	1,290	1,304	1,304	1,303	1,303
R-squared	0.376	0.385	0.034	0.048	0.093	0.086

According to the figures in Table 1.3 columns (5)-(6), the coefficients of E-index still have the positive sign consistent with the sign obtained using the 2SLS technique. However, the coefficients of E-index are insignificant, perhaps because the sample size is not large enough for estimation with firm fixed effects or due to the endogeneity issue.

1.7.2 A Simultaneous Equations Model: The 3SLS Procedure

Since the regressions on the LC/assets ratio using panel data technique with firm fixed effects are insignificant possibly due to endogeneity issues, we employ another technique to estimate this relationship as a robustness check. Considering the possibility that firms make decisions on LC and cash simultaneously, we treat both LC/assets and cash/assets as endogenous variables. We formulate a simultaneous equation model as follows:

$$LC/Assets = \beta_1 * E\text{-}Index + \beta_2 * size + \beta_3 * tangibility + \beta_4 net\ worth + \beta_5 * Q + \beta_6 profit\ Volatility + \beta_7 * Industry\ Volatility + \beta_8 Profitability + \beta_9 leverage + \beta_{10} dividend\_dummy + \beta_{11} Cash/Assets + \varepsilon \quad (7)$$

$$Cash/Assets = \beta_1 * E\text{-}Index + \beta_2 * size + \beta_3 * tangibility + \beta_4 net\ worth + \beta_5 * Q + \beta_6 profit\ Volatility + \beta_7 * Industry\ Volatility + \beta_8 Profitability + \beta_9 leverage + \beta_{10} dividend\_dummy + \beta_{11}\ LC/\ Assets + \beta_{12} Capital\ expenditure + \beta_{13} Net\ working\ capital + \beta_{14} R\&D + \varepsilon \quad (8)$$

$$U\ LC/Assets = \beta_1 * E\text{-}Index + \beta_2 * size + \beta_3 * tangibility + \beta_4 net\ worth + \beta_5 * Q + \beta_6 profit\ Volatility + \beta_7 * Industry\ Volatility + \beta_8 Profitability + \beta_9 leverage + \beta_{10} dividend\_dummy + \beta_{11} Cash/Assets + \varepsilon \quad (9)$$

$$Cash/Assets = \beta_1 * E\text{-}Index + \beta_2 * size + \beta_3 * tangibility + \beta_4 net\ worth + \beta_5 * Q + \beta_6 profit\ Volatility + \beta_7 * Industry\ Volatility + \beta_8 Profitability + \beta_9 leverage + \beta_{10} dividend\_dummy + \beta_{11} ULC/\ assets + \beta_{12} Capital\ expenditure + \beta_{13} Net\ working\ capital + \beta_{14} R\&D + \varepsilon \quad (10)$$

The estimation results of the above model using the 3SLS are reported in Table 1.4. The coefficient of E-index in Table 1.4 column (1) is positive and significant; consistent with the results we obtained using the 2SLS. The result shows that firms with entrenched CEOs use more LCs to enjoy the liquidity they provide. The result on ULC/assets is similar.

1.7.3 The Entrenchment Effect on Corporate Liquidity for Small and Large Firms[7]

Corporate liquidity decisions are affected by market frictions that the firm faces. Smaller firms are expected to encounter more market frictions, compared to their larger counterparts, because of lack of considerable data and lack of information on these firms. In this subsection, we contrast the effect of CEO entrenchment on the total liquidity as well as the composition of total liquidity between small and large firms. To this end, we divide our sample into two subsamples of firms whose size is smaller/larger than the mean size of the whole sample and re-estimate equations (1)-(6) for the two subsamples separately using the 2sls regression technique and contrast the results.

[7] We also tried other specifications of the size effect on the relationship between CEO entrenchment and corporate liquidity management by adding an interaction term of the E-index and a dummy variable equals to 1 for firms in the small subsample, and 0 otherwise. Most of the effects are similar.

Table 1.4. Line of Credit Ratio (LC/Assets) and Entrenchment: A System Model Estimated Using 3SLS

Variables	(1) ULC/Assets	(2) LC/Assets
E-index	0.041**	0.056***
	(0.017)	(0.022)
Size	-0.038***	-0.055***
	(0.005)	(0.006)
Tangibility	-0.076***	-0.065***
	(0.019)	(0.025)
Tobin's Q	0.012***	0.018***
	(0.003)	(0.004)
Net worth	-0.115***	-0.121***
	(0.027)	(0.034)
Profitability	0.257***	0.292***
	(0.036)	(0.046)
Industry volatility	-0.015	0.000
	(0.081)	(0.104)
Profit volatility	0.027**	0.024
	(0.013)	(0.016)
Leverage	-0.026**	0.126***
	(0.011)	(0.014)
Dividend	0.015	0.010
	(0.011)	(0.014)
Cash/non cash total assets	-0.206***	-0.252***
	(0.029)	(0.036)
Constant	0.323***	0.398***
	(0.061)	(0.077)
Observations	882	882

The results on the relation between liquidity ratio ((LC + cash)/assets) and entrenchment for the two subsamples of small and large firms are reported in Table 1.5. According to these results, the positive association between total liquidity and entrenchment can be attributed to the smaller firms as the coefficients (β_1) of E-index for the small firms are positive and significant (columns (1)-(2)) while those for the large firms subsample are insignificant (columns (3)-(4)). This indicates that smaller firms with entrenched CEOs do and the larger firms do not maintain greater liquidity ratios. Two explanations may be offered for this finding. First, smaller firms are more opaque. In practice, there is much less information available to the market on small firms and less monitoring is undertaken of these firms by market participants. As a result the market discipline that could curb the sub-optimal liquidity holding is effective for large firms though not for the small firms, or, at least, not to the same extent. Second, the default risk reduction due to higher liquidity is more desirable for smaller firms because they do not have easy access to markets for hedging.

Table 1.6 reports the results on the relationship between the share of line of credit in total liquidity (LC/ (LC + cash)) and CEO entrenchment for small and large firms. From the figures in this Table, we can see that the negative relationship between the proportion of LC and entrenchment found for the whole sample is attributable to the subsample of large firms. The coefficients (β_1) of E-index for the latter subsample are negative and significant (columns (3)-(4)), while those for the small firms are insignificant. These results indicate that only entrenched CEOs in larger firms tend to hold a greater proportion of cash in total liquidity (smaller proportion of LC). Entrenched

Table 1.5. Total Liquidity Ratio and CEO Entrenchment (2SLS): Small versus Large Firms

	Small Firms		Large Firms	
	(1)	(2)	(3)	(4)
Variables	(LC +cash)/ Assets	(ULC +cash)/ Assets	(LC+cash)/ Assets	(ULC+cash)/ Assets
E-index	0.277**	0.238**	0.010	0.034
	(0.119)	(0.111)	(0.025)	(0.023)
Size	-0.258***	-0.281***	-0.032	-0.038**
	(0.055)	(0.051)	(0.019)	(0.017)
Tangibility	0.666**	0.480	0.339***	0.253***
	(0.318)	(0.295)	(0.087)	(0.077)
Q	0.077***	0.073***	-0.005	-0.004
	(0.010)	(0.009)	(0.005)	(0.004)
Net worth	-0.277**	-0.309***	-0.615***	-0.631***
	(0.118)	(0.110)	(0.060)	(0.053)
Profitability	0.335*	0.322*	0.231**	0.198*
	(0.178)	(0.165)	(0.116)	(0.103)
Industry	-1.048	-0.805	-0.263	-0.426**
volatility	(0.832)	(0.772)	(0.219)	(0.195)
Profit	0.198***	0.171***	-0.135	-0.102
volatility	(0.040)	(0.037)	(0.225)	(0.200)
Leverage	0.044	-0.100***	-0.431***	-0.510***
	(0.031)	(0.029)	(0.058)	(0.051)
Dividend	0.135*	0.125*	0.016	0.003
	(0.073)	(0.068)	(0.022)	(0.019)
R&D	0.002	0.002	-0.000	-0.000
	(0.004)	(0.004)	(0.000)	(0.000)
Net working	0.017***	0.016***	0.660***	0.725***
capital	(0.003)	(0.003)	(0.047)	(0.042)
Capital	0.601	0.708*	-0.406**	-0.449***
expenditure	(0.419)	(0.389)	(0.172)	(0.153)
Constant	1.010***	1.263***	0.619***	0.631***
	(0.338)	(0.313)	(0.122)	(0.108)
Observations	404	404	530	530

Table 1.6. Liquidity Mix and CEO Entrenchment (2SLS): Small versus Large Firms

	Small Firms		Large Firms	
	(1)	(2)	(3)	(4)
Variables	ULC/ (ULC + cash)	LC/ (LC + cash)	ULC/ (ULC + cash)	LC/ (LC + cash)
E-index	-0.045	-0.042	-0.116**	-0.153***
	(0.053)	(0.054)	(0.047)	(0.046)
Size	0.044*	0.098***	0.016	0.048
	(0.025)	(0.026)	(0.034)	(0.033)
Tangibility	-0.162	-0.018	0.146	0.259
	(0.128)	(0.131)	(0.160)	(0.158)
Tobin's Q	0.000	-0.001	-0.007	-0.007
	(0.004)	(0.004)	(0.009)	(0.008)
Net worth	0.085	0.074	0.619***	0.383***
	(0.053)	(0.054)	(0.111)	(0.109)
Profitability	-0.322***	-0.313***	0.153	-0.165
	(0.080)	(0.082)	(0.186)	(0.184)
Industry	-0.243	-0.360	1.539***	1.805***
volatility	(0.372)	(0.380)	(0.402)	(0.397)
Profit	-0.003	0.001	-1.165***	-1.314***
volatility	(0.016)	(0.017)	(0.430)	(0.424)
Leverage	-0.003	0.068***	0.930***	0.689***
	(0.014)	(0.014)	(0.105)	(0.104)
Dividend	-0.016	-0.047	0.060	0.093**
	(0.032)	(0.033)	(0.041)	(0.041)
Constant	0.299**	0.001	0.178	0.211
	(0.141)	(0.144)	(0.225)	(0.222)
Observations	404	404	530	530

CEOs in small firms are not holding a smaller proportion of LC in total liquidity. An explanation may be that smaller firms are more likely to be cash constrained and entrenched CEOs in these firms would want to use more LC to increase their total precautionary liquidity sources, despite the bank monitoring due to LC.

1.7.4 Entrenchment Effects on Liquidity: Opaque versus Transparent Firms

Opacity of the firm is also likely to affect the level of market frictions that the firm faces. Entrenched CEOs in more opaque firms are expected to have a greater chance to misuse the liquidity sources for personal benefits as they can hide from market discipline more easily. Thus, we expect entrenched CEOs in opaque firms to have a stronger incentive to hold liquidity. Following Livingston et. al, (2007), we use market to book (M/B) ratio as a measure of firm opacity and compare the effect of entrenchment on corporate liquidity management for firms with small/large market to book ratios. The market to book ratio has been widely used as a measure of a firm's growth opportunity in the corporate finance literature. Firms with a larger market to book ratio are more likely to be younger firms operating in newer industries with more growth opportunities which make them more opaque and harder to value (Livingston, et al 2007). To this end, we divide our sample into two subsamples comprised of firms with market to book ratios below/above the mean market to book ratio of the sample. We then estimate the models (Equations (1)-(6)) separately for the two subsamples using the 2SLS regression technique and compare the effects.

The results on the relation between liquidity ratio ((LC + Cash) /assets) and entrenchment for the two subsamples of opaque and transparent firms are reported in Table 1.7. According to the results, the positive association between liquidity of the firm

Table 1.7. Total Liquidity Ratio and CEO Entrenchment (2SLS): Opaque versus Transparent Firms

	Transparent Firms		Opaque Firms	
	(1)	(2)	(3)	(4)
Variables	(LC + Cash)/ Assets	(ULC +Cash)/ Assets	((LC +Cash)/ Assets	(ULC+Cash)/ Assets
E-index	0.026	0.038*	0.332***	0.334***
	(0.024)	(0.023)	(0.089)	(0.086)
Size	-0.015	-0.034*	-0.228***	-0.236***
	(0.022)	(0.021)	(0.044)	(0.043)
Tangibility	0.325***	0.192*	0.968***	0.766***
	(0.116)	(0.110)	(0.249)	(0.241)
Tobin's Q	0.009	0.011	0.054***	0.051***
	(0.027)	(0.026)	(0.008)	(0.008)
Net worth	-0.417***	-0.435***	-0.229*	-0.264**
	(0.064)	(0.061)	(0.120)	(0.116)
Profitability	0.151	0.208*	0.365**	0.351**
	(0.120)	(0.114)	(0.161)	(0.155)
Industry volatility	-0.583**	-0.703***	-0.890	-0.672
	(0.248)	(0.236)	(0.693)	(0.670)
Profit volatility	-0.249	0.005	0.238***	0.209***
	(0.277)	(0.264)	(0.035)	(0.034)
Leverage	-0.392***	-0.470***	0.051*	-0.091***
	(0.069)	(0.065)	(0.026)	(0.025)
Dividend	0.002	-0.002	0.146**	0.138**
	(0.029)	(0.028)	(0.060)	(0.058)
R&D	0.001	-0.001	0.000	0.000
	(0.002)	(0.002)	(0.000)	(0.000)
Net working capital	0.509***	0.495***	0.016***	0.016***
	(0.027)	(0.026)	(0.003)	(0.003)
Capex	-0.297	-0.272	0.066	0.306
	(0.209)	(0.199)	(0.356)	(0.344)
Constant	0.411***	0.525***	0.717***	0.817***
	(0.136)	(0.130)	(0.261)	(0.252)
Observations	459	459	473	473

and entrenchment found in the full sample are more significant in the opaque firm subsample. This result is consistent with our finding on small firm subsample, because small firms are generally more opaque. The coefficients (β1) of E-index in the liquidity ratio model for the opaque firm subsample, reported in Table 1.7 columns (3)-(4), are more stringently significant and larger in magnitude, compared to the coefficients of E-index for the transparent firm subsample, reported in Table 7 columns (1)-(2). These results tell us that the effect of entrenchment on firms' liquidity is more remarkable for the opaque firms, because entrenched CEOs in these firms have more discretion on the cash and LC, so that they tend to raise liquidity for their own purposes.

Table 1.8 reports the results on the relationship between the proportion of lines of credit (LC/LC + cash) and entrenchment. From the results we can see that the negative relationship between the proportion of LCs and entrenchment is much stronger and significant in the subsample of transparent firms. The finding is consistent with that on large firms due to similar reasons discussed there.

1.8 Conclusion

We investigate the relationship between corporate total liquidity ((cash + lines of credit)/assets) and CEO entrenchment. To our knowledge, we are the first to demonstrate that corporate liquidity including lines of credit is positively associated with CEO entrenchment. Entrenched CEOs prefer greater liquidity because it can help reduce firms' liquidity risk providing them with a "quiet life" in the form of a secured job and safer assets that they hold in the form of stocks and stock options of the firm. Greater liquidity also allows CEOs to pursue consumption of luxury personal perks, instead of maximizing shareholder wealth.

Table 1.8. Liquidity Mix and CEO Entrenchment (2SLS): Opaque versus Transparent Firms

	Transparent Firms		Opaque Firms	
	(1)	(2)	(3)	(4)
Variables	ULC / (ULC + cash)	LC / (LC + cash)	ULC / (ULC + cash)	LC / (LC + cash)
E-index	-0.107***	-0.179***	-0.085*	-0.090*
	(0.039)	(0.039)	(0.044)	(0.046)
Size	-0.020	0.071**	0.063***	0.074***
	(0.033)	(0.034)	(0.022)	(0.023)
tangibility	0.293*	0.526***	-0.279***	-0.200*
	(0.173)	(0.176)	(0.107)	(0.111)
Q	0.027	-0.014	-0.000	-0.002
	(0.044)	(0.045)	(0.004)	(0.004)
Net worth	0.574***	0.391***	-0.028	-0.046
	(0.105)	(0.107)	(0.060)	(0.063)
profitability	0.020	-0.227	-0.252***	-0.210**
	(0.186)	(0.189)	(0.080)	(0.083)
Industry	1.230***	1.580***	0.479	0.199
volatility	(0.404)	(0.411)	(0.349)	(0.362)
Profit volatility	-1.584***	-1.930***	-0.014	-0.013
	(0.450)	(0.457)	(0.016)	(0.017)
Leverage	0.723***	0.496***	-0.007	0.063***
	(0.110)	(0.112)	(0.013)	(0.014)
Dividend	0.098**	0.042	-0.022	0.000
	(0.046)	(0.047)	(0.030)	(0.032)
Constant	0.429**	0.190	0.325**	0.268**
	(0.205)	(0.209)	(0.128)	(0.133)
Observations	459	459	473	473

As a second step, we study the relationship between the proportion of lines of credit in total liquidity and the CEO entrenchment. We find that this proportion is negatively related to the CEO entrenchment. Possible rationales are that entrenched CEOs prefer cash to lines of credit because they have more flexibility over the use of cash, while lines of credit are monitored by the lending banks.

We further investigate the underlying channel of the effect for the negative relationship between the proportion of lines of credit in total liquidity and CEO entrenchment. Previous research finds that entrenched CEOs are inclined to hold excess cash (Dittmar *et al.* 2003; Dittmar & Mahrt-Smith 2007; Chen & Chuang 2009). The focus of our investigation is whether entrenched CEOs also hold greater lines of credit. We find that both lines of credit and unused lines of credit scaled by assets are positively related to the CEO entrenchment (E-index) suggesting that although lines of credit are associated with bank monitoring, entrenched managers still tend to hold greater amounts of lines of credit because of the additional liquidity they provide. This may occur because the monitoring is not effective or because access to the lines of credit is worthwhile despite the restrictions due to monitoring.

We also compare the effect of entrenchment on corporate liquidity decision for small versus big firms and opaque versus transparent firms. Since liquidity policy of the firm will be affected by the market frictions it faces and its degree of opacity, we expect that smaller and more opaque firms will be subject to more market frictions, and, therefore, the effect of CEO entrenchment on their liquidity management will be greater. Our data confirm these expectations demonstrating that the positive association between liquidity of the firm and CEO entrenchment found in the full sample can be attributed to

the smaller and/or more opaque firms. We also find that the negative relationship between the proportion of lines of credit in total liquidity and CEO entrenchment is stronger in transparent firms than the opaque firm subsample, indicating the former group's effect of entrenchment on line of credit share is stronger. In the context of liquidity mix, we find that large and transparent firms maintain a stronger negative relationship between the proportion of lines of credit over total liquidity and CEO entrenchment, compared to the small firm counterpart.

These findings have important implications for firms' shareholders and creditors. Our evidence shows that firms with entrenched CEOs are more likely to have excess liquidity, which is costly for the shareholders. We also show that this effect is stronger in smaller and opaque firms. Shareholders should better incentivize the management to reduce excess liquidity in order to minimize the cost associated with it. Our results further suggest that entrenched CEOs increase both cash holdings and lines of credit to increase liquidity, despite the fact that lines of credit are associated with bank monitoring. This may occur because bank monitoring associated with lines of credit is ineffective or because the costs associated with it are not high enough to counterbalance the desirability of liquidity. Shareholders should work to properly constrain and incentivize the managers to reduce excess liquidity, e.g., through distribution of cash as dividends or undertaking stock repurchase programs.

Our findings also suggest that creditors of the firm may benefit from the excess liquidity associated with entrenchment as excess liquidity can help reduce firms' liquidity and default risk and enable them to better service their debt obligations. Creditors can, thus, benefit from the excess liquidity associated with entrenched CEOs. It is notable,

however, that firm creditors do not necessarily benefit from entrenched management in general because other consequence of entrenchment may reduce the value of the firm, which is beyond the scope of this chapter.

CHAPTER 2

BANK HOLDING COMPANY PERFORMANCE, RISK AND "BUSY" BOARD OF DIRECTORS

2.1 Introduction

The governance of banking firms came under stricter scrutiny after the onset of the financial crisis of 2007-2009 because bank governance was believed to constitute a major contributory factor to the crisis (Kirkpatrick 2009; Adams & Mehran 2011). In the U.S., the Emergency Economic Stabilization Act (2008) limited the executive compensations of the CEOs.[8] Similarly, in the U.K. Sir David Walker was commissioned by the government to recommend measures to improve board-level governance at banks (Adams & Mehran 2011). Despite the important role of the board of directors in banking firms (Adams & Mehran 2003, 2011), most studies on the subject exclude financial firms.[9] Macey and O'Hara (2003) and Adams and Mehran (2003) have proposed that bank governance is unique because of the stricter nature of their regulatory constraints, high leverage in the industry and the potential for contagion across BHCs and from BHCs to the real economy. The uniqueness property of BHC boards suggests that their effects on bank performance and risk may be dissimilar to those of the boards for corporate firms and, hence, they are worthy of special attention.

Extant studies on board of directors are focused on the determinants of the size and the independence of the board and the effects of these board characteristics on firm

[8] This includes the discontinuation of tax deductibility for performance-based pay over $1 million and the requirement of special committees to review any executive compensation policies that may contain unduly large risk-inducing provisions.

[9] Brickley and James (1987), Brewer, Jackson and Jagtiani (2000), Byrd, Fraser, Lee and Williams (2001), Adams and Mehran (2003), and Adams & Mehran (2011) are exceptions.

value (Hermalin & Weisbach 1988; Yermack 1996; Hermalin & Weisbach 1998; Coles *et al.* 2008). The general consensus is that complex firms which need a greater level of advising by the boards have larger boards and a greater proportion of their directors are outside directors (Coles *et al.* 2008).

Recently, researchers have begun to look at the effect of "busy" or over-boarded directors, defined as directors serving on multiple boards, on the values of non-financial firms (Ferris *et al.* 2003; Fich & Shivdasani 2006). On the positive side, busy directors potentially have valuable knowledge and experience and enjoy reputational benefits while, on the negative side they may not have enough time and energy to monitor and advise the firm's management. The evidence is mixed. Ferris et al (2003), find no empirical evidence that busy boards harm firm performance, while Fich and Shivdasani (2006) identifying a board with more than 50% of its directors holding three or more directorships as a busy board and find a negative relationship between firm performance and busy boards. The performance measure used in both cases is Tobin's Q. Heretofore, no study has looked at the effect of busy boards on BHCs' behavioral patterns. According to Adams and Mehran (2003, 2011), the conflicting influences from bank regulators, shareholders and depositors may complicate the governance of BHCs rendering them unique in their impact. Specifically, since regulators and depositors are concerned with the safety and soundness of BHCs, while the shareholders aim to maximize shareholder value, the conflict of interest between these stakeholders could potentially affect the structure of the BHC board and their operations. Adams and Mehran (2003) report that in practice BHCs do have larger boards and a greater number of outside directors, compared to the manufacturing firms.

We examine the effect of busy directors on the performance and risk of BHCs. We define busy directors as directors with three or more directorships. We expect that busy directors will help improve BHC performance because they bring more experience and knowledge and provide better advising and monitoring functions, which are very valuable for BHCs, despite the burden that multiple directorships imposes on them. Consistent with this view, we find that BHCs with more busy directors have a better performance as measured by a higher return on assets (ROA), a higher Tobin's Q and a higher earnings and assets (EBIT) over total assets. We also find that BHCs with a greater number of "busy" directors have a lower level of total risk (the standard deviation of stock return), a lower market risk (the market beta of a CAPM model) and also a lower idiosyncratic risk (the standard error of the CAPM model). In addition, busy directors are negatively associated with BHC default risk level as measured by Z-score; a greater number of busy directors is associated with a higher Z-score.

Our findings contribute to the literature in at least four ways. First, we are the first to study the effect of busy board of directors on the performance of BHCs. We discover a positive relationship between BHC performance and the number of busy directors as they bring in more knowledge and experience to the BHC boards and perform a better monitoring and advising function. This factor seems to dominate the fact that they may be too busy to carry out these tasks. Second, we are the first to study the effect of busy boards on the risk dimension of BHCs. Previous studies on BHC governance mainly look at the effect of governance on the performance of BHCs. The risk taking behavior of BHCs is one of the main concerns of bank regulators due to its impact on depositors and spillover to the entire economy. The destructive contagion among financial institutions

and from the financial sector to the real sectors, an example of which was witnessed during the recent 2007-2009 crisis, only strengthens the importance of the risk effect of bank governance, in particular during the crises. Our finding of a negative relationship between BHC risk and the number of "busy" directors identifies a new factor that affects the risk taking behavior of BHCs. The effect of busy boards on performance and risk are found to be complements, rather than substitutes, although it is possible for BHCs to trade off returns for a lower level of risk.

Third, our findings support the argument of Adams and Mehran (2003, 2011) that governance of BHCs and non-financial corporations are different and, hence, it is improper to draw conclusions from research on the board of directors of non-financial firms for boards of BHCs. Our findings can help bank regulators and investors to have a better understanding of the role of the board of directors and its impact on BHC performance and risk, as they shed new light on how the unique features of the banking industry alter the impact of governance on BHCs and makes it dissimilar to those of non-financial firms. To improve the regulation on the governance of BHCs, bank regulators must take careful considerations of the unique features of BHC governance mechanisms. For example, the proposals on limiting the number of directorships for directors in non-financial corporations may be ill-advised for BHCs[10]. Shareholders of the BHCs will benefit from having "busy" directors on board, since "busy" directors are positively related to firm value as measured by Tobin's Q. BHC managers can expect to receive better advising from "busy" directors too.

[10] For example, the Council of Institutional Investors (1998) argues that directors with full time jobs should not serve on more than three or four other boards expect in unusual and highly specific circumstances. The National Association of Corporate Directors (1996) suggests that directors with full time positions should not serve on more than three or four other boards. (Ferris *et al.* 2003)

The remainder of the paper is organized as follows. Section 2.2 presents a brief review of literature and develops our hypotheses. In section 2.3, we describe the data and summary statistics and in section 2.4 we discuss the model and the estimation procedure. Sections 2.5 and 2.6 present the regression results and robustness tests, respectively, and section 2.7 concludes.

2.2 Related Literature and Testable Hypotheses

Dissimilarities between the corporate governance of BHCs and non-financial firms have attracted attention since the work of Macey and O'Hara (2003) who describe unique corporate governance features of commercial banks. According to their view, corporate governance of non-financial firms fits into the Anglo-American model, where the exclusive focus of corporate governance is to maximize shareholder value. However, banks are governed according to a variant of the Franco-German paradigm with the fiduciary duties of board of directors expanded beyond shareholders to include creditors (depositors and bond holders). Banks are different from non-financial firms in several dimensions. First, compared to non-financial firms, banks tend to have very little equity in their capital structure as 90% or more of their capital takes the form of debt. This translates into a substantial level of leverage. Second, banks are heavily exposed to maturity mismatch between their assets and liabilities as their liabilities are mainly in the form of short-term deposits, while their main assets are long-term loans. This maturity mismatch exposes banks to interest rate risk, liquidity risk and bank run problems. Heavy engagement in off balance sheet activities, especially by the large BHCs, only strengthens this problem. Third, bank failures, and even bank distress, exert considerable spillover effects on other banks, and the financial system as a whole, because of the banks'

liquidity provider function and, consequently, exerts a major impact on the overall economy. Fourth, banks are also unique in the sense that they manage the national payment mechanism and direct loans to favored sectors such as housing and agriculture (Saunders and Cornett, 2011). Fifth, banks are the most heavily regulated firms and subject to much support and scrutiny from the regulatory bodies. Support programs such as the coverage by the Federal Deposit Insurance Corporation (FDIC), emergency loans through the Discount Window and bailout plans such as the Troubled Asset relief Program (TARP) give shareholders and bank managers incentives to engage in excessive risk taking and makes depositors less interested in monitoring the banks. On the other hand, regulatory constraints on product lines, geographic expansion, and loan limits as well as reporting requirements and bank examination are designed to limit bank risk taking. These characteristics make the banking industry distinct from their corporate counterparts and may alter the structure and the workings of the bank boards.

Empirical studies on the differences between board of directors of BHCs and non-financial firms are mainly focused on the differences in board size and proportion of outside directors. Booth, Cornet and Tehranian (2002) also find that, when comparing the largest 100 banks to the largest 100 industrial firms for the year 1999, banks have larger boards with a greater number of outside directors. Similarly, Adams and Mehran (2003) find that in comparing a sample of 35 large BHCs and a sample of large manufacturing firms for the 1986-1999 period, based on Yermack (1996), the same results hold. More recently, Adams (2011), using the S&P 1500 firms over the 1996-2007 period, confirms that banks have larger and more independent boards, compared to non-financial firms.

Boards of directors perform two main functions: monitoring and advising. There are extensive studies on how the size and independence of the board affects its monitoring function in the corporate sector and relatively fewer studies on the banking sector (Hermalin & Weisbach 1988; Booth & Deli 1996; Hermalin & Weisbach 1998; Dalton *et al.* 1999; Boone *et al.* 2007; Coles *et al.* 2008; Harris & Raviv 2008). The general consensus of the literature on the effect of monitoring function of the board of directors is that smaller boards with a greater number of outside directors are more effective in monitoring the management. According to Jensen (1993), "…as groups increase in size they become less effective because the coordination and process problems overwhelm the advantages from having more people to draw on". Smaller boards are more effective because they can reduce the cost of director free-riding and coordination (Jensen 1993).

Yermack (1996) also finds evidence that smaller boards are more effective in monitoring. Using a sample of 452 large U.S industrial corporations between 1984 and 1991, he finds an inverse relationship between firm market value and the size of the board of directors. Further, he finds that in firms with smaller boards, CEOs are more likely to be replaced after poor performance and, the pay-performance sensitivity of CEO compensation is greater in magnitude. Raheja (2005) models the determinants of the proportion of outsiders versus insiders in corporate boards. She argues that insiders have more firm-specific information, but may lack independence from CEO while outsiders are more independent, and, thus, more effective in monitoring the CEOs. The overall prediction of Raheja (2005) model is that the monitoring function of the boards is associated with the number of outside directors. Several studies provide evidence that

boards with a greater number of outside directors are more effective in monitoring and behave more along the lines of the shareholders' interest. For example, Weisbach (1988) finds that in outsider-dominated boards, CEOs are more likely to resign after poor performance (Weisbach, 1988). Rosenstein and Wyatt (1990) find positive share-price reaction surrounding outside director appointments. Byrd & Hickman (1992) find that bidding firms with at least 50% independent outside directors have significantly greater announcement-date abnormal returns. Brickley et al (1994) find that the average stock-market reaction to the announcement of poison pills is positive for firms with a majority of outside directors and negative for firms without a majority of outside directors.

Compared to the monitoring role of the board of directors, their advisory role has received less attention (Coles *et al.* 2008).[11] According to Dalton et al (1999), larger boards provide better advice to the management and the better advice mainly comes from the outside directors. Fich (2005) reports that firms like to appoint CEOs of other firms as directors because of their ability to provide expert advice. Coles et al. (2008) argue that boards of directors of complex firms, defined as large diversified firms with greater debt in their capital structure, need to play a larger role in advising the management. They argue that complex firms should have larger boards with more outside directors, because larger boards and boards with more outside directors potentially bring in more experience and knowledge and offer better advice (Hermalin & Weisbach 1988; Dalton *et al.* 1999; Agrawal & Knoeber 2001; Fich 2005). Using data on industrial firms from 1992 to 2001, these authors find that complex firms, as defined above, do indeed have larger boards. They also find that, in complex firms, firm performance, measured by Tobin's Q, is

[11] Exceptions include Klein 1998, Booth &Deli 1999, Agrawal &Knoeber 2001, Adams and Mehran 2003 and Adams and Ferreira 2007.

positively associated with board size. They argue that the positive relationship between Tobin's Q and the board size in complex firms is driven by outside directors, because outside directors provide a better advising function to the management (Coles *et al.* 2008).

Klein (1998) argues that complex firms need more advising from their boards. According to the three criteria of size, extent of diversification and debt intensity**,** most BHCs can be viewed as complex and, hence, we expect their boards to be large and to provide them a stronger advising function, compared to manufacturing firms. Consistent with Coles et al (2008), data show that BHCs indeed have larger boards with greater proportions of outside directors (Adams & Mehran 2003; Pathan & Skully 2010). This finding provides some evidence on the importance of the advising function of the BHC boards. Adams and Mehran (2011) also find evidence that BHC performance is positively associated with the size of BHC boards.

It is generally argued that directors who serve on multiple boards on the one hand tend to have valuable knowledge, experience and reputation, and on the other hand they tend to be too busy, in the sense that they do not have enough time and energy to monitor or advise the firm. Ferris et al. (2003) were the first to study the effect of busy boards of directors on non-financial firm performance. They find that directors of larger firms and profitable firms are more likely to hold multiple directorships in other firms. This finding raises the endogeneity issue in the study on the effect of busy directors on firm performance; directors in more profitable and large firms are more likely to attract additional directorships, and additional directorships may be beneficial to firm performance at the same time. The main finding of the Ferris et al. (2003) study is that sitting on multiple boards does not cause directors to shirk their responsibilities and firms

with busy directors are not associated with a higher probability of securities fraud litigation.

Fich and Shivdasani (2006) also study the effect of busy directors on the monitoring function of the boards and on firm performance. The main question the authors pose is whether busy boards are effective monitors. They identify a board as busy if a majority of its outside directors sit on three or more boards; a measure different from Ferris et al. (2003). They find evidence that busy boards harm firm performance in the sense that firms with busy boards have lower market-to-book ratios, weaker profitability, and lower sensitivity of CEO turnover to firm performance.

The studies by Ferris (2003) and Fich and Shivdasani (2006) on the effect of busy boards are carried out in the context of industrial firms. To our knowledge, no similar studies are conducted for BHCs. As discussed earlier, there are reasons to believe that the effects of busy directors on BHCs are dissimilar to those for non-financial firms. Since BHCs can fall into the category of complex firms, as defined in Coles et al. (2008), and they are known to be opaque (Morgan, 2002), they are likely to require more advising from their boards. Adams & Mehran (2003) and Pathan & Skully (2010) find that, compared to industrial firms, BHCs have larger boards with more outside directors, suggesting that BHCs feel a need for greater advising from boards, consistent with the argument of Dalten et al (1999) and Hermalin and Weisbach (1988). Busy outside directors are expected to bring in more valuable experience and knowledge and to provide a better advising function and to reduce the free-riding problem and coordination cost of large boards at the same time. Banks' primary business is to accept deposits and to make loans. Busy directors with knowledge in different industries will help banks

make more profitable loans. Also with the advancement of technology and involvement of banks in investment banking and securities trading business, and increasing off-balance sheet activities, they have become more and more complex and require more advising from their boards. According to the bank holding company supervision manual publish by the Federal Reserve, the board of directors of bank holding companies should actively monitor the performance and risk of the bank holding company. They have the responsibilities to approve major policies, procedures and business strategies adopted by the BHC. The board also has the ultimate responsibility to oversight the risk-taking activities including operational risk, credit-risk, market risk, liquidity risk, and also risks involved in securities and derivative contracts. Thus, we expect busy directors to help improve BHC performance and control risks. The above discussion leads to the following hypotheses:

H_1: directors with multiple directorships improve the performance of BHCs where performance is measured by Tobin's Q, ROA, and EBIT/total assets.

H_2: directors with multiple directorships are associated with lower BHC risk.

H_3: BHCs with more busy directors will have a lower percentage of non-performing assets over total assets.

In these hypotheses systematic risk is measured by market beta while credit risk is measured by the percentage of non-performing assets over total assets as a proxy for asset quality. One major concern about busy directors is that they may shirk their responsibilities because they do not have enough time and energy. We argue that this is less likely in the case of BHCs for several reasons. First, BHCs directors are under more scrutiny compared to the corporate firms because they are held responsible not only to

shareholders, but also to bank depositors and regulators (Adams, 2008). Directors of BHCs also face great liability risk, since courts can hold bank directors to a higher standard of duty of care than directors of non-bank corporations especially in case of a bank failure (Macey and O'Hara, 2003; Adams, 2008). At the same time, bank directors are exposed to higher monetary penalties imposed by bank regulators for violation of fiduciary duties (Macey and O'hara 2003; Adams, 2008). We argue that these factors will help alleviate the problem of busy directors shirking their responsibilities. One simple way to evaluate the diligence of directors is to examine their attendance of board meetings, which is emphasized in numerous codes of conduct of bank directors. Attendance of board meetings is a necessary way for directors to obtain information, participate in decision-making and avoid any personal liabilities (Adams 2003). If busy directors do not shirk their responsibilities, we expect that they will not fail the attendance requirement of the board meetings. Thus, we propose:

H_4: *The busyness of the board of directors will not raise their probability of failing the 75% attendance criterion of board meetings* (i.e., to become problem directors).

2.3 Data and Summary Statistics

The data on the board of directors of BHCs are obtained from Corporate Library. This data set has information on various characteristics of the directors of BHCs, as well as non-financial corporations, including the age of the director, the number of years the director has worked for the company as a director, the classification of the director as inside director, outside director, and outside-related director (defined below), the total number of directorships the director holds in other companies, etc. To identify a BHC, we manually check each firm in the data set of corporate library against the list of BHCs

provided by the Federal Reserve Bank of Chicago[12]. After identification of the BHCs, we use BANK COMPUSTAT to extract the financial information of the BHCs and the ExecuComp dataset to obtain information about the compensation of the CEOs. We merge together the data on boards of directors from Corporate Library, financial data from BANK COMPUSTAT and data on CEO compensation from Execucomp. The merge creates a data set containing a sample of 116 BHCs from 2001 to 2010.

2.3.1 Variable Construction

We define busy directors as directors who hold three or more directorships. A similar measure is used in Fich (2003) and Ferris (2006). Board size is the total number of directors. Board age is the average age of the directors. Inside directors are defined as directors who are also officers of the company. Outside directors are independent directors on the board[13]. Following Coles et al (2006), CEO pay-performance-sensitivity (delta) is defined as the change in the dollar value of the CEOs' wealth for a one percentage point change in stock price. BHC size is defined as the natural log of total BHC assets. Leverage is defined as total liabilities over total assets and reflects capital adequacy. BHC risk is the standard deviation of BHC monthly stock returns. Three measures of BHC performance are used. ROA is net income over total assets. Tobin's Q is the ratio of market to book value of assets. EBIT/TA is the ratio of earnings before interest and taxes to total assets. Following Adams and Mehran (2003), and Laeven and Levine (2007), Tobin's Q is calculated as the {market value of equity + book value of assets – book value of equity}/book value of assets.

[12] Federal Reserve Bank of Chicago provides a list of BHCs on its website. The website link is as follows: http://www.chicagofed.org/webpages/banking/financial_institution_reports/bhc_data.cfm

[13] For a detailed definition and classification of insider versus outside directors, please refer to the data manual of corporate library.

Four measures of risk are used. First, total risk of BHCs or the standard deviation of BHC daily stock return. Second, the market risk of the BHC stock (beta) derived from a capital asset pricing model (CAPM). Third, the idiosyncratic risk of BHCs, measured by the standard deviation of the regression residuals of the CAPM model. Similar measures of BHC risks are used in the studies by Saunders et al (1990), Esty and Megginson (2003), Laeven and Levine (2009), and Bai and Elyasiani (2013). Fourth, Z-score, distance to default, is calculated as (ROA+CAR)/σ(ROA), where CAR is the capital-asset ratio. Z-score measures the probability of insolvency for a bank. Banks with a higher Z-score have relatively more profits to cover their debt and, therefore, a lower default risk (Bai and Elyasiani, 2013). Following Laeven and Levine (2009) and Bai and Elyasiani (2013), we use the natural logarithm of the Z-score as the measure of bank stability. Appendix A provides a detailed definition of all the variables used in the paper.

2.3.2 Summary Statistics

The summary statistics are presented in Table 2.1 for BHCs in the sample for the period 2001-2010. The BHCs in our sample have the average total asset size of $ 82.892 billion indicating the presence of some very large banking firms. We use the natural logarithm of total assets to measure bank size in order to reduce the effect of large banks on our results because asset size is highly skewed to the right. According to the figures in Table 1, the average ROA of BHCs in our sample is about 0.9%. The average market to book ratio is about 1.077 showing growth potential, and the ratio of EBIT over total assets is 2.4%. The average standard deviation of monthly stock return of BHCs is about

Table 2.1. Summary Statistics of Sample BHCs

Variable	N	Mean	STD	Min	Max
BHC financials					
Total assets($billions)	748	82.892	170.637	2.711	707.121
Leverage	748	0.898	0.028	0.828	0.939
BHC Risk	748	0.080	0.048	0.003	0.202
Delta ($thousands)	748	286.569	414.582	3.574	1592.681
BHC performance Measures					
ROA	748	0.009	0.009	-0.020	0.019
Tobin's Q	748	1.077	0.074	0.965	1.231
EBIT	746	0.024	0.011	-0.004	0.043
BHC risk measures					
Z-score	663	3.891	1.216	1.815	6.328
Total Risk	748	0.025	0.016	0.009	0.066
Market Risk	748	1.319	0.461	0.604	2.262
Idiosyncratic Risk	748	0.019	0.011	0.008	0.049
Board Characteristics					
Board Size	748	13.592	3.180	8.000	20.000
Board Age	748	60.831	3.286	51.643	73.364
Mean-Multi Directorship	748	1.821	0.893	1.000	6.400
Number of busy directors	748	2.623	3.059	0.000	9.000
% of outside directors	748	0.724	0.130	0.444	0.909

0.08 and the average total risk of the BHCs is 2.5%. The average market beta of BHCs is 1.319. BHCs are highly leveraged with the ratio of total liabilities over total assets standing at 0.898. On average, BHC boards have 13.59 directors with an average age of 61 and each director holds about 1.82 directorships. In comparison to Adams and Mehran (2011), our sample has a slightly smaller ROA (0.9% versus 1%), and a slightly bigger market to book ratio (1.08 versus 1.05). The board size is slightly smaller in our sample (13.59 directors versus around 17).

2.4 Model and Methodology

2.4.1 Busy Directors and BHC Performances

Given the possible endogeneity problem between BHC performance and the number of busy directors (Ferris *et al.* 2003), we formulate a simultaneous equation model in which both performance and the number of busy director are treated as endogenous variables. The model can be described as:

$$performance_i = \alpha_0 + \alpha_1 number\ of\ busy\ directors_i + \emptyset P + \gamma Year\ Dummy_{1-9} + \varepsilon_i \quad (1)$$

$$number\ of\ busy\ director_i = \alpha_0 + \alpha_1 Performance_i + \emptyset S + \gamma Year\ Dummy_{1-9} + \varepsilon_i \quad (2)$$

Measures of BHC performance employed include return on assets (ROA), Tobin's Q and the ratio of earnings before interest and taxes (EBIT) to total assets, as defined in the data section. The independent variable of main interest is the number of busy directors; namely directors who hold three or more directorships on the board. The vector P of control variables in the performance model is chosen mostly based on Morck et al (1989), McConnell and Servaes (1990), Woidtke (2002), and Elyasiani and Jia

(2008). The control variables include BHC size, BHC risk, leverage, and CEO pay-performance-sensitivity. All variables are as defined in the data section.

The model is estimated using the three-stage least squares (3SLS) method to account for mutual interdependence of performance and number of busy directors. A proper instrumental variable must satisfy the following two conditions. First, it should be related to the variable it serves as an instrument for. Second, it should be unrelated to the error in the model (Elyasiani and Jia 2008). The instrument we use for busy board of directors is the number of public firms headquartered in the same city as recorded in Compustat. We argue that directors on BHCs headquartered in cities with a lot of other business are more likely to find director position in other companies. So we expect the number of busy director the BHC has will be positively related to the number of public firms headquartered in the same city. However, the number of public firms headquartered in the same city is unlikely to affect the performance and risks of the BHCs. We test the relevance of the instrument, and it passes our test.

2.4.2 Busy Directors and BHC Risk

We also study the effect of busy boards on three market-based risk measures including total risk, systematic risk and idiosyncratic risk, as well as the accounting-based Z-score measure of BHCs default risk. We use a two-factor CAPM model to estimate the market risk and the interest rate risk exposure of BHCs. The model can be described as follows:

$$R_{BHC} = \alpha_0 + \beta_1 market\ return + \beta_2 riskfree\ rate + \varepsilon \quad (3)$$

In this model, R_{BHC} is the daily return on the BHC stock, market return is defined as the return on the equally-weighted market index and the risk-free rate is the daily three month T-bill rate. We incorporate the interest rate risk into the traditional CAPM model because a lot of studies on BHC stock return find that BHCs are exposed to interest rate risk, besides the market risk (Choi, Elyasiani, Kopecky, 1992; Song 1994; Flannery, Hameed, Harjes, 1997; Elyasiani and Mansur, 1998). We use daily stock return data from 2001 to 2010 to estimate the market model, since our data on directors cover the 2001 to 2010 period. We use an autoregressive model of the first order (AR (1)) to estimate the unanticipated changes in the risk-free rate and employ the residuals of the AR (1) process of interest rate in equation (3) to estimate the market risk (beta) and the idiosyncratic risk of BHCs. Thus, the total BHC risk is defined as the standard deviation of its daily stock return and the idiosyncratic risk refers to the standard deviation of the regression errors of the above model or the portion of stock return of BHC that could not be explained by the market return and interest rate.

When compared to the accounting-based measures, the advantages of the market-based measures include that they are forward looking, namely that they incorporate all the current and expected future information. However, the market measures of risks are relatively noisy and do not directly reflect the insolvency risk of BHCs. (Bai and Elyasiani, 2013). Thus, following Laeven and Levine (2009) and Bai and Elyasiani (2013), we also employ the Z-score as a measure of BHCs risk. Compared to the market-based risk measures discussed earlier, Z-Score directly measures the bank's insolvency risk, that is, the probability of default, which depositors and deposit insurers express primary concern (Bai and Elyasiani 2013).

BHC risk and the number of busy directors are mutually interdependent because on the one hand busy directors have the skills to affect risk and on the other hand BHCs with a certain level of risk may seek busy directors to address their risk concerns. Hence, we formulate a simultaneous equation model in which both risk and director busyness are treated as endogenous variables.

$$BHC\ risk_i = \alpha_0 + \alpha_1 Busyboard_i + \emptyset W + \gamma Year\ Dummy_{1-9} + \varepsilon_i \qquad (4)$$

$$Busyboard_i = \alpha_0 + \alpha_1 BHC\ risk_i + \emptyset V + \gamma Year\ Dummy_{1-9} + \varepsilon_i \qquad (5)$$

Equation (4) and (5) describe the interdependence between BHC risk and the busyness of board of directors. In equation (4), risk of the BHC is modeled as a linear function of the busyness of the board of directors. In equation (5), the busyness of board of directors of BHC is modeled as a linear function of the BHC risk. The model is estimated using the 3SLS method with the number of other public firms headquartered in the same city as recorded in Compustat as the instrument variables for busy board of directors.

2.4.3 Busy Directors and non-Performing Assets of BHCs

According to the bank holding company supervision manual published by the Federal Reserve, it is the responsibility of the board of directors of the bank holding company to ensure that there is an effective loan-review system and controls that can accurately and timely identify, monitor the asset quality of the bank holding company, and to ensure the prompt charge-off of loans. To shed light on the effect of busy directors on the BHC asset quality, we test the effect of busy directors on their non-performing assets which is a measure of BHC asset quality (Brewer and Jackson, 2006). The

dependent variable we use is the ratio of non-performing assets over total assets of BHCs. The model estimated is as follows:

$$Non-performing\ assets = \beta_0 + \beta_1 Busy\ director + contol\ variables + \varepsilon \quad (6)$$

$$Busy\ director = \beta_0 + \beta_1 non-performing\ assets + contol\ variables + \varepsilon \quad (7)$$

This model is estimated using the 3SLS technique. We expect the coefficient of busy directors in the non-performing asset equation to be negative if busy directors can better perform the advising and monitoring functions with their knowledge and experience associated with sitting on multiple boards. The control variables in the non-performance asset equation include BHC size, leverage, risk, profitability (EBIT over total assets), the board size (the total number of directors on the board), the CEO incentive (pay-performance sensitivity of CEO). We expect that BHCs with incentive-based CEO pay will have a smaller credit risk because the incentive-based CEO pay-structure aligns the interests of the management and shareholders. BHCs risks are expected to be positively related to the credit risk.

2.4.4 Attendance of Board Meetings by Busy Directors

To test whether busy directors shirk their responsibilities, including attending board meetings, we examine the effect of busyness of directors on their attendance of board meetings. Because data on the actual frequency of attendance at board meetings are not publicly available, following Adams (2008), we examine whether or not board members were identified in the proxy statements as problem directors who failed to attend at least 75% of the board meetings they were supposed to attend. We employ a probit model to study whether being a busy director is associated with a higher

probability of becoming a problem director. The model estimated follows Adams (2008) and can be described as follows:

Problem director dummy= $\beta_0+\beta_1$busy director dummy+β_2 control variables +ε (8)

The dependent variable in equation (8) is set to 1 if the director is a problem director, namely that he/she failed the 75% attendance standards. The main independent variable we are interested in is the dummy variable identifying busy directors, i.e., directors who hold three or more directorships. Following Adams (2008), the control variables in the model include the director's stock ownership, gender, age, tenure, and being an active CEO, as well as the BHC's size, risk, and profitability (EBIT/Total assets) and the board size. The coefficient of the busyness variable measures its effect on the probability of becoming a problem director. [14]

If busy directors do not have a higher probability of becoming a problem director, we expect the coefficient of the busy director dummy to be insignificant. However, if busy directors do have a higher (lower) probability of becoming a problem director, the coefficient of the busy director dummy is expected to be positive (negative). It is theoretically possible that busy directors attend more meetings because they have greater incentives to learn from one meeting to be more effective in advising and monitoring the other firms on whose boards they serve. The stock ownership of the director is expected to negatively affect the probabilities of becoming a problem director because it will incentivize the director to attend more board meetings and to influence the decision

[14] Directors who are paid less may have weaker incentives to attend the meetings but data on directors pay are not publicly available. It is also notable that busy directors may fail to attend meetings more than other directors through less than 75% of the meetings. That data is also unavailable. To elaborate, busy directors may miss the meetings randomly because they do not want their absence to be obvious. They may also exert their influence directly on the CEO, outside the meeting.

process for their self-interest. In this scenario, the coefficient of director stock ownership is expected to be negative. The effect of board size is expected to be positive following Jensen (1993) because large boards are more likely to suffer from the free-riding and coordination problems. If the free time that a director has is a factor that affects the directors' attendance of board meetings, we expect that directors who are also active CEOs of other firms have a higher probability of becoming problem directors.

2.5 Empirical Results

2.5.1 Univariate Results

To evaluate the effect of busy directors on the performance and risks of BHCs, we divide our sample into two subsamples based on the median value of the number of busy directors. The median value of the number of busy directors for the whole sample is 1. The first subsample includes BHCs whose boards have either none or one busy director. The second subsample is comprised of BHCs whose boards have more than one busy directors. We compare the differences in the performance and risk measures of these two subsamples. According to the results reported in Table 2.2, BHCs with two or more busy directors exhibit better performance than those with none or only one busy director. Specifically, the former group has a greater Tobin's Q, ROA and EBIT over total asset, than the latter and the differences are all statistically significant at 1% level. These results are consistent with our first hypothesis (H_1) stating that busy directors will help improve the performance of BHCs because of their knowledge and experience accumulated while sitting on multiple boards; busy directors are a blessing, rather than of being a curse!

Table 2.2. Univariate Result

Variables	Busyboard=0	Busyboard=1	Difference
Tobin's Q	1.067	1.088	-0.021***
			(-3.96)
ROA	0.007	0.010	-0.003***
			(-4.54)
EBIT/Total Assets	0.022	0.027	-0.005***
			(-6.69)
Total Risk	0.029	0.021	0.008***
			(6.75)
Market Risk	1.399	1.230	0.168***
			(5.08)
Idiosyncratic Risk	0.022	0.016	0.006***
			(7.04)
Z-score	3.999	3.758	0.242**
			(2.56)

Table 2.2 also shows that BHCs with more than two busy directors have lower total risk, market risk and idiosyncratic risk compared to BHCs with none or only one busy director. The differences are all significant at 1% level. These results support our second hypothesis (H_2) purporting that busy directors help to reduce BHCs risks. The only conflicting result is that the subgroup of BHCs with more than one busy director has a lower z-score than the subsample comprised of BHCs with either none or one busy director indicating that the former group has a greater probability of failure. This result is not consistent with our hypothesis (H_3) that busy directors are associated with reduced credit risk of BHCs. One possible reason may be that the simplistic univariate framework does not control for other important factors that also affect the default risk of BHCs, such as BHC size, BHC risk and the profitability of BHCs. Next, we will present the multivariate results which avoid this shortcoming.

2.5.2 Multivariate Results

2.5.2.1 Busy Directors and BHCs Performance

The estimation results for the system-based relationship between BHC performance and busy directors are reported in Table 2.3. The performance measures including ROA, the EBIT ratio and Tobin's Q are all found to be positively and significantly associated with the measure of busy board of directors. This indicates that busy directors are helping BHCs to improve performance. The effects of busy directors on BHC performance are economically significant as well. One additional busy director on average increases the BHCs Tobin's Q by 0.011 (column (1)) or will help increase the ROA of BHCs by 30 basis points or increase the EBIT ratio by 0. 1%. This result shows that BHCs with more busy directors enjoy better performance, providing support for our first hypothesis (H_1) about the relationship between BHC performance and busy boards. The negative effects of being busy or over-boarded seem to be dominated by its positive effects.

The signs of the coefficients on the control variables for BHC performance model are consistent with existing literature. The coefficients of BHC size and leverage are negative, indicating that larger and more highly leveraged BHCs show a worse performance (Woidtke 2002; Anderson & Reeb 2003; Baele *et al.* 2007; Elyasiani & Jia 2008). The coefficient of CEO pay-performance-sensitivity (Delta) is positive and significant, indicating that BHCs whose CEO pays are closely related to bank performance have better performance because these CEOs have greater incentives, since their pays are closely related to the performance of the BHCs they are managing.

Table 2.3. BHC Performance and Busy Directors

Variables	Tobin's Q	ROA	EBIT
No. of Busy Directors	0.011***	0.0003*	0.001**
	(0.002)	(0.000)	(0.000)
% outside directors	-0.038**	-0.002	-0.003
	(0.017)	(0.002)	(0.002)
Board size	0.000	0.000	-0.000
	(0.001)	(0.000)	(0.000)
BHC size	-0.033***	-0.001***	-0.000
	(0.004)	(0.000)	(0.000)
BHC risk	-0.615***	-0.123***	-0.125***
	(0.064)	(0.007)	(0.008)
Pay-performance sensitivity	0.034***	0.002***	0.002**
	(0.007)	(0.001)	(0.001)
Leverage	0.201**	-0.034***	-0.031**
	(0.093)	(0.010)	(0.012)
Director stock owners ownership	-3.200**	-0.213	-0.381*
	(1.618)	(0.163)	(0.206)
Constant	1.269***	0.058***	0.066***
	(0.091)	(0.010)	(0.012)
Observations	568	568	568
R-squared	0.282	0.519	0.499

2.5.2.2 Busy Directors and BHCs Risk.

The estimation results for the relationship between BHC risk and busy board of directors are reported in Table 2.4. Columns 1-3 report the results on the total, market and idiosyncratic risks, respectively. The coefficients of busy board in all three columns are negative and significant at 5% indicating that BHCs with more busy directors have a lower total, market and idiosyncratic risks. These findings support our second hypothesis (H_2) purporting that busy boards embody more knowledge, skill and experience as well as greater reputation and they are capable of better advising and monitoring and unwilling to risk their reputation, resulting in lower BHC risk levels. The effect of busy boards on BHC default risk (Z-score), is positive and significant (column (4)), indicating that BHCs with busy boards have a lower default risk as proposed by our second hypothesis (H_2).

2.5.2.3 Busy Directors and non-Performing Assets (Credit Risk)

We also examine the relationship between an accounting risk measure, the ratio of non-performing assets over total assets, and busy directors. This ratio is a measure of the asset quality or credit risk of BHCs. Results based on 3SLS are, reported, in Column (1) of Table 2.5.[15] Consistent with our hypothesis (H_3), the coefficient of number of busy directors is negative and significant at 1% level, indicating that BHCs with more busy directors have a lower ratio of non-performing assets over total assets. The rationale is again that busy directors can provide more effective monitoring and better advise which improves the quality of the BHC loans. This finding is consistent with our earlier results

[15] The OLS results, reported in column 2, control for firm fixed effect and year fixed effect and serve as a robustness check.

Table 2.4. BHC Risk and Busy Directors

Variables	(1) Total Risk	(2) Market Risk	(3) Firm Risk	(4) Z-score
No. of busy Directors	-0.004***	-0.110***	-0.003***	0.650***
	(0.001)	(0.015)	(0.000)	(0.179)
Board size	0.001***	0.013**	0.000***	-0.038
	(0.000)	(0.005)	(0.000)	(0.030)
%outside directors	0.009***	0.088	0.005**	-0.908*
	(0.003)	(0.066)	(0.002)	(0.482)
BHC size	0.002***	0.034	0.002***	-1.187***
	(0.001)	(0.024)	(0.001)	(0.261)
EBIT	-0.374***	-0.533	-0.289***	0.354
	(0.067)	(1.692)	(0.048)	(0.642)
CEO pay performance	-0.001	-0.016	-0.001	0.348**
Sensitivity	(0.001)	(0.028)	(0.001)	(0.168)
Leverage	-0.004	0.194	-0.004	-3.629
	(0.019)	(0.380)	(0.013)	(2.554)
Director stock ownership	0.351	2.361	0.321	-51.762
	(0.310)	(6.075)	(0.218)	(40.279)
Firm Risk				-13.277***
				(2.543)
Constant	0.009	0.874*	0.011	20.604***
	(0.021)	(0.491)	(0.014)	(4.200)
Observations	568	568	568	557

Table 2.5. Busy Directors and BHCs' non-Performing Assets

Variables	(1) Non-Performing Assets/Total Assets	(2) Non-Performing Assets/Total Assets
No. of Busy directors	-0.004***	-0.0003**
	(0.001)	(0.0001)
Board size	0.0004*	0.0004***
	(0.000)	(0.0001)
%outside director	-0.006	-0.013***
	(0.004)	(0.003)
BHC size	0.004*	0.004***
	(0.002)	(0.001)
BHC risk	0.149***	0.116***
	(0.018)	(0.006)
CEO pay performance	- 0.000	-0.002*
sensitivity	(0.000)	(0.001)
BHC leverage	-0.020	-0.031
	(0.022)	(0.020)
Capital asset ratio	-0.088***	0.053***
	(0.024)	(0.016)
Constant	0.004	-0.009
	(0.030)	(0.024)
Firm fixed effect	No	Yes
Year fixed effect	Yes	Yes
Observations	637	661

indicating that BHCs with more busy directors have a better performance as measured by Tobin's Q, ROA, and EBIT/Total Assets. The effect on non-performing assets is large in magnitude and economically significant. Specifically, on average, one additional busy director will reduce the ratio of non-performing assets over total assets by about 0.4%.

The signs of the coefficients on the control variables for BHC credit risks are consistent with existing literature. The coefficient of BHC size is positive, indicating large BHCs have a higher ratio of non-performing assets over total assets. This may reflect their bolder attitude toward risk or their greater focus on riskier types of loans such as syndicated, foreign corporation and foreign government loans. The coefficient of BHC risk (the monthly standard deviation of BHC stock returns) on non-performing assets is positive and significant indicating that BHCs with higher risk have a higher ratio of non-performing assets over total assets as well. This may indicate reverse causality between the two variables as higher loan losses increase risk as measured by stock return volatility, or that BHCs taking bigger risks do so in different dimensions qualifying the two risk types as complements, rather than substitutes.

2.5.3 Busy Directors' Board Meeting Attendance

Probit and logit results on the relationship between problem directors and busy directors are presented in Table 2.6, columns (1-2), respectively. Probit and logit use different probability functions. While neither specification is clearly superior to the other, they do provide a check on the robustness of the findings based on one another. Our r esults show that busy directors do not exhibit a greater probability of becoming problem directors in terms of failing the attendance standard (attending 75% of the meetings). The coefficient of busy directors is insignificant, indicating that being a busy director does not

Table 2.6. Busy Directors' Board Meeting Attendance

Variables	(1) Probit	(2) Logit
Busy director dummy	0.111	0.328
	(0.101)	(0.249)
No. of Board Meetings	-0.035***	-0.089***
	(0.012)	(0.031)
Director stock ownership	-31.092**	-83.838**
	(15.689)	(41.877)
BHC size	-0.105***	-0.265***
	(0.033)	(0.083)
BHC risk	-0.830*	-2.205*
	(0.472)	(1.251)
Female dummy	-0.117	-0.331
	(0.137)	(0.359)
Tenure	-0.002	-0.004
	(0.006)	(0.016)
Age	0.003	0.007
	(0.006)	(0.016)
Board size	0.018**	0.046**
	(0.007)	(0.023)
EBIT	5.510	13.624
	(4.944)	(12.415)
Active CEO dummy	0.150	0.413*
	(0.098)	(0.239)
Year dummy variable	Yes	Yes
Constant	-1.256**	-1.775
	(0.548)	(1.387)
Observations	6,989	6,989

alter the probability for the director satisfying the 75% attendance standard. This result is consistent with Adam (2008), who also finds no evidence that the number of directorships held by a director increases his/her probability of becoming a problem director. This finding helps to reduce the concern that when directors are busy with multiple directorships, they get exhausted and shirk their responsibilities in advising and monitoring the firm. One reason for the finding of no association between busyness and satisfying the attendance standard may be that BHC regulators impose additional requirements on the attendance of BHCs board meetings, and BHC directors face more severe legal punishments for the damage they cause by their misconduct or neglect of their duties (Adams, 2008).

Most of the control variables of the regression have the expected signs. The coefficient of the director stock ownership is negative and significant at 5% level, indicating that directors who own more shares of the BHC have a lower probability of becoming problem directors. Stock ownership provides the directors with greater incentives to attend board meetings as they would share the benefits from it. The coefficient of number of board meetings held within the year is negative and significant, indicating when there are more board meetings within a year, the board of directors are less likely to miss the 75% attendance standard. The coefficient of board size is positive and significant, showing that directors of larger boards have more attendance problems, perhaps because larger boards are exposed to more free-riding and coordination problems, resulting in a disincentive for attendance. The demographic characteristics of directors including gender and age are not found to be related to the probability of becoming problem directors. Director tenure is also found to be unrelated to the probability of

becoming a problem director. The coefficients of BHCs size and risks are all negative and significant, indicating that directors in large BHCs and riskier BHCs have less attendance problems. This may be because such BHCs require more advising and monitoring, and directors on such boards have a heavier load of duties and are pressurized to a greater extent to attend the meetings. They may also receive larger payments that they do not like to forego. Moreover, what is notable is that directors who are also active CEOs in other companies are not found to have a higher probability of becoming a problem director as the coefficient of active CEO dummy is insignificant. This finding provides further evidence that the directors' free time, or lack of it, is not related to the probability of becoming problem directors.

In general, our finding that busy directors do not have a higher probability of becoming problem directors is consistent with the finding of Adams (2003) who finds the number of directorships held by the director to be unassociated with the probability of becoming a problem director. This finding alleviates some of the concerns about busy directors exerting less effort and shirking their responsibilities.

2.5.4 Busy Director Effects during the Recent Financial Crisis

After the onset of the financial crisis of 2008-2009 the governance of banking firms came under stricter scrutiny because it was perceived to be a culprit for the crisis (Kirkpatrick, 2009; Adams and Mehran, 2011). We investigate how the effect of busy directors on BHC performance and risk was altered during the recent crisis. Two scenarios are possible in this regard. First, "busy" directors may indeed become too exhausted during the crisis to play their roles as monitors and advisors, limiting their impact on firms' performance and risk, compared to the non-crisis time. Second, if the

busy directors do have the time, it is possible that their advising and monitoring functions become more fruitful during the crisis because their experience, skills and reputation may become crucial during crisis time strengthening their impact, compared to the ordinary times.

To test this hypothesis, we introduce a crisis dummy variable to identify the financial crisis period. This variable equals 1 for years 2008 and after, zero otherwise, because data frequency is annual. We include this dummy variable and its interaction with our main variable of interest, namely the number of busy directors on the board, in the simultaneous equation model describing BHC performance and risks (equations (1), (2) (4) and (5)). If the coefficient of the interaction term has the same (the opposite) sign as the coefficient of the variable busy directors, the effect of having busy directors is greater (smaller) during the crisis than the non-crisis period.

Results for the effect of busy directors on BHC performance are reported in Table 2.7. The coefficients of the interaction term between the crisis dummy and busy directors are positive and significant, indicating that the benefits of having busy directors on board are stronger in improving the BHC performance during the financial crisis, compared to the non-crisis time. Results for the effect of busy directors on BHC risks are reported in Table 2.8. The coefficients of the interaction term between the crisis dummy and busy directors are positive and significant for total risk and market risk. These results indicate that during the crisis time, the benefits of busy directors in reducing risk are smaller, compared to non-crisis time. It appears that the heavy effect of the crisis overwhelmed the role of the directors, making them incapable of exerting a considerable

Table 2.7. BHC Performance and Busy Directors During Recent Financial Crisis

Variables	(1) Tobin's Q	(2) EBIT	(3) ROA
No. of Busy director	0.008***	0.0003*	-0.001
	(0.002)	(0.0001)	(0.001)
Crisis*busy director	0.004*	0.001*	0.001*
	(0.002)	(0.000)	(0.000)
Crisis dummy	-0.028***	-0.008***	-0.006***
	(0.009)	(0.002)	(0.002)
Board size	0.000	0.000	0.000
	(0.001)	(0.000)	(0.000)
% outside director	-0.037**	-0.000	-0.001
	(0.016)	(0.002)	(0.002)
BHC size	-0.029***	0.003*	0.001
	(0.004)	(0.002)	(0.001)
BHC risk	-0.403***	-0.101***	-0.114***
	(0.078)	(0.011)	(0.010)
CEO pay performance sensitivity	0.0003***	0.0004*	0.0003***
	(0.000)	(0.000)	(0.000)
Leverage	0.131	-0.003	-0.026**
	(0.089)	(0.014)	(0.011)
Director stock ownership	-3.156**	-0.382*	-0.208
	(1.538)	(0.198)	(0.164)
Constant	1.284***	0.009	0.037*
	(0.087)	(0.025)	(0.020)
Observations	568	568	568

Table 2.8. BHC Risks and Busy Directors during Recent Financial Crisis

Variables	(1) Total Risk	(2) Market Risk	(3) Firm Risk	(4) Z-score
No. of Busy director	-0.002***	-0.078***	-0.001***	0.431*
	(0.000)	(0.015)	(0.000)	(0.239)
Crisis*busy director	0.001*	0.031**	0.000	-0.127
	(0.000)	(0.014)	(0.000)	(0.088)
Crisis	0.014***	0.051	0.010***	1.154***
	(0.001)	(0.055)	(0.001)	(0.386)
Board size	0.000	0.008	0.000	-0.017
	(0.000)	(0.005)	(0.000)	(0.032)
% outside director	0.010***	0.127	0.006***	-0.500
	(0.003)	(0.093)	(0.002)	(0.522)
BHC size	0.001	-0.028	0.000	-0.827**
	(0.001)	(0.024)	(0.000)	(0.325)
EBIT	-0.270***	-6.213***	-0.215***	5.743
	(0.048)	(1.756)	(0.036)	(10.907)
CEO pay performance sensitivity	-0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	0.012	-0.491	0.008	-1.060
	(0.015)	(0.510)	(0.011)	(2.643)
Director stock ownership	0.473*	-0.395	0.422**	-65.998*
	(0.249)	(8.670)	(0.181)	(39.007)
BHC risks				-12.589***
				(3.216)
Constant	0.003	2.101***	0.007	13.467***
	(0.014)	(0.540)	(0.011)	(5.227)
Observations	568	568	568	557

impact, even equivalent to what they had prior to the crisis. In other words, ordinary experience and wisdom of the directors was of little use in solving the problems caused by the crisis at least in the immediate future; the solution to the crisis simply required greater forces such as government support and positive macroeconomic effects.

2.5.5 Busy Directors' Board Meeting Attendance: Non-Financial Firms versus BHCs

Some busy directors of BHCs hold director positions in both BHCs and non-financial corporations. Given the stricter regulatory requirements for the BHC directors and the greater penalties imposed on BHC directors failing to attend the board meetings, we investigate the relative frequency of the board meeting attendance of the busy directors with positions in both BHC and non-financial boards to see whether they attend the BHC board meetings to the same or greater extent. This can be an indicator of their dedication and the importance they assign to their tasks as directors for the two groups of firms. To this end, we estimate the probability of a busy director of a BHC becoming a problem director as a function of the BHCs board and the board of the non-financial corporations. The dependent variable is a dummy variable identifying a problem director who fails the 75% attendance criteria of board meetings. The main independent variable of interest is a dummy variable identifying the directorship with BHCs. This setup will help us to shed light on whether the busy directors treat the board appointment of BHCs and non-financial corporations the same way and devote the same amount of efforts in attending the board meetings of the two types of firms or they value the board appointments of BHCs to a larger extent because of stricter regulatory pressure and greater penalty.

Results based on logit and probit models are presented in columns 1-2 of Table 2.9, respectively. The coefficient of the independent variables of interest, namely the BHC dummy variable, is negative and significant in both models indicating that busy directors are less likely to fail the 75% meeting attendance criteria for BHCs, compared to non-financial corporations. The finding provides some evidence that busy directors consider the board appointments of BHCs more important than that of the non-financial firms and devote more time attending the board meetings of BHCs. This finding also helps to partially explain why previous studies on the effect of busy board of directors on non-financial firm value find that busy directors harm firm performance as in Fich and Shivdasani (2006). This shows the effect of stricter regulation and penalty on failure to attend meetings and serves as a useful piece of information for bank regulators.

2.6 Robustness Check

To check the robustness of the findings, we re-estimate the relationship between BHC performance and busy directors using the OLS technique controlling for both firm and year fixed-effects. Results, reported in Table 2.10, are consistent with our results using the simultaneous equations model reported in columns The coefficients of busy directors in the models with the dependent variables Tobin' Q and EBIT/Total assets are both positive and significant indicating that BHCs with more busy directors have better performance as measured by either of these performance measures. The effects are both statistically and economically significant. The coefficients of the control variables in the 3SLS and OLS models also have the same signs.

Table 2.9. Busy Directors' Board Meeting Attendance of non-Finance Firm and BHCs

Variables	(1) Logit	(3) Probit
BHC dummy	-0.549***	-0.226***
	(0.126)	(0.051)
No. board meetings	-0.072***	-0.027***
	(0.014)	(0.005)
Board size	0.112***	0.049***
	(0.017)	(0.007)
% outside director	-0.702*	-0.293*
	(0.399)	(0.167)
Firm size	-0.111***	-0.048***
	(0.040)	(0.016)
Leverage	0.719*	0.245
	(0.437)	(0.181)
Tobin's Q	-0.237	-0.101
	(0.196)	(0.081)
ROA	-1.003	-0.444
	(2.457)	(1.005)
Female dummy	-0.013	-0.017
	(0.157)	(0.065)
Outside director dummy	0.211*	0.096*
	(0.120)	(0.050)
Director tenure	-0.012*	-0.006**
	(0.007)	(0.003)
Director age	0.019***	0.008***
	(0.007)	(0.003)
Director stock ownership	-6.640	-2.437
	(13.189)	(5.455)
Insider ownership	1.974***	0.874***
	(0.397)	(0.179)
Institutional ownership	0.373	0.145
	(0.260)	(0.108)
Constant	-4.794***	-2.401***
	(0.753)	(0.312)
Year dummy variable	Yes	Yes
Observations	21,140	21,140

Table 2.10. OLS Results of the Relationship Between Busy Directors and BHC Performance

Variables	(1) Tobin's Q	(2) ROA	(3) EBIT
No. of Busy directors	0.003***	0.0001	0.001***
	(0.001)	(0.0001)	(0.000)
Board size	-0.001	-0.0001	-0.0003***
	(0.001)	(0.0001)	(0.0001)
% outside directors	-0.064***	-0.003	-0.004*
	(0.018)	(0.002)	(0.002)
BHC size	-0.021***	-0.001**	-0.001
	(0.003)	(0.0003)	(0.0004)
BHC risk	-0.133***	-0.031***	-0.025***
	(0.021)	(0.003)	(0.004)
CEO pay performance	0.040***	0.003***	0.004***
Sensitivity	(0.006)	(0.001)	(0.001)
Leverage	-0.187*	-0.053***	-0.068***
	(0.106)	(0.010)	(0.015)
Director stock ownership	-6.163***	-0.344	-0.579**
	(1.778)	(0.252)	(0.277)
Constant	1.505***	0.073***	0.101***
	(0.103)	(0.009)	(0.014)
Observations	656	656	654
R-squared	0.437	0.510	0.388

We also re-estimate the relationship between BHCs risk and the number of busy directors using the OLS technique controlling for firm and year fixed effects. Results, reported in Table 2.11, are again consistent with what we found previously, namely that BHCs with more busy directors have a lower total, market and idiosyncratic risks. The coefficients of busy directors in the three models all have negative signs and are significant. This finding provides evidence that our results are robust to different estimation techniques. However, the coefficient of busy directors in the regression on z-score loses significance under OLS, showing the superiority of the system approach.

2.7 Conclusions

The failure and distress condition of a large number of financial institutions in the recent financial crisis, and its massive impact on the economy triggered an extensive discussion on the governance of these institutions and the effect of governance characteristics on the performance and risk of BHCs (Kirkpatrick 2009; Adams and Mehran 2011). As one important component of governance, the board of directors of BHCs receives much attention (Adams & Mehran 2003, 2011). Recent studies reveal that the boards of directors of BHCs are unique in the sense that they have features dissimilar to those of the industrial firms, e.g., in terms of having a larger board with a greater number of outside directors. This study contributes to this strand of literature by studying the effect of "busyness" of the directors on the performance and risk of BHCs.

We find a positive relationship between BHC performance and the number of busy directors, controlling for board size, indicating that BHCs with more busy directors enjoy better performance as measured by Tobin's Q, ROA and EBIT/Total Assets,

Table 2.11. OLS Results of the Relationship Between Busy Directors and BHC Risks

Variables	(1) Total Risk	(2) Market Risk	(3) Idiosyncratic Risk	(4) Z-score
No. of Busy	-0.023***	-0.016*	-0.019***	0.027
Directors	(0.004)	(0.009)	(0.005)	(0.027)
Board size	-0.009**	-0.009	-0.013***	0.036
	(0.004)	(0.007)	(0.004)	(0.023)
% outside directors	0.404***	0.275**	0.396***	0.026
	(0.076)	(0.139)	(0.085)	(0.434)
BHC size	-0.010	-0.168***	-0.006	0.281
	(0.035)	(0.063)	(0.040)	(0.225)
CEO pay performance	-0.083***	-0.225***	-0.086**	0.015
Sensitivity	(0.030)	(0.052)	(0.034)	(0.182)
Leverage	-0.567	-0.856	-0.211	-0.131
	(0.507)	(0.892)	(0.568)	(3.189)
CAR				4.925*
				(2.673)
Director stock	-4.318	-16.903	3.389	-10.553
Ownership	(10.920)	(19.104)	(12.227)	(58.750)
Constant	1.233**	4.034***	0.831	-0.267
	(0.615)	(1.071)	(0.689)	(4.098)
Observations	654	654	654	581
R-squared	0.576	0.692	0.478	0.651

possibly because as complex, opaque, highly leveraged and highly regulated firms (Coles et al., 2008), BHCs require more advising from their boards. Directors with multiple directorships are able to bring in more knowledge, information and experience accumulated by sitting on multiple boards, and, therefore, perform better monitoring and provide better advice to the management. Another explanation may be that BHCs have extensive interactions with different sectors of the economy by providing loans and accepting deposits, and busy directors who sit on multiple boards can accumulate knowledge and experience across industries and sectors, which are much valuable to BHCs.

We also find a negative relationship between BHC market-based risk measures and busy boards of directors, indicating that BHCs with more busy directors have a lower total, market, and idiosyncratic risks. The experience, knowledge and reputation accumulated with multiple directorships help busy directors to more effectively advise and monitor the management to reduce BHC risks. Using an accounting-based measure of BHCs risk, Z-score, we also find that BHCs with more busy directors are associated with a higher z-score (lower risk). The Z-score measures BHCs distance to default, and can be viewed as a measure of BHC stability. Our findings about the effect of busy directors on BHC performance and risks are robust to different estimation techniques and alternative measure of busy boards. We also document that busy directors are associated with improved BHC asset quality as measured by a lower ratio of non-performing assets over total assets. That is one of the channels identified in the paper on how busy directors help improve BHCs performance and reduce BHCs risks. Of course, there may be other channels not studied in the paper.

Moreover, we find that there is no relationship between being characterized as a busy director and the probability of becoming a problem director who fails the 75% attendance standard of board meetings. This can partially alleviate the concern that busy directors exert less effort and shirk their responsibilities because they are too busy. We also find that directors who are active CEOs of other companies are not associated with an increasing probability of becoming problem directors. The evidence shows that having less free time does not limit busy directors in performing their duties.

The findings have great implications for investors and bank regulators. They show that busy directors are beneficial to improved performance and reduced risk of BHCs. This feature should, therefore, be encouraged, rather than discouraged. At the same time, the findings provide another piece of evidence that boards of directors of BHCs are indeed different from that of industrial firms in terms of size, independence and busyness of the board, as well as the effects of these characteristics on BHC performance and risk. Bank regulators need to have in mind the unique features of BHC boards, and develop commensurate rules and regulations for BHCs to perform their functions more effectively. Regulators also need to be aware that the findings about board of directors of industrial corporation e.g., the proposal to limit the number of directorships that a director can hold, may not be applicable to BHCs. Research on the board of directors of BHCs deserves special attention and may produce industry-specific policy recommendations. Investors are better off with BHCs that have busy directors. Managers will like the help from busy directors, but may not want these directors because they will be looking over their shoulders more closely.

CHAPTER 3

CEO ENTRENCHMENT AND LOAN SYNDICATION

3.1 Introduction

Over the past decade, syndicated loans have played an increasingly important role in corporate financing. According to Sufi (2007), nearly one trillion dollar worth of new syndicated loans is made to U.S. non-financial corporations each year, which constitutes about 15% of the latter's aggregate debt outstanding. In 2009, the international syndicated loans market had a market value of $1.8 trillion, surpassing the international bond markets valued at $1.5 trillion (Chui et. al, 2010). The market value of global syndicated loans increased significantly after year 2009 and reached over $4 trillion in 2011. In the U.S., the top ten bank holding companies (BHCs) controlled 74.9% of the total syndicated loan market in 2012, with JP Morgan Chase being positioned at the top of the list with 983 deals and a total volume of over $291 billion (Table 3.1). Despite the importance of syndicated loans in corporate financing, research on these loans is relatively limited, in comparison with research on public equity and debt underwriting markets or venture capital (Sufi, 2007).

A syndicated loan is a loan offered to a firm by a team of two or more financial institutions (Sufi, 2007). Unlike a traditional bank loan which has only a single creditor, a syndicated loan involves a group of lenders including lead arrangers and participant lenders, both organized as financial institutions. The loan syndication process starts with the lead arranger signing a preliminary loan agreement, called a mandate, with the borrowing firm.

Table 3.1. Ranks of the U.S. Lead Arrangers in the Syndicated Loans Markets, 2012

Rank	Bank Holding Company	Volume ($ US)	Number of Deals	Market Share
1	JP Morgan Chase	291,542,474,621	983	18.50%
2	Bank of America Merrill Lynch	248,079,582,528	1,082	15.70%
3	Citi	171,490,758,250	415	10.90%
4	Wells Fargo & Company	145,094,689,960	846	9.20%
5	Barclays	90,711,740,979	308	5.80%
6	Credit Suisse	53,956,152,013	192	3.40%
7	Deutsche Bank	47,230,292,485	192	3.00%
8	Morgan Stanley	46,925,272,894	179	3.00%
9	RBS	45,027,072,959	237	2.90%
10	RBC Capital Markets	38,711,960,036	184	2.50%

Resources: Thomson Reuters league table. https://www.loanpricing.com/

The mandate specifies the terms of the loan including the loan amount, the approximate interest rate, loan covenants, fees, and collateral etc. After signing the mandate with the borrowing firm, the lead arranger will seek potential participants who would like to provide part of the loan and join the loan syndicate, and provide them with an information memorandum containing detailed information about the borrowing firm. The participating lenders will sign the loan agreement if they agree to join. The loan agreement specifies the purpose of the loan, the rate of interest, repayment schedule, loan security and covenants which are identical to all the lending parties. During the life of the loan, the lead arranger also takes on the primary information collection and monitoring responsibilities and acts as the agent bank by governing the terms of the loan, administering the drawdown of funds, calculating interest payment, and enforcing financial covenants (Sufi, 2007).

In the syndicate process, lead arrangers and participant lenders play remarkably different roles; the lead arranger is the primary information collector and distributor, and takes the primary monitoring responsibilities. The monitoring role of participant lenders is secondary; they may engage in "joint monitoring" the borrower, since they also have financial stakes in the borrower (Sufi, 2007). Besides the interest income, the lead arranger also receives fees for servicing the syndicated loans. These fees are paid by the borrowing firm (Sufi, 2007).

The syndication process, thus, generates an additional dimension of agency problem between the lead arranger and the participant lenders, besides the traditional agency cost of debt between the borrowing firm and the lenders, under the frame work of Holmstrom and Tirole (1997) (Lin et. al, 2012). In the loan syndication process, the lead arranger, holding only a portion of the loan itself, takes the primary responsibility of monitoring the borrower and servicing the loan, which is a costly task. At the same time, the efforts of the lead arranger are hard to observe and to evaluate, directly resulting in moral hazard and incentive problem between the lead arranger and the participant lenders. This important tier of agency problem is seldom studied in the literature. Despite the important role syndicated loans have played in corporate financing and the unique features of syndicated loans, especially the additional agency problem existing among syndicated lenders, the question about how loan syndicates are structured to address and mitigate moral hazard problems both at the borrowing firm and within the syndicate is seldom explored and still awaits an answer (Lin et.al, 2012).

In this paper, we investigate the effect of CEO entrenchment on the loan syndication structure. Two tiers of agency problems have bearings on this relationship;

the traditional agency cost of debt between borrower and lender (tier 1) and the agency problem between the lead arranger and the participant lenders (tier 2). Previous studies find that CEO entrenchment will have an impact on the firm's cash policy, investment policy and compensation policy (Myers and Rajan, 1998; Opler et al., 1999; Dittmar, 2003). However, the impact of CEO entrenchment on these two tiers of agency problem and how lenders choose the structure of the syndicated loans in response to them is less understood. This issue deserves more attention and exploration as detailed below.

According to the agency theory, managers acting as the agent of shareholders will pursue their own interest, unless they are properly incentivized and monitored to act in the best interest of shareholders. In firms with entrenched CEOs, the agency conflict between managers and shareholders are more intense because of CEO's tendencies towards empire building, excessive compensation or luxury perks. To elaborate, previous research documents that entrenched CEOs are more likely to engage in empire building investments and value-destroying acquisitions. In extreme cases, entrenched CEOs may even be involved in direct theft of corporate assets. Corporate resources are also more likely to be wasted by entrenched CEOs in the form of excessive compensation or luxury perks (Myers and Rajan, 1998; Opler et al, 1999; Dittmar, 2003). These activities may potentially impair the value of the collaterals placed on the loan, increase the firm's default risk probability, and raises the expected costs of financial distress as a consequence (Lin et al 2012). Thus, CEO entrenchment may require more intense due diligence and monitoring from the lenders, which will influence the loan syndicated structure. According to Sufi (2007), banks will form a concentrated syndicate to facilitate

the monitoring of the firm with a smaller number of lenders holding a big share of the loan.

Using loan syndication data from Dealscan for the sample period 1996 to 2011, we study the effect of CEO entrenchment on the loan syndication structure including the percentage of the loan retained by lead arranger, the number of participant lenders, the Herfindahl index of loan allocation concentration, the percentage of loan held by foreign lenders, and the number of foreign lenders. CEO entrenchment is measured by the entrenchment index (Eindex) designed by Bebchuk (2009) which is based on six anti-takeover provisions: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes and supermajority requirements for mergers and charter amendments[16]. We obtain four main results on syndicated loans made to firms with more entrenched CEOs, compared to the firms with less entrenched CEOs. First, the lead arrangers for these loans retain greater shares of these loans. Second, on average, these loans have a smaller number of participant lenders. Third, these loans are more tightly held among the lenders resulting in a larger Herfindahl index of loan allocation concentration. Fourth, foreign lenders, lenders headquartered outside the U.S., are involved in these loans to a more limited extent; the number of foreign lenders and the percentage of loans held by foreign lenders are both smaller.

This study contributes to several lines of literature. First, it contributes to the literature on the monitoring and certification role of banks. It provides new evidence that banks will form effective syndicated structures to facilitate the monitoring of the firms with more entrenched CEOs. We find that syndicated loans made to firms with more

[16] Eindex is widely used as a measure of CEO entrenchment in the literature, e.g. Bates, Becher, and Lemmon, 2008; Brown and Caylor, 2006; Cai, Garner and Walkling, 2008; Dittmar and Smith, 2007.

entrenched CEOs have a smaller number of lenders, and the lead arrangers in these loans retain a larger percentage of the loans. This syndicated structure will help the lenders to reduce the superfluous costs and inefficient free-riding. The larger share of loans retained by the lead arrangers will provide them with stronger incentives for collecting information and monitoring the borrowing firms. Second, this study contributes to the literature studying the effect of CEO entrenchment, or more broadly, on how corporate governance affects the agency conflicts between borrowers and lenders. The findings provide evidence that firms with more entrenched CEOs are subject to a deeper level of agency conflicts between the borrower and the lender, and necessitate a greater extent of monitoring from the lenders, leading to a concentrated syndicate structure formed to facilitate monitoring. Third, this study sheds lights on a new type of agency problem rarely studied in the literature; the agency problem between the lead arrangers and the participating lenders (Lin et. al, 2012). This type of agency problem affects the lead arranger's ability to attract potential participant lenders, and the lead arrangers' ability of risk sharing and diversification through syndication. It also affects the participation of other lenders. Fourth, this study contributes to the literature on the effect of CEO entrenchment on corporate financing by demonstrating the dependence of firms with entrenched CEOs on lead arrangers' retaining a larger loan share. The findings have great implications for the shareholders of the firms, the lead arrangers, the participating lenders as well as the regulators. A clear understanding of the two tiers of agency problems involved in the syndicated loans market emphasizes the importance of corporate governance mechanism to control for CEO entrenchment in order to mitigate its impact on corporate financing through syndicated loans and to reduce its dependence on lead

arrangers in attracting funds from participant lenders. It will also help the lenders to form efficient syndication structures to improve loan monitoring. The findings of this study will also benefit regulators with respect to the regulation and guidance of the syndicated loan market.

The remainder of the paper proceeds as follows: section 3.2 is a brief review of related literature and hypothesis development. Section 3.3 describes the data and the sample. Section 3.4 presents the regression results and discussion. Section 3.5 concludes the paper.

3.2 Related Literature and Hypothesis Development

The agency problem between managers and shareholders, and shareholders and creditors are essential elements of the effect of corporate governance and CEO entrenchment on various corporate policies and financial contracting practice (Jensen and Meckling, 1976; Holmstrom and Tirole, 1997). According to the agency theory, managers of the firms tend to pursue their own interests instead of maximizing shareholders' wealth if they are not properly incentivized and monitored with effective corporate governance mechanisms. Entrenched CEO's tendencies towards empire building, excessive compensation or luxury perks further exaggerate the agency conflict between managers and shareholders. For example, previous research finds evidence that entrenched CEOs are more likely to engage in empire building investments and value-destroying acquisitions than other firms. Entrenched CEOs are also more likely to waste corporate resources in the form of excessive compensation or luxury perks. In extreme cases, entrenched CEOs may even be involved in direct theft of corporate assets. (Myers and Rajan, 1998; Opler et al, 1999; Dittmar, 2003). These activities tend to increase the

firm's default risk probability, impair the values of the collaterals put on its debt, and raise the expected costs of financial distress as a consequence (Lin et al 2011; Lin et al 2012). Thus, CEO entrenchment may require more intense due diligence and monitoring from the lenders. Previous literature finds evidence that monitoring by private lenders is effective in addressing agency problems (Byers et al., 2008). The early theory of banking, including Leland and Pyle (1997) and Diamond (1984) emphasizes bank's specialness as delegated agents of monitoring and information collection. Previous research finds evidence that bank loans are value-enhancing for borrowers because banks provide monitoring and certification effects (James, 1987; Lummer and McConnell; Carey, et al, 1998; Denis and Mihov, 2003; Dahiya, et al, 2003; Byers, 2008).

The insights on joint monitoring described in Diamond's (1984) find direct application to the syndicated loan markets. First, according to Diamond (1984), loan monitoring by multiple lenders suffers from superfluous costs and inefficient free-riding. As argued above, loans made to firms with more entrenched CEOs may require more due diligence and monitoring from the lenders, which will worsen the free-riding problem of the lenders. This will predict that syndicated loans made to firms with entrenched CEOs will be more highly concentrated with fewer lenders. This prediction concerning the relationship between CEO entrenchment and loan syndication structure, namely concentration of the loan ownership among fewer lenders, is made under the first tier of agency problem between the borrower and the creditors. The discussion above leads to the following hypothesis:

H_1: syndicated loans made to firms with entrenched CEOs will have a smaller number of participating lenders.

H_2: syndicated loans made to firms with entrenched CEOs will be more closely held among the lenders, resulting in a larger Herfindahl index of loan allocation concentration.

As mentioned in the introduction section, the loan syndication process generates a second layer of moral hazard problem, namely, the agency problem between the lead arranger and participant lenders. In a loan syndication arrangement, the lead arranger is the delegated monitor with the primary responsibility of monitoring the firm. The monitoring is costly to the lead arranger and hard to observe and evaluate by other participant lenders. If the lead arranger is holding only a small portion of the loan, it has the incentive to shirk its responsibility because the financial stake it holds is disproportional to the monitoring responsibility it has to take. This will lead to a moral hazard problem between the lead arranger and the participant lenders under the framework of Holmstrom (1979) and Holmstrom and Tirole (1997). Lead arrangers holding a larger share of the loan will have greater incentives to monitor because they have more financial stake tied in the loan. We expect that for firms with entrenched CEOs, the moral hazard problem between the lead arranger and the participating lenders will be more severe, because the monitoring burden for the lead arranger is heavier, and the monitoring function is more of a necessity. Aware of this agency problem, participating lenders will ask the lead arranger to hold a greater fraction of the loan when the borrower requires more monitoring with due diligence (Lin et. al, 2012). The above discussion leads to the following hypotheses:

H_3: the lead arranger of a syndicated loan made to a firm with a more entrenched CEO retains a larger portion of the loan.

CEO entrenchment may also affect the syndicated loan structure in terms of the foreign lender participation. Previous literature generally agrees that greater geographical distance between the lender and the borrower makes it more difficult for the lender to conduct ex-ante loan screening and ex-post loan monitoring and as a consequence, results in higher agency costs (Stein, 2002; Esty, 2004; Lin et al 2012). Borrowing firms with entrenched CEOs may require more ex-ante screening and greater ex-post monitoring. Thus, foreign lenders may be less willing to participate in the syndicated loan arrangements to firms with entrenched CEOs. Moreover, according to Esty (2004), because foreign lenders are sometimes not treated fairly when there is loan default, especially in the situation of debt restructuring or collateral seizing, they are more concerned about expropriation risks (Lin et al 2012). For example, foreign banks may not get paid while the borrower's domestic banks get payments when the borrower defaults. Moreover, foreign-denominated loans may get paid at pre-devaluation rates. The secured or collateralized assets held by foreign creditors may also be sold by borrowers (Esty, 2004). Therefore, we expect a negative relationship between CEO entrenchment and the number of foreign lenders, and also the percentage of loans held by foreign lenders in the loan syndication. The above discussion leads to the following hypotheses:

H_4: syndicated loans made to firms with entrenched CEOs will have a smaller number of foreign lenders.

H_5: foreign lenders will hold a smaller portion of the syndicated loans made to firms with entrenched CEOs.

On the contrary, there are counter arguments that would result in a diffused structure of syndicated loans with less concentrated loan ownership and a larger number of lenders made to firms with more entrenched CEOs. Entrenched CEOs may exhibit

strong risk aversion, because managers hold an under-diversified human capital in the firm according to Fama (1980), and without effective corporate governance, such as in the case of entrenchment, the entrenched CEOs will exhibit strong risk aversion to safeguard their human capital. In this context, Jensen and Rubach (1983) argue that managers tend to reduce firm risk in order to increase their job security when anti-takeover protection are available and existing studies find evidence in support of this view. For example, Grinstein and Hribar (2004) argue that entrenched CEOs may reduce firm's risk through diversifying acquisitions. Pathan (2009) also finds evidence that CEO entrenchment negatively affects bank risk-taking in his sample of large U.S. bank holding companies. If entrenched CEOs are more risk-averse, and wish to reduce firm risk for personal benefits, it will help to reduce the agency conflict between the borrower and the creditors, since one of the major agency conflicts between borrowers and the creditors is the risk-shifting problem, that is, the borrower will adopt high risk projects to replace low risk projects As argued above, entrenched CEOs are less likely to engage in this type of risk shifting if they exhibit strong risk aversion to safeguard their human capital. Then loans made to firms with more entrenched CEOs may require less monitoring from the lenders. Under this scenario, we would expect firms with entrenched CEOs to have a diffused syndicate structure, because entrenchment would require less intensive monitoring from the creditors.

However, there are also arguments and evidence suggesting that entrenched CEOs may invest more in firm-specific human capital and in projects with long-term pay-offs, and may have more R&D expenses resulting in greater firm risk. R&D expenses and capital expenditure are widely used in the literature to measure firm risk-taking activities.

Higher capital expenditure on tangible assets indicates lower risk taking by the management (Bhagat and Welch, 1995; Kothari et al., 2002). On the contrary, R&D expenses are regarded as high risk activities in the literature because R&D expenses are usually associated with innovation and development of new products and services (King and Wen, 2011). Stein (1988) suggests that managers tend to make long-term investment with stronger anti-takeover protection. Jiraporn and Gleason (2007) find that firms with weaker shareholder rights have higher levels of debt. Giroud and Mueller (2010) find that firms with weaker corporate governance are associated with lower capital expenditure and higher R&D expense. Coles et al. (2009) find that entrenched managers tend to increase R&D intensity where entrenchment is measured by board co-option (the proportion of directors appointed after the CEO assumes office over the total number of directors). King and Wen (2011) also find that entrenched CEOs (weaker shareholder governance) make greater R&D expenditures. Furthermore, entrenched managers with better anti-takeover protection are less subject to the managerial myopia problem (DeAngelo and Rice, 1983; Stein, 1988) in the sense that they can invest in long term projects without worrying about job losses. The overall effect of CEO entrenchment on loan syndication structure remains an open empirical question, which we study in the paper.

Existing research on syndicated loans is relatively limited, although there are extensive studies on venture capital, public equity, and debt underwriting markets (Sufi, 2007). The existing literature mainly focuses on the lead arranger's syndication incentives, and on how borrower information opacity and the information asymmetry between borrowers and lenders affect the syndicate loan structure. For example, Simons

(1993) finds that the lead arranger's main syndication incentive is diversification. Lee and Mullineaux (2004) find that lenders form more concentrated syndicates when borrower information quality is lower. Sufi (2009) also finds that syndicated loans made to firms subject to more information asymmetry problem are more concentrated. In this paper, we investigate how the CEO entrenchment of the borrowing firm affects the syndication structure.

The most relevant paper in previous literature is Lin et al., (2012) which examines how the control rights and cash flow rights divergence of a borrowing firm's largest ultimate owner influence the concentration and composition of the firm's loan syndication structure in terms of foreign lenders participation and the overall lending expertise of the syndicated members. They find that lead arrangers form a more concentrated syndicate to facilitate enhanced due-diligence and monitoring when the control-ownership divergence is large, namely that the largest ultimate owner of the firm hold significantly more control rights of the firm compared to cash-flow rights.

3.3 Data and Summary Statistics

The data on loan syndication is obtained from DealScan, which contains detailed information on syndicated loan contract terms including loan amount, maturity, loan purposes, covenants, lead arrangers, and participant lenders. We use the entrenchment index (E-index), designed by Bebchuk et.al, (2009) as our measure of CEO entrenchment[17]. Bebchuk et.al (2009) examine the relative importance of the twenty-four provisions followed by the Investor Responsibility Research Center (IRRC) and constructs the index based on six of these provisions. The IRRC provisions are also used

[17] For detailed information on the design of the E-index, please refer to Bebchuk et. al (2009) The E-index data is available on the website: http://www.law.harvard.edu/faculty/bebchuk/.

in the construction of the corporate governance index (G-index) originated by Gompers, Ishii, and Metrick (2003). The six provisions include: staggered boards, limits to shareholder bylaw amendments, supermajority requirement for mergers and charter amendments, poison pills, and golden parachutes. The first four provisions serve as constitutional limitations that restrict shareholders' voting power. The last two provisions are directly related to takeover prospects (Bebchuk *et al.* 2009). An increase in the entrenchment index indicates a higher level of CEO entrenchment. Bebchuk et.al, (2009) find that firm value as measured by Tobin's Q is negatively associated with increases in the entrenchment index level for the 1990-2003 periods. They do not find any relationship between reduced firm valuation or negative abnormal return and the other eighteen IRRC provisions which are not included in the construction of entrenchment index.

The six provisions included in the entrenchment index (E-index) serve to strengthen the power of management by limiting the power of shareholders and providing the management with stronger anti-takeover protection. The provisions in the E-index are also provisions that receive most shareholder opposition according to the leading proxy solicitation firm Georgeson Shareholder (Bebchuk *et al.* 2009). The entrenchment index is widely used in the literature that examines the relation between shareholder rights and various corporate decisions and outcomes (Bates, Becher, and Lemmon, 2008; Brown and Caylor, 2006; Cai, Garner and Walkling, 2008; Dittmar and Smith, 2007; Bebchuk *et al.* 2009). The data used to construct the Eindex designed by Bebchuk (2009) are obtained from risk metrics.

We merge the data on loan syndication from Dealscan and CEO entrenchment data from risk metrics with borrowing firms' financial data from Compustat. The final sample period runs from 1996 to 2011 based on availability of data on syndicated loans. The summary statistics of the data are presented in Table 3.2. The average total assets of the borrowing firms in the sample are around $9,466 million with a standard deviation of $12,691 million. The profitability of the sample average firm, defined as net income divided by total assets (ROA), is around 13% with a standard deviation of about 6%. Tangible assets, defined as net property, plant, and equipment divided by total assets, for the sample firms is on average around 32% with a standard deviation of 23%. The sample firms' market to book ratio (M/B) is about 1.65 with a standard deviation of 0.68. The average loan size in the sample is about 527 million dollars with a standard deviation of 560 million dollars. The average loan maturity is about 40 months with a standard deviation of 19.88 months, which is comparable with the sample of Sufi (2009). The Herfindahl index of loan allocation among lenders stands at 0.17 with a standard deviation of 0.16. This indicates that the syndicated loans in the sample is not very closely held on average. A smaller value of Herfindahl index of loan allocation indicates that the loan is loosely held by the lenders, while a larger figure indicates that the loan is held in a more concentrated manner (tightly held). A Herfindahl index of loan allocation equal to 1 refers to the situation when there is only one lender holding 100% of the loan. The average number of lenders is 12.56 with a standard deviation of 7.89 lenders. The loan share held by lead lenders is 29.49% with a standard deviation of 23.04%. Detail definitions of the variables are provided in the appendix.

Table 3.2. Summary Statistics of the Sample of Syndicated Loan Borrowers

Variable	Obs	Mean	Std. Dev.	Min	Max
Borrower Characteristics					
Eindex	3759	2.25	1.25	0.00	6.00
Assets ($millions)	3759	9,466.00	12,691.00	332.00	47,326.00
Tangibility	3546	0.32	0.23	0.02	0.78
Tobin's Q	3721	1.65	0.68	0.96	3.47
Profitability	3570	0.13	0.06	0.03	0.27
Leverage	3757	0.61	0.16	0.30	0.90
Loan Characteristics					
Loan Maturity (Months)	3729	40.48	19.88	12.00	61.00
Loan Amount ($ Millions)	3759	527.00	560.00	40.00	2,080.00
Herfindahl Index of Loan Concentration	3759	0.17	0.16	0.04	0.68
% of loans held by lead lenders	3680	29.49	23.04	7.57	82.00
Total number of lenders	3759	12.56	7.89	2.00	29.00

3.4 Regression Results and Discussion

3.4.1 The Effect of CEO Entrenchment on Loan Syndication Structure

To study the effect of CEO entrenchment on the loan syndication structure, we estimate the following models using the ordinary least squares (OLS) regression technique.

Number of lenders = β_1Eindex+ λ borrower characteristics + γ loan characteristics + year dummy variables +ε (1)

Herfindahl index of loan concentration= β_1Eindex+ λ borrower characteristics + γ loan characteristics + year dummy variables +ε (2)

Percentage of loan held by lead arrangers= β_1Eindex+ λ borrower characteristics + γ loan characteristics + year dummy variables +ε (3)

Percentage of loan held by foreign lenders= β_1Eindex+ λ borrower characteristics + γ loan characteristics + year dummy variable+ε (4)

Number of foreign lenders= β_1Eindex+ λ borrower characteristics + γ loan characteristics + year dummy variables +ε (5)

The dependent variables are total number of lenders (1), the Herfindahl index of loan ownership concentration (2), the percentage of loan held by the lead arrangers (3), percentage of the loan held by foreign lenders (4) and the number of foreign lenders (5). These dependent variables are the main variables used in the loan syndication literature as a measure of loan syndication structure (Lin et al (2012) and Sufi (2007)). The main independent variable of interest is CEO entrenchment, as measured by Eindex designed by Bebchuk (2009). The control variables are chosen based on the previous literature on

loan syndication including Lin et al (2012) and Sufi (2007). We control for borrowing firm characteristics including firm size, profitability, leverage, market-to-book ratio (Tobin's Q) and asset tangibility. Detailed definitions of variables are provided in the data section and also in the appendix. Furthermore, for each firm, we construct the market based Z-score (MZ-score) as a measure of firms' insolvency risk. The MZ-Score measure is preferable to the traditional Z-Score, since it is a market-based measure which incorporates future information while the accounting-based Z-score only takes into account historic information. MZ-Score can be calculated analytically using the formula (MZ-Score= $(\overline{R}+1)/\sigma_R$), where $\overline{R}$ and σ_R are, respectively, the mean and the standard deviation of the monthly returns in a given year. MZ-Score is a risk-adjusted return measure because it accounts for both return and risk simultaneously. The larger the return and/or the lower the risk the higher the MZ-score will be. A large MZ-score indicates a lower insolvency risk.

Along with firm-specific variables, we also control for several loan characteristics including loan size, loan maturity, term loan dummy variable, and dummy variables for loan purposes. We classify the primary purposes of loans into four groups: debt repayments, general corporate purposes, financing acquisitions, and commercial paper backup. We control for industry fixed effects and year fixed effects in all our regression models. All standard errors are corrected for heteroskedasticity.

The result on the effect of CEO entrenchment on loan syndication structure is presented in Table 3.3. Column (1) in this Table reports the results on the effect of CEO entrenchment on the number of lenders. The coefficient of Eindex is negative and significant, indicating that syndicated loans made to firms with more entrenched CEOs

have a smaller number of lenders. This supports our first hypothesis (H_1) purporting that syndicated loans made to firms with more entrenched CEOs will have a smaller number of lenders in order to facilitate monitoring. Under the framework of Diamond (1984), when the borrowing firm requires more due-diligence and monitoring, syndicated loans will be structured with a smaller number of lenders to facilitate lender monitoring by reducing superfluous cost and free-riding problems associated with multiple lenders.

The regression result on the effect of CEO entrenchment on the Herfindahl index of loan allocation concentration is reported in Column (2) of Table 3.3. We do not find a significant relationship between the Herfindahl index of loan allocation concentration and CEO entrenchment. A possible explanation may be that the model suffers from endogeneity problems, which we will deal with in the next section. Column (3) in this table reports the results on the effect of CEO entrenchment on the percentage of loan held by the lead arrangers. The coefficient of Eindex is positive and significant, indicating that when lead arrangers make syndicated loans to firms with more entrenched CEOs, they retain a greater portion of the loan in their own portfolio. This result is consistent with our hypothesis (H_3) proposing that firms with entrenched CEOs requires more monitoring and due-diligence because entrenched CEOs tend to engage in activities such as empire-building, value-destroying acquisitions, and excess compensation, that may impair the value of the loan collateral, increase the firm's default risk, and result in higher expected costs of financial distress (Lin et al 2012, Lin et al 2011, Myers and Rajan, 1998; Opler et al, 1999; Dittmar, 2003).

Table 3.3. The effect of CEO Entrenchment on Syndication Structure: OLS Results

Variables	(1) Total Number of Lenders	(2) Herfindahl Index of Lenders' Shares	(3) Loans Held by Lead Arrangers (%)	(4) Number of Foreign Lenders	(5) Percentage of Loans Held by Foreign Lenders (%)
Eindex	-0.143*	-0.001	0.502*	-0.102**	-0.764***
	(0.077)	(0.002)	(0.293)	(0.049)	(0.253)
Log assets	1.052***	-0.002	0.643	0.921***	4.697***
	(0.126)	(0.003)	(0.432)	(0.072)	(0.366)
Leverage	2.427***	-0.049***	-9.581***	1.476***	1.835
	(0.668)	(0.017)	(2.560)	(0.429)	(2.209)
Profitability	2.628	-0.184***	-8.114	-0.027	-10.848
	(2.291)	(0.058)	(8.538)	(1.430)	(7.441)
Tobin's Q	-0.274	0.010*	-0.404	0.130	1.869***
	(0.205)	(0.005)	(0.761)	(0.128)	(0.669)
Tangibility	0.572	-0.001	-4.501***	0.302	4.943***
	(0.420)	(0.010)	(1.650)	(0.277)	(1.383)
MZ-score	-0.070***	-0.001**	0.028	-0.082***	-0.390***
	(0.017)	(0.000)	(0.062)	(0.010)	(0.051)
Log loan maturity	1.200***	-0.041***	-2.978***	0.196*	-1.505***
	(0.184)	(0.005)	(0.606)	(0.102)	(0.511)
Log loan amount	3.984***	-0.075***	-7.326***	1.932***	0.019
	(0.156)	(0.004)	(0.503)	(0.084)	(0.431)
Term loan dummy	-0.184	0.059***	10.622***	0.174	2.935***
	(0.359)	(0.010)	(1.070)	(0.177)	(0.926)
Constant	-78.882***	1.847***	185.241***	-41.680***	0.162
	(2.181)	(0.067)	(7.817)	(1.305)	(7.029)
Observations	3,352	3,352	3,283	3,352	2,575
R-squared	0.520	0.382	0.208	0.457	0.180

Consistent with the insights of Diamond (1984), the lead arranger's holding of a greater portion of the syndicated loan will facilitate lender monitoring and due diligence, because the lead arranger performs the primary role of monitoring in syndicated loans. This result suggests that syndicated loans are structured in such a way to reduce the agency problem between the lead arranger and the participant lenders. Lead arrangers retaining a greater portion of a syndicated loan will have stronger incentives to monitor the borrowing firms with entrenched CEOs which demand more monitoring and greater due diligence and, thus, reduce the agency problem between the lead arranger and the participating lenders. In other words, syndicated loans made to firms with entrenched CEOs are structured in such a way to reduce both the first tier of agency problem (agency problem between the borrower and the lender) and the second tier of agency problem (agency problem between the lead arranger and the participant lenders).

The results have great implications for the shareholders of the firms as well as the firm's creditors. It shows greater dependence of the firms with more entrenched CEOs on the lead arranges to get financing through syndicated loans. The lead arrangers have to hold a large share of the loan in order to encourage participation of other lenders. This will negatively affect lead arrangers' ability to achieve risk diversification through syndication since the lead arrangers have to hold a larger portion of the loans made to firms with more entrenched CEOs. On the other hand, shareholders of the firm with more entrenched CEOs may benefit from the more concentrated syndicate structure with a smaller number of lenders and the lead arrangers holding a great loan share because of the monitoring of the entrenched CEOs from the syndicated lenders.

Column (4) in Table 3.3 reports the result on the effect of CEO entrenchment on the number of foreign lenders. The coefficient of Eindex is negative and significant, indicating that fewer foreign lenders participate in syndicated loans made to borrowers with entrenched CEOs because the latter may require more ex-ante screening as well as ex-post monitoring, which foreign lenders want to avoid because they would get the same terms as other lenders but expect to be treated less favorably at times of corporate default situations, especially in debt restructuring or collateral seizing events (Lin et al 2012). For example, borrowers may repay domestic, but not foreign banks, replay foreign-denominated loans at pre-devaluation rates or sell secure or collateralized assets held by foreign creditors (Esty, 2004). This is consistent with our hypothesis H_4.

Column (5) in Table 3.3 reports the results on the effect of CEO entrenchment on the percentage of loan held by the foreign lenders. The coefficient of Eindex is again negative and significant, indicating that foreign lenders on average hold a smaller percentage of the syndicated loans made to firms with more entrenched CEOs. This result is consistent with our expectation that CEO entrenchment may negatively affect the participation of foreign lenders in the syndicated loans, consistent with our hypothesis H_5.

3.4.2 Endogeneity of CEO Entrenchment

In this section, we explore the potential endogeneity problem with the measure of CEO entrenchment. Thus far, we find that syndicated loans made to firms with entrenched CEOs are structured in such a way to reduce both the agency problem between the borrower and the lender, as a group, and the agency problem between the lead lender and the participant lenders. While it is unlikely that the direction of causality runs in the other direction, i.e. the syndication structure is causing CEO entrenchment, it

is possible that the borrowers may have some unaccounted for characteristics that jointly determine CEO entrenchment and the syndicate structure, for example, the risk profile of the business enterprise that the borrower operates.

To alleviate this concern, we adopt an analysis using a system model and the two-stage least squares (2SLS) estimation technique. This technique requires instrumental variables for CEO entrenchment that are related to this variable but not to loan syndication structure of the firm. We use the industry average CEO entrenchment index as the instrument for the firm's entrenchment index, because several recent studies employ industry level measures as an instrumental variable and argue that industry-level variables are more likely to be exogenous (John and Knyazeva, 2006; Knyazeva, 2009; John and Kadyrzhanova 2008).

Table 3.4 shows the results based on the 2SLS technique. Consistent with the evidence found using the OLS technique, we find that syndicated loans made to firms with more entrenched CEOs have a smaller number of lenders, the lead lenders hold a larger portion of the loan, involve fewer foreign lenders and the foreign lenders hold a smaller portion of these loans.

The difference between the results found using the 2SLS and the OLS techniques lies in the effect of CEO entrenchment on the Herfindahl index of loan allocation concentration. The coefficient of Eindex which was positive but insignificant when using the OLS, improves to become significant under the 2SLS procedure. The significance of the coefficient of Eindex is achieved because we controlled for the endogeneity of Eindex in our 2SLS regression using an instrument variable for Eindex. The result indicates that syndicated loans made to firms with more entrenched CEOs are more closely held among

Table 3.4. The effect of CEO Entrenchment on Syndication Structure: 2SLS Results

Variables	(1) Total Number of Lenders	(2) Herfindahl Index of Lenders' Shares	(3) Percentage of Loans Held by Lead Arrangers (%)	(4) Number of Foreign Lenders	(5) Percentage of Loans Held by Foreign Lenders (%)
Eindex	-0.257*	0.006*	0.955*	-0.150*	-0.852*
	(0.144)	(0.003)	(0.544)	(0.090)	(0.483)
Log assets	1.067***	-0.001	0.686	0.916***	4.231***
	(0.115)	(0.003)	(0.436)	(0.073)	(0.369)
Leverage	2.227***	-0.056***	-9.807***	1.483***	4.143*
	(0.674)	(0.016)	(2.572)	(0.429)	(2.244)
Profitability	2.597	- 0.163***	-9.039	-0.021	-10.515
	(2.244)	(0.053)	(8.558)	(1.430)	(7.630)
Tobin's Q	-0.354*	0.010**	-0.170	0.116	2.351***
	(0.203)	(0.005)	(0.776)	(0.130)	(0.696)
Tangibility	0.529	-0.008	-4.457***	0.309	6.193***
	(0.436)	(0.010)	(1.657)	(0.278)	(1.412)
MZ-score	-0.055***	-0.001	0.031	-0.081***	-0.355***
	(0.017)	(0.000)	(0.063)	(0.011)	(0.052)
Log loan maturity	1.261***	-0.035***	-2.925***	0.198*	-0.596
	(0.160)	(0.004)	(0.608)	(0.102)	(0.483)
Log loan amount	3.995***	-0.073***	-7.296***	1.934***	-0.135
	(0.132)	(0.003)	(0.505)	(0.084)	(0.441)
Term loan dummy	-0.196	0.063***	10.756***	0.173	2.978***
	(0.277)	(0.006)	(1.072)	(0.177)	(0.931)
Constant	-79.256***	1.761***	183.290***	-41.570***	1.401
	(2.073)	(0.049)	(7.923)	(1.317)	(7.245)
Observations	3,352	3,352	3,283	3,352	2,575

the lenders, resulting in a higher Herfindahl index of loan allocation syndication. This result supports our second hypothesis (H_2) suggesting that when CEOs are entrenched loan allocation will be more concentrated. According to Diamond (1984), the concentrated syndicate structure will facilitate the joint monitoring of the borrower by reducing the superfluous cost and lenders' free riding problem.

3.4.3 Simultaneous Equation Model: The 3SLS Regression Technique

In this section, we address the possibility that the total number of lenders, the loan share retained by the lead arrangers and the Herfindahl index of loan allocation concentration in the loan syndication structure may be determined simultaneously, and that they are all endogenous. It is possible that the number of lenders affects the loan share retained by the lead arrangers while the loan share retained by the lead arrangers also affects the number of lenders. In other words, the total number of lenders, the loan share retained by the lead arrangers and the Herfindahl index of loan allocation concentration may be determined simultaneously as jointly endogenous variables within a system. If these variables are indeed endogenous, ignoring the simultaneous nature of their interdependence can bias the regression results and lead to unreliable inferences. A system of equations treating both the number of lenders, the loan share retained by the lead arrangers and the Herfindahl index of loan allocation concentration as the endogenous variables addresses this concern. The system model is described as follows:

Number of lenders=β_1 percentage of loans held by lead arrangers + β_2Herfindahl index of loan concentration +β_3Eindex+γ borrower characteristics+β loan characteristics +ε

Herfindahl index of loan concentration= β_1 percentage of loan held by lead arrangers+ β_2 total number of lenders + β_3Eindex + γ borrower characteristics + λ loan characteristics +ε

Percentage of loan held by lead arrangers= β_1 total number of lenders + β_2 the Herfindahl index of loan concentration + β_3 Eindex + γ borrower characteristics +λ loan characteristics +ε

The above system of equations is estimated using the three-stage least squares (3SLS) procedure. The instrument variable used for Eindex is still the industry level average Eindex. Table 3.5 reports the regression results. Column (1) in this Table reports the result on the total number of lenders. The coefficient of Eindex in this model is negative and significant, indicating that syndicated loans made to firms with more entrenched CEOs have a smaller number of lenders. The result is consistent with our previous findings based on the OLS and the 2SLS techniques. Column (2) reports the result on the percentage of loan retained by lead lenders. The coefficient of Eindex in this equation is again positive and significant, indicating that for syndicated loans made to the firms with more entrenched CEOs, the lead lender retains a larger portion of the loan. This result is also consistent with those based on the OLS and the 2SLS techniques. Column (3) reports the result on the Herfindahl index of lenders' shares. The coefficient of Eindex is positive and significant, indicating that syndicated lenders form a concentrated syndicate with smaller number of lenders resulting in a larger Herfindahl index of loan allocation. This result is consistent with the result obtained using 2SLS regression technique too.

Table 3.5. The Effect of CEO Entrenchment on Syndication Structure: The 3SLS Results

Variables	(1) Total Number of Lenders	(2) Percentage of Loans Held by Lead Arrangers (%)	(3) Herfindahl Index of Lenders' Shares
Eindex	-0.575***	1.274***	0.007***
	(0.195)	(0.472)	(0.002)
Percentage of loans held by lead arrangers (%)	-0.443***		0.005***
	(0.038)		(0.000)
Total number of lenders		-2.276***	0.010***
		(0.222)	(0.002)
Herfindahl index of lenders' shares	80.757***	175.193***	
	(11.089)	(19.361)	
Log assets	1.627***	3.660***	-0.017***
	(0.164)	(0.421)	(0.003)
Leverage	2.307**	4.949**	-0.027**
	(0.981)	(2.368)	(0.011)
Profitability	10.624***	22.915***	-0.130***
	(3.371)	(7.791)	(0.034)
Tobin's Q	-1.010***	-2.216***	0.012***
	(0.295)	(0.668)	(0.003)
Tangibility	0.119	0.229	-0.001
	(0.603)	(1.423)	(0.007)
MZ-score	-0.028	-0.071	0.000
	(0.023)	(0.056)	(0.000)
Log loan maturity	2.303***	4.963***	-0.027***
	(0.307)	(0.697)	(0.003)
Log loan amount	6.370***	13.936***	-0.072***
	(0.598)	(1.370)	(0.007)
Term loan dummy	-0.538	-0.768	0.009
	(0.587)	(1.514)	(0.006)
Year dummy	Yes	Yes	Yes
Loan purposes dummy	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes
Constant	-132.981***	-288.859***	1.530***
	(13.867)	(31.315)	(0.121)
Observations	3,283	3,283	3,283

3.4.4 The Effect of CEO Power on Loan Syndication Structure

To test the robustness of the results of CEO entrenchment on the loan syndication structure, we look at another close measure of CEO entrenchment, that is, CEO power. The six provisions components of the entrenchment index (Eindex) serve to strengthen the power of management and limit the power of shareholders by providing the management with stronger anti-takeover protection. So other measures of CEO power could be a close substitute for the entrenchment index (Eindex). Various measures of CEO power are studied in previous literature including the number of titles possessed by the CEO and CEO duality, when the CEO also chairs the company's board of directors (Liu, Jiraporn 2010). One objective measure of CEO power is the CEO's relative compensation among top executives. Bebchuk et al. (2009) argue that CEO pay slice or pay share (CPS) better captures the relative power of the CEO among the top management team. CEO pay slice is defined as the CEO's total compensation as a fraction of the total compensation of the top executives, including the CEO himself/herself, in a given company. Bebchuk et al (2009) find that the constructed variable CEO pay slice is negatively and significantly related to the firm value as measured by Tobin's Q, accounting profitability, and stock market reactions to acquisition announcements. Bebchuk et al (2009) also argue that the variable CEO pay-slice is superior to other measures of CEO power including CEO-Chairman duality for two reasons. First, CEO pay slice or pay share (CPS) may reflect the dimensions of the CEO role in the top executive team beyond the ones reflected by the formal and easily observed variables such as CEO-Chairman duality, because CPS is likely to be the outcome of many observable and unobservable variables related to top executive power distribution. Second, CPS can help to control for any firm fixed effect that affect the

average executive compensation. Liu, Jiraporn (2010) also argue that the measure of CEO pay slice (CPS) can better capture the graduation and nuances of CEO power compared to the dichotomous variables such as CEO-Chairman duality because it is constructed as a continuous variable. We adopt CPS as defined in Bebchuk et al (2009), and use it for robustness check on the effect of CEO entrenchment. One potential concern with using CPS as a measure of CEO power is that it could potentially capture the ability of CEOs, since more capable CEOs are expected to get a larger slice of pay too.

The results on the effect of CEO power, as measured by CEO pay slice (CPS), on syndicated loan structure are presented in Table 3.6. Overall the effect of CEO power on the syndicated loan structure is very similar to that of CEO entrenchment. Syndicated loans made to firms with more powerful CEOs usually have a smaller number of lenders with the lead lender retaining a large portion of the loan. At the same time, foreign lenders are reluctant in participating in syndicated loans as the evidence shows that syndicated loans made to firms with more powerful CEOs usually involve a smaller number of foreign lenders as well as a smaller portion of loan held by foreign lenders.

3.5 Conclusions

Over the past decade, syndicated loans have played an increasingly important role in corporate financing. We study the effect of CEO entrenchment on the syndicated loan structure to shed light on the embedded agency problems associated with syndicated loans. These agency problems are of two categories; the agency problem between the borrower and the lenders as a group and the agency problem between the lead arranger and the non-lead participating lenders. CEO entrenchment is expected to affect the

Table 3.6. The Effect of CEO Power on Loan Syndication Structure: the OLS Results

Variables	(1) Total Number of Lenders	(2) Herfindahl Index of Lenders' Shares	(3) Percentage of Loans Held by Lead Arrangers(%)	(4) Number of Foreign Lenders	(5) Percentage of Loans Held by Foreign Lenders (%)
CEO pay share	-1.912*	0.005	7.776*	-1.301*	-4.985
	(1.125)	(0.024)	(4.228)	(0.730)	(3.750)
Log assets	1.195***	-0.003	0.644	0.938***	4.110***
	(0.139)	(0.003)	(0.519)	(0.095)	(0.449)
Leverage	2.852***	-0.042**	-7.180**	2.113***	4.838*
	(0.824)	(0.017)	(3.092)	(0.524)	(2.722)
Profitability	3.449	-0.115**	-14.159	0.553	-8.994
	(2.650)	(0.058)	(9.921)	(1.574)	(9.095)
Tobin's Q	-0.188	0.006	0.051	0.331**	3.236***
	(0.218)	(0.005)	(0.816)	(0.136)	(0.748)
Tangibility	0.646	-0.011	-3.485*	0.814***	8.603***
	(0.495)	(0.009)	(1.856)	(0.309)	(1.590)
MZ-score	-0.054***	-0.000	-0.021	-0.063***	-0.271***
	(0.020)	(0.000)	(0.075)	(0.013)	(0.061)
Log loan maturity	0.965***	-0.026***	-2.612***	0.134	-0.798
	(0.191)	(0.004)	(0.715)	(0.139)	(0.578)
Log loan amount	4.076***	-0.067***	-8.058***	1.931***	0.082
	(0.160)	(0.004)	(0.601)	(0.118)	(0.613)
Term loan dummy	0.478	0.034***	7.052***	0.440*	1.897
	(0.342)	(0.010)	(1.281)	(0.247)	(1.254)
Year dummy	Yes	Yes	Yes	Yes	Yes
Loan purposes dummy	Yes	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes	Yes
Constant	-80.865***	1.620***	195.929***	-42.213***	-5.412
	(2.486)	(0.064)	(9.327)	(1.658)	(9.849)
Observations	2,396	2,396	2,396	2,396	1,827
R-squared	0.537	0.392	0.207	0.445	0.132

former type of agency problem, because entrenched CEOs may engage in activities such as empire building, excessive perk consumptions that may impair the value of the loan collateral, increase the default risk, and results in higher expected costs of financial distress (Lin et al 2012, Lin et al 2011). Therefore, CEO entrenchment will intensify the agency problem between the borrower and the lenders as a group. Since the syndicated loans made to firms with entrenched CEOs require more monitoring, it will also worsen the agency problem between the lead arranger and the participant lenders. We find that syndicated loans are structured in such a way to reduce both types of agency problems.

Our results indicate that syndicated loans made to firms with more entrenched CEOs are more closely held, namely that they involve a smaller number of lenders and a bigger Herfindahl index of loan allocation concentration. The concentrated syndicate structure will facilitate monitoring by reducing the coordination cost and free-riding problem. We also find that when lead lenders arrange loans to firms with entrenched CEOs, they retain a larger portion of the loan for themselves in order to reduce the agency problem between themselves and non-lead participating lenders and to encourage participation of the non-lead participating lenders. When lead lenders retain a larger portion of the syndicated loans, they have greater incentives to monitor the borrower. We also find that CEO entrenchment has a negative impact on the participation of foreign lenders in the syndicated loans. Syndicated loans made to firms with more entrenched CEOs also have fewer foreign lenders and these lenders hold a smaller percentage of the syndicated loans. Foreign lenders are reluctant to participate in syndicated loans made to firms with entrenched CEOs because the latter require more ex-ante screening and ex-post monitoring and also they are concerned with the risk of expropriation during debt

restructuring or collateral seizing events (Lin et al., 2012). The findings of the paper have great implication for the shareholders of the borrowing firm, the lenders providing the loans, and also the regulators. The shareholders of the borrowing firm should better monitor and incentivize entrenched CEOs to reduce the impact of CEO entrenchment on syndicated loan structure. Lenders should also pay attention to the corporate governance of the firm, especially the CEO entrenchment problem, and effectively monitor the loan to the firm. With the findings of the paper, regulators could have a better understanding the syndicated loan market, and the players in this market so that they can more effectively regulate the markets in order to protect both the borrower and the lender and to increase the efficiency of the syndicated loan markets.

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APPENDIX A

DEFINITION OF VARIABLES

Table A.1. Definition of Variables Used in Chapter 1

Variable Name	Definition
Cash ($ M)	Cash and short term investment (che in Compustat). It refers to cash special deposits, working funds, and temporary cash investment.
Total liquidity to asset ratio	(Total lines of credit + cash)/assets
Unused liquidity to asset ratio	(Unused lines of credit + cash)/assets
Total lines of credit ratio	Total lines of credit/(Total lines of credit + cash)
Unused Lines of credit ratio	Unused lines of credit/(Unused lines of credit + cash)
Assets ($M)	Book Asset minus cash holdings (at-che)
Size	Log of assets
Tangibility	Total property, plant and equipment/assets (ppent/assets)
Tobin's Q	Cash-adjusted market-to-book ratio (assets+ (prcc_f*csho-ceq)/assets
Net worth	Total Common equity minus cash and short term investment then divided by assets.
Profitability	The ratio of EBITDA over assets
Industry volatility	3-digit SIC industry median value of the within-year standard deviation of quarterly changes in firm sales scaled by the average asset value in the year.
Profit volatility	The firm-level standard deviation of annual changes in the level of EBITDA, calculated using four lags, and scaled by average assets in the lagged period.
Leverage	(long term debt + short term debt)/ assets
Dividend	Dividend=1 if the firm pays dividend in the year. 0 otherwise.
R&D	The R&D expense scaled by assets
Net working capital	Net working capital scaled by assets

Table A.2. Definition of Variables used in Chapter 2

Variable Name	Definition
BHC Size	the natural log of total assets
Leverage	total debt over total assets
BHC risk (control variable)	the standard deviation of the monthly stock returns
CEO Pay performance sensitivity (Delta)	the dollar change of CEO wealth due to 1% change in stock price ($1000).
ROA	net income over total assets
Tobin's Q	{market value of equity+ book value of assets –book value of equity}/book value of assets
Total risk	the standard deviation of the daily stock return of BHCs
Market risk	the market beta from the CAPM model.
Idiosyncratic risk	the standard error of CAPM model
Board size	is the total number of directors
Mean No. of directorships	average number of directorships held by the directors
Number of busy directors	The number of directors with three or more directorships

Table A.3. Definition of Variables used in Chapter 3

Variable Name	Definition
CEO power	The ratio of CEO total compensation to the sum of all top-five executives' total compensation.
Log assets	Log of the total book value of assets.
Leverage	Total liability over total assets
Log loan maturity	Log of loan maturity
Eindex	The entrenchment index based on six anti-takeover provisions: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes and supermajority requirements for mergers and charter amendments.
Tangibility	Net property, plant, and equipment divided by total assets.
Profitability	Net income, divided by total assets (ROA).
Log Loan Size	The natural log of the loan amount measured in millions of US dollars.
Herfindahl index of lenders' shares	The Herfindahl index of lenders' shares in the loan, computed as the sum of the squares of each lender's share in the loan.
Number of foreign lenders	The total number of foreign lenders in the syndicate.
Percentage of loan held by foreign lenders	The total percentage of the loan held by all foreign lenders.
Number of participant lenders	The number of participant lenders in the syndicate.
Percentage of loan kept by lead arranger	The percentage of the loan kept by the lead arranger. If the syndicate has more than one lead arranger, this is the total percentage of the loan kept by all the lead arrangers.
Tobin's Q	The sum of the market value of equity plus the book value of debt, divided by total assets.