CEO Overconfidence and Dominance in Bank Financial Decisions: The US Evidence

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A Thesis Submitted to the School of Economics, Finance and Business, in partial fulfillment of the degree of Doctor of Philosophy

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To my parents and fianc ée Wen Wang

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Abstract

This thesis empirically investigates financial and investment decisions of banks and bank holding companies in a managerial behavioural approach with a view to ascertaining to what extent managerial psychology is as important as managerial incentive a determinant affecting the process of instituting an efficient bank governance mechanism. A large sample of US banks and bank holding companies over 1996-2006 is examined for the effects of irrational and powerful bank Chief Executive Officers (CEOs). Integrating the analyses of both corporate governance and corporate finance, the thesis uncovers evidence that overconfident, dominating and overconfident-dominating bank CEOs have negative impact on bank financial decisions, such as M&As, payout policy and risk taking as they tend to overestimate their ability and underestimate possible risks of invested projects. Cognitive failures of this origin would have the worst fallout effects when the overconfident CEOs are also dominating the boards. Deploying Holder 67 and CEO-Chair as proxies for overconfidence and dominance factors respectively, the study shows that overconfident, dominating and overconfident-dominating CEOs are more likely to perform mergers with dubious quality, particularly in activity and geography diversifying mergers. The one- and two-year negative post-merger performance of banks ran by overconfident, dominating and overconfident-dominating CEOs bolsters the argument that mergers undertaken by these CEOs are economically undesirable. For the effects of psychological and cognitive biases on bank payout policy, results show that overconfident and overconfident-dominating CEOs are negatively related to the dividend payout ratio and total payout ratio. The negative association becomes stronger when the banks under examination have a higher degree of information asymmetry or with less growth opportunity. Evidence also confirms that CEO overconfidence, dominance and especially overconfidence-dominance have negative effects on bank risk control. CEOs with these attributes have a higher propensity for taking some bank-related risks, such as market-based risk, earnings volatility, credit risk and default risk. Overall, findings of this research suggest the essentiality of taking account of managerial psychological biases in reforming the existing bank governance mechanism, especially in designing appropriate compensation packages for executives and the desirable board composition for banks with overconfident-dominating CEOs.

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Chapter 1

Introduction

The global financial crisis starting in 2007 has emphasized the vital importance of corporate governance in the banking industry. While corporate governance is generally a critical matter for the enhancement of business performance and for ensuring managerial accountability in the interest of all stakeholders, the importance of bank governance goes well beyond the confines of the banking industry. Not only is a vigorous governance structure imperative for a bank's prosperity and accountability, but its absence would be more consequential. Absence of strong and effective bank governance proves a trigger of financial instability which may even have global repercussions.

Research into the causes of the global financial crisis has found unqualified evidence that governance failures in the banking industry were a major contributing factor (Kirkpatrick, 2009). Mr. Ben Bernanke, Chairman of the US Federal Reserve, points out that inefficient corporate governance mechanisms led to the instability of the banking industry (*New York Times*, 2009). Summarizing the findings of international research, Ard and Berg (2010) specify at least four broad areas where current bank governance systems are deficient and have contributed to the financial crisis: risk governance; the remuneration and alignment of incentive structures; board independence, qualifications, and composition; and shareholder engagement.

The vital importance of corporate governance has motivated a wide range of studies. The main paradigm underlying these endeavours is based on the assumption of agent rationality (Jensen and Meckling, 1976; Fama and Jensen, 1983; Marnet 2008). This agency view of corporate governance typically emphasizes formal incentives and control mechanisms (Ees et al., 2009). Informed by this agency-based paradigm, corporate governance mechanisms are conventionally designed to reduce interest conflicts between shareholders and managers (the principal–agent problem) through, for example, special incentive packages such as the equity-based compensation to executives (Shleifer and Vishny, 1997; La Porta et al., 2000).

While measures to reduce or even eliminate agency problems are necessary and desirable, the drawbacks of the current arrangements for bank governance as exposed by the global financial crisis reveal that there are extra dimensions to the agency issue that call for a rethinking of the conventional paradigm behind the installation of prevailing bank governance. On other occasions, the agency perspective may offer only ambiguous advice. For example, Fahlenbrach and Stulz (2010) recently found that banks with better interest alignment between managers and shareholders actually performed worse during the crisis period. This finding is interesting because it suggests there is no direct link between alignment states and bank performance, as suggested by agency theory.

The critical importance of bank governance and unease about the conventional paradigm motivated this thesis to seek new directions in research on the corporate governance of banks. Specifically, this study elects to examine the behavioural bias of bank chief executive officers (CEOs) in the form of overconfidence and its interaction

with CEO power in and around the boardroom. The aim of the research is to better our understanding of the extent to which the behavioural bias of bank CEOs affects the direction of and control over those financial decisions in the banking sector, and hence the conditions for effective bank governance.

It is surprising that, despite the critical role that banks play in the economy, there is a continuing dearth of research on the corporate governance of banks (Adams and Mehran, 2003; Macey and O'Hara, 2003). Studies of the behavioural process and dynamics in and around bank boardrooms are even scarcer. This study aspires to fill this void in the literature by empirically examining the cognitive attributes of bank CEOs and their effects on banks' financial activities, including M&As, payout policy, and risk taking.

There is intimate linkage between corporate finance and corporate governance (Williamson, 1988; Frederikslust et al., 2007). It is therefore natural and imperative for studies of bank governance to consider the interaction between governance and bank financial activity. Paredes (2005) suggests that CEO overconfidence is a product of inappropriate corporate governance mechanisms since CEOs are more likely to be overconfident as a result of large executive compensation and great corporate control power. But little is known about how managerial psychology such as CEO overconfidence impacts corporate finance, especially in the banking industry. This thesis intends to contribute to the literature by expanding the scope of research on bank governance to investigate the effects of behavioural bank governance on bank financial decision making.

A further intended contribution of the current research is to be achieved by focusing on cognitive bias in relation to bank CEOs' overconfidence, dominance and the joint overconfidence-dominance factor. Managerial psychological and cognitive biases, such as CEO overconfidence, are frequently examined for industrial firms (Roll, 1986; Hayward and Hambrick, 1997; Malmendier and Tate, 2005; Brown and Sarma, 2007). Evidence from banking firms, however, is scant. One common interpretation for the exclusion of the banking industry from the empirical sample is that banks are extensively regulated (Doukas and Petmezas, 2007), but the global financial crisis proves that regulatory failures do happen and opaque banks are like black boxes, creating many regulatory difficulties (Morgan, 2002; Barth et al., 2004).

Like CEOs of industrial firms, bank CEOs can also be overconfident, since overconfidence is an endogenous human psychological bias rather than a by-product that can be alleviated through industry regulation. In fact, bank CEOs are more likely to be overconfident because, as Paredes (2005) indicates, bank CEOs tend to have better compensation and more concentrated control power, which could boost the CEO confidence level. Similarly, although many banks and bank holding companies with chair–CEOs, such as Citigroup, Lehman Brother, Merrill Lynch, and UBS, experienced significant value reduction or bankruptcy in the 2007 financial crisis, research on CEO dominance power in the banking industry is still inadequate, whereas the prior literature confirms a negative relation between CEO dominating power and corporate financial performance for industrial firms (Frinkelstein, 1992; Villalonga and Amit, 2006).

This thesis also aspires to contribute to the current debate on reforming bank governance in the wake of the financial crisis. In response to mounting calls from the public to rectify governance failures in the banking industry, regulators typically look for more regulations and more stringent compliances. Whether this is the only way forward is debatable. Hart (1995) shows that principal-agent theory is not the only paradigm that should be counted as a dominant factor in developing the corporate governance structure. Morck (2004) and Marnet (2004) argue that, while traditional agency-based corporate governance arrangements with rational firm managers should be improved, the development of effective governance mechanisms should also consider managerial behavioural issues, such as behavioural biases due to cognitive and psychological failures. Similarly, Paredes (2005) suggests that the focus of the new corporate governance mechanism should move from solving agency problems to consider more managerial psychological aspects and thus leads to more efficient corporate finance decisions. This is particularly fitting when applied to the banking industry, since bank CEOs are very powerful and less concerned about bad performance caused by their behavioural biases, given deposit insurance policies and the 'too big to fail' effect (O'Hara and Shaw, 1990; Stern and Feldman, 2004; Becher et al., 2005). Regarding top bank officers' remuneration as the central issue in the current debate, Mullineux (2006) and Bolton (2010) note that traditional incentive systems (e.g., equity-based compensation) of non-financial firm corporate governance systems may not be efficient for dealing with the principal–agent problem in the banking sector. Therefore, a more comprehensive bank corporate governance system should be developed to align interests between bank managers and other stakeholders such as shareholders, depositors, and tax payers.

This thesis also aims to contribute to the literature by revealing a new dimension of bank risk management, that is, risk due to managerial cognitive attributes. Prior studies have shown that managerial behavioural biases lead to value-reducing financial decisions in industrial firms, whereas little evidence is available in the banking industry. The detection of such evidence of value-destroying financial decisions in the banking sector should help better our understanding of this largely ignored aspect of bank risk.

Behavioural corporate governance is a new area of research. Four main strands of the emerging behavioural governance theory can be identified in the literature: (1) behavioural financial analysis, which extends the behavioural analysis of financial markets to that of financial decisions in corporate finance (Shiller, 2003, 2005; Sheffrin, 2001; Thaler 1999); (2) the analysis of irrationality, which applies cognitive psychology, social psychology, and/or inputs from neuroscience to economic decision making under ambiguous situations (Camerer et al., 2005; Zak, 2005); (3) behavioural law and economics, which are mainly concerned with the prescription of measures to protect individuals against behavioural biases (Jolls et al., 1998; Korobkin and Ulen, 2000; Korobkin, 2003); and (4) behavioural strategic management, which addresses the influence of cognitive biases on the decisions of senior management (Hogarth, 1980; Schwenk, 1985; Bazerman, 1986). A classical paper in this strand is Sheffrin (2001), which distinguishes two origins of behavioural bias. The first is internal to the firm and attributed to the cognitive biases and emotional needs of managers. The second consists of external errors committed by financial analysts and investors. Baker et al. (2004) integrate these two distinctions to introduce the irrationality of both managers and investors to explain investment policies.

Building upon the managerial hubris hypothesis by Roll (1986), this thesis therefore explores the influence of overconfidence bias on financial decision making from the perspective of bank CEOs. This managerial approach can also improve the inadequacy in the previous research on CEOs overconfidence, i.e. the weak evidence unearthed so far (DeAngelo et al., 2009). Moreover, given the American financial system is capital market-oriented, CEOs are usually with centralized power since they are more often than dominating in the board room. It is therefore economically meaningful to concentrate on dissecting the behavioural biases of CEOs and its combined effect with power (Schmidt and Tyrell, 1997).

Following Malmendier and Tate (2005, 2008), Deshmukh et al. (2009), and Niu (2010), this thesis is designed to examine M&As, payout policy, and risk taking as three representative activities of bank financial decisions. Decisions in these areas are directly linked to the creation of shareholder wealth—which involves ensuring shareholder payback (i.e., stock dividends) and increasing their wealth from their investment (Shleifer and Vishny, 1997)—and are the central concerns of corporate governance. If managerial cognitive bias leads to irrational acquisitiveness, reluctant dividends payment, and excessive risk taking behaviour which is beyond the optimal level, shareholder wealth will be destroyed and thus a more efficient corporate governance system must be instituted to protect shareholders, taking into consideration possible effects of behavioural bias on the part of top management.

The empirical examination covers banks and bank holding companies in the US over the period 1996–2006. The sample is based on the US banking industry because it is the origin of the 2007 financial crisis, and the entire banking industry has been under

rapid deregulation since the 1990s and thus provides more advanced requirements for bank corporate governance. The sample year starts in 1996, since this is the time the overconfidence data are comprehensively available from the US Securities and Exchange Commission (SEC) EDGAR dataset. The sample ends in 2006, since the global financial crisis started in 2007 (Sudarsanam and Huang, 2006; Fahlenbrach and Stulz, 2010). The US banking industry is selected mainly for two reasons. First, problems in the US banking industry are generally regarded as the trigger of the global financial crisis. Second, the US banking market is usually believed to be informationally efficient, at least in the semi-strong form. This allows this research to assume away the irrationality of investors and banking clients so that the theis can concentrate on the issue of managerial overconfidence (Roll, 1986).

Three types of bank CEOs are examined in the thesis: overconfident, dominating, and jointly overconfident–dominating. Similar with the study by Malmendier and Tate (2005), CEO overconfidence is measured by the incidence of a CEO twice holds executive stock options that are already more than 67% in the money (Holder 67). Following Pi and Timme (1993), CEO dominance is evidenced by the bank CEO being both the CEO and chair of the board of the bank. CEO overconfidence–dominance applies to CEOs who are both overconfident and dominating, as defined above. Essential data for measuring CEO overconfidence and dominance are manually collected from the SEC EDGAR database.

Using a sample of 100 bank merger cases, thus study detects the terms of mergers when CEOs are overconfident, dominant, and jointly overconfident–dominant. Evidence is found that these attributes have a negative effect on value creation for

acquiring shareholders. In particular, consistent with DeLong (2001) and Dietsch and Oung (2002), diversifying bank mergers, for example, involving geographic or activity diversification, destroy value. Overconfident, dominating, and overconfident–dominating CEOs of acquiring banks increase the probability of either geography- or activity-diversifying mergers by 15.21%, 22.57%, and 20.25%, respectively. While the separate CEO overconfidence bias alone has an insignificant effect on purely geographically diversifying mergers, overconfidence–dominance increases the likelihood of pure geographically diversifying mergers by 36.58%, compared with an increase of 27.58% for dominating CEOs. When a CEO dominates the board, the CEO's overconfidence bias has the strongest effect. On the target side, overconfident CEOs of target banks are found to bargain for higher premiums from the bidder. This effect is maximal when target CEOs are both overconfident and dominating, and the abnormal returns to target shareholders are also the highest then.

The payout policy is another area of central concern in bank governance. Various hypotheses have been put forward in the literature to explain the motivations for dividend payouts. This thesis approaches this issue by examining the influences of CEO cognitive biases. Using a sample of 691 banks and bank holding companies from 1996–2006, the results show that, generally, banking firms managed by overconfident, dominating, and overconfident–dominating CEOs are less likely to pay dividends, whereas overconfident CEOs and overconfident–dominating CEOs are more likely to repurchase shares.

The results vary slightly, depending on the estimation approach adopted. Under the fixed effect logistic regression, only the overconfidence–dominance factor shows a

positive correlation with share repurchases. Based on the random effect Tobit regression model, both CEO overconfidence and CEO overconfidence–dominance are negatively related to the dividend payout ratio and total payout ratio. No significant relation has been detected between CEO dominance and the dividend payout ratio or total payout ratio, respectively.

Taking into consideration firm-specific characteristics, the negative effects of CEO overconfidence or CEO overconfidence–dominance on dividend payouts are worse for banks that are smaller or with less growth opportunity. No significant differences are detected between firms managed by rational CEOs or CEOs with cognitive bias when conditioned on profitability.

Based on the unbalanced panel data models that consider several dimensions of bank risks—including market-based risk, earnings volatility, credit risk, and default risk—this thesis investigates the relation between bank risk taking and CEO psychological bias. The results confirm that the CEO psychological biases have encouraged, to an important extent, risk taking in the run-up to the financial crisis that broke out in 2007. Statistical analysis shows that systematic risk and earnings volatility in the banking sector increased rapidly in 2004 and 2005. Multivariate analysis suggests that there is a significant positive relation between CEO overconfidence and bank total risk, idiosyncratic risk, credit risk, and default risk. CEO dominance is positively related with bank systematic risk, earnings volatility, and credit risk. The strongest effect is found in the CEO overconfidence–dominance factor, which shares significant positive relations with all bank risk measures,

confirming that the joint effect of power and overconfidence in the board are associated with the highest propensity for risk taking.

Further tests are carried out to check whether CEO cognitive bias and power illusion effects are diminishing for banks with high and low charter value. Theoretically, high-value banks with better investment environments have lower risk taking propensity and thus the managerial judgement bias may decline. The impact of CEO psychological bias and power illusion effects on bank risk taking varies after grouping banks into different categories with high and low charter values. CEO overconfidence–dominance for banks with high charter value remains significantly related to bank systematic risk, credit risk, and default risk. For banks with low charter value, this joint factor is positively related to total risk, idiosyncratic risk, and credit risk. CEO overconfidence and CEO dominance have only limited impacts on some special risky proxies.

In a dynamic setting, the lagged effects of CEO overconfidence, dominance, and overconfidence–dominance are examined with a sub-sample of CEOs who had continuous tenure over 1996–2006. Again, except for idiosyncratic risk, the prior one-year's CEO overconfidence–dominance has a positive relation with all bank risk measures in the current fiscal year. To address the possible endogeneity problem, the generalized method of moments (GMM) is applied. The CEO overconfidence–dominance factor persists, showing a robust relation with the bank's total risk, systematic risk, earnings volatility, and default risk.

Critical implications for the construction of bank governance and its reform can be derived from the research. First, by way of establishing the existence of significant relations between managerial cognitive biases and bank financial designations—such as M&As, payout policy, and risk taking—this thesis shows cognitive biases are an important element in and around the boardroom and in the process of banks' financial decisions. This research on the US banking industry adds powerful evidence to the theme that irrational leading managers operate in efficient markets and real economic losses can be significant (Baker et al., 2004). Second, this research shed critical lights on board composition. Evidence from the US banking industry in this thesis confirms that individual power, as a first condition, followed by overconfidence bias can lead to a higher possibility of judgement bias (Anderson and Galinsky, 2006). As a result, the current research advises greater protection against the risk of a board composition where the CEO is overconfident as well as dominating, since this tends to tip the balance of the boardroom in making sound financial decisions. Further, this research suggests that, in addition to the usual criteria for selecting board members, such as merits, background, skills, and professional performance, cognitive attributes should be an important element to consider. Third, this thesis provides some useful pointers for the future reform of corporate governance in the banking industry. Since overconfident CEOs are usually self-motivated (self-attributed) and thus undertake biased financial decisions through overestimating their personal abilities rather than pursuing personal benefits (Heaton, 2002), regulators should be more cautious relying incentive-based compensation as the main mechanism aligning interests between shareholders and CEOs, since CEOs can have cognitive biases. This thesis also finds that jointly overconfident–dominant CEOs should not be motivated by being granted extra equity-based compensation that is already beyond the optimal compensation

structure. Furthermore, this research also proposes caution against increasing stock options in the compensation package if the bank CEO proves to be overconfident, since this increase can have an adverse impact on the bank governance structure in protecting shareholders, depositors, and taxpayers.

The remainder of the thesis is organized into four chapters. After the introduction, Chapter 2 investigates the valuation effect on shareholders in relation to terms of bank mergers when CEOs are overconfident, dominating, and jointly overconfident–dominating. A large body of literature finds that bank consolidations reduce the bidder bank shareholders' wealth, while no significant improvements are detected for post-merger performance (Madura and Wiant, 1994; Berger et al., 1999; Becher et al., 2005). A main explanation for this phenomenon is related to the agency problem, as in empire building (Gorton and Rosen, 1995), but Ryan (1999) believes it is due to managerial hubris rather than the shareholders' interests. Chapter 2 empirically studies this issue when the CEOs involved in the merger process are overconfident, dominating, and overconfident–dominating.

Chapter 3 examines the relation between CEO attributes and bank payout policy. Since the introduction of the 'dividend puzzle' by Black (1976), the empirical literature is focused on the identification of dividend payout motivations, as in the free cash flow hypothesis (Jensen, 1986) and signalling hypothesis (Lintner, 1956). Fama and French (2001) propose a new direction of research on why firms have a higher propensity to buy back shares and dividends are disappearing. While the substitution hypothesis by Grullon and Michaely (2002) suggests that firms are more likely to adopt share repurchases as a substitute of cash dividends, Dittmar (2000) argues that

repurchasing firms also pay large amounts of dividends to shareholders. Therefore, the existing literature offers ambiguous interpretations about the phenomenon of booming repurchases and disappearing dividends. Chapter 3 investigates the behavioural side of the story by examining whether overconfident CEOs are a factor driving this payout policy. Because overconfident CEOs can overestimate a bank's future earnings and growth rate, they may thus have a lower propensity to pay dividends, since they need capital to support business expansion. Moreover, they may believe that their firms are undervalued and thus it is cheaper to buy back shares from the market (Deshmukh et al., 2009). For dominating CEOs, the managerial entrenchment hypothesis suggests that such CEOs tend to pay higher dividends to shareholders, while the free cash flow hypothesis indicates powerful CEOs lead to lower dividend payment propensities. Feng et al. (2007) find that the corporate governance system has a positive impact on dividend payments; therefore, CEO duality, as an example of a sub-optimal governance system, may decrease dividend payments (Daines et al., 2009). Chapter 3 is particular interested in examining the effects of managerial overconfidence, dominance, and overconfidence–dominance on cash dividends and share repurchases.

Chapter 4 investigates the relation between bank risk taking behaviour and CEO psychological bias. The recent financial crisis has reignited debate on bank CEOs' risk taking incentives. This chapter argues that the overarching attention of the prior literature on the relation between managerial compensation and risk taking behaviour needs to be complemented, since it only produces ambiguous results. In this chapter, the research focus is placed on the CEO psychological side, including cognitive biases and power illusion, in an attempt to investigate its effects on bank risk taking, and

hence its possible fallout on the financial crisis. Outside the banking industry, empirical results are mixed on whether managerial overconfidence or powerful managers increase risk taking behaviour (Li and Tang, 2010; Nosic and Weber, 2010). Empirical evidence of the banking industry is scarce. Although Niu (2010) reports a positive effect of CEO overconfidence on bank risk levels, the use of only a few bank risk measures may have biased this author's results. In this light, the empirical tests in this chapter are designed to cover a wide range of bank risk measures and extend to the case of power illusion in banks.

Chapter 5 concludes the research by summarizing the main findings of the thesis.

Chapter 2
Managerial Overconfidence, Dominance, and Bank Mergers

2.1 Introduction

Over the last two decades, the gradual process of deregulating the banking industry, along with the 1994 Riegle-Neal Act (RNA) and the 1999 Gramm-Leach-Bliley Act (GLBA), gave rise to a boom period of bank consolidations in the US.[1] From 1980 to 2003, the number of banks declined from 16,000 to approximately 8,000, a decreasing trend of almost 50% (Pilloff, 2004). Hagendorff et al. (2007) regard the banking sector as the most active industry among all merger and acquisition (M&A) deals in the US since the 1980s.[2]

Theoretically, such a booming merger wave in the banking industry should bring positive efficiency benefits for merged banks through cost reductions or deregulated product market entry requirements. However, the majority of studies on value creation from bank mergers show that, on average, bank consolidations destroy value for acquiring shareholders and result in no significant improvement in post-acquisition

[1] Before the 1994 RNA, bank mergers in different states were prohibited, whereas the new act allows banks and bank holding companies to carry out interstate mergers. The 1999 GLBA permits banks to be involved in mergers with security companies and insurance firms.

[2] In the following context, the terms *mergers*, *acquisitions*, *M&As* and *corporate takeovers* are used interchangeably.

performance (Berger and Humphrey, 1992; Madura and Wiant, 1994; Houston and Ryngaert, 1994; Berger et al., 1999; Becher and Campbell, 2005).[3] Given this flourishing merger period and lack of significant efficiency gains, this kind of bank merger paradox, introduced by Houston et al. (2001), can be attributed to the agency problem, as in empire building or chief executive officer (CEO) compensation maximization (Bliss and Rosen, 2001; Anderson et al., 2004). Ryan (1999) provides another explanation of this paradox, in that the current bank merger wave may be due to managerial hubris, a theory that has not been tested in the financial sector.

The growing literature on managerial overconfidence suggests that overconfident managers are more likely to overestimate their personal abilities and to underestimate the difficulty in achieving goals than are matched rational managers (Langer, 1975; Larrick, 1993). This kind of behavioural bias is extremely significant for individuals who have strong dominating power and regard all outcomes as under control, even when the situation is uncertain and full of complicated information (Weinstein, 1980; March and Shapira, 1987; Klayman et al., 1999; Schaefer et al., 2004; Moore and Cain, 2007). In the financial field, Roll (1986) was first to adopt managerial hubris as a negative factor for value creation through corporate takeovers. The author finds that takeovers by overconfident managers overpay target firms and destroy shareholder wealth. Malmendier and Tate (2005) investigate the overconfidence effect on

[3] Some studies do find that bank mergers create value (Cornett and Tehranian, 1992; Spindt and Tarhan, 1992). However, in quantitative terms, more empirical studies fail to find a positive valuation effect for bank mergers.

corporate investment decisions. They find that overconfident managers overestimate financial projects and are more aggressive in undertaking investments than are rational managers when internal funds are sufficient. Meanwhile, Paredes (2005) and Balmaceda (2009) note that when considering the overconfidence effect, dominating power is also important. [4]Overconfident powerful managers can be the object of too much deference from their subordinate employees; they are therefore more likely to be self-attributed and to more readily transfer their biased judgements to corporate decisions, such as M&A. An empirical study by Brown and Sarma (2007) also suggests that mergers undertaken by dominating CEOs reduce shareholder value.

This chapter is motivated to explore whether overconfident, dominating, and overconfident-dominating CEOs undertake non-value-maximizing mergers, and thus provides an alternative interpretation of the bank merger paradox. Using a sample of 100 US bank mergers over the period 1996-2006 from Thomson One Banker, the overconfidence, dominance, and overconfidence-dominance effects are examined with several merger-related characteristics based on both target and bidder sides.

The results show that acquiring CEO overconfidence, dominance, and overconfidence-dominance factors have a negative effect on shareholder value creation, whereas target CEO dominance and overconfidence-dominance factors are positively related with target shareholder value creation, since they boost the

[4] Following Paredes (2005), since CEO dominance is a proxy of CEO power, words such as "dominant", "dominance" and "power" are adopted interchangeably in the following contents of thesis.

likelihood of the target CEO negotiating for higher merger premiums from bidding firms. When considering combined value after mergers, the results suggest that overconfident, dominating, and overconfident-dominating acquiring CEOs reduce synergistic value, whereas no significant evidence is found for the target side.

A subsequent investigation explores the source of such value reduction mergers to acquiring shareholders. One kind of poor-quality merger deal is the diversifying merger, since it can cause an overinvestment problem when managers have free cash flows or inefficient capital allocation when compared with focused companies (Wulf, 2009; Martin and Sayrak, 2003; Malmendier and Tate, 2008). In the banking industry, Delong (2001) suggests that focusing bank mergers create 3.0% value to shareholders, while diversifying bank mergers have a significant negative impact on creating value to shareholders. Similar results are found in this chapter for diversifying mergers, such as activity- and geography-diversifying mergers. Generally, overconfident, dominating, and overconfident-dominating CEOs significantly increase the probability of carrying out diversifying mergers by 15.21%, 22.57%, and 20.25%, respectively. In particular, overconfident-dominating CEOs have the most significant effect on poor-quality mergers, since they increase the probability of geography- and activity-diversifying mergers by 36.58% and 47.96%, respectively.

One potential weakness of the results is due to sample selection bias, as suggested by Heckman (1979). That is, the results may be inefficient if the empirical sample

contains reduplicative observations, since overconfident, dominating, and overconfident-dominating CEOs can behave as acquisitiveness. After a two-step Heckman selection correction process, the results are still robust, since overconfident-dominating bidder CEOs destroy shareholder wealth, while overconfident, dominating, and overconfident-dominating bidder CEOs reduce synergistic value for shareholders.

This chapter also examines post-merger performance. Merged banks with overconfident, dominating, and overconfident-dominating CEOs underperform compared with merged banks run by the other types of CEOs, especially in the first two years after a merger announcement.

Building on the existing studies on managerial judgement bias and financial investment decisions, this chapter sheds light on the growing literature in several ways. First, the managerial hubris hypothesis is linked with a new industry, the banking sector, which has not yet been discussed. Indeed, prior studies on CEO overconfidence ignore the banking industry, since regulation makes it difficult for overconfident CEOs to affect financial decisions such as M&A (Doukas and Petezas, 2007). In this context, however, two important issues should be pointed out. On the one hand, bank CEOs are more powerful than industrial CEOs, since they own more human capital and receive more powerful rights over regulators, and thus can more easily manipulate financial decisions (Becher and Frye, 2004; Levine, 2004). On the

other hand, there is still debate on regulation efficiency in the banking sector, since high regulation costs are required to monitor banks with complicated structures, and intensive regulation has a negative effect on bank development and performance (Djankov et al., 2002; Barth et al., 2004). Second, the behavioural corporate finance literature is also improved, since the overconfidence effect is now also linked with the dominance effect. Although the overconfidence effect receives wide discussion, limited evidence has been found to prove whether CEO power should be the company of the managerial overconfidence hypothesis. Adams et al. (2005) suggest that although they are overconfident, less powerful CEOs are inclined to compromise with other senior managers who disagree with their decisions. Therefore, as suggested by Keiber (2004), further evidence is essential to determine whether the agency problem results in the worst situation when CEOs are both overconfident and dominating. Third, this chapter enhances the managerial hubris research on corporate takeovers by extending the CEO overconfidence effect to several merger-related factors. Previous studies focus on how overconfident or dominating CEOs affect the cumulative abnormal returns (CARs) of acquiring firms rather than the paired returns. The question of whether or not overconfident, dominating, or overconfident-dominating CEOs cause the synergistic losses remains unresolved. With the market value-weighted combined return measurement, the results in this chapter confirm that overconfident, dominating, and overconfident-dominating CEOs destroy synergistic value. Further, this study also considers the situation where target CEOs are overconfident and dominate the board.

The remainder of this chapter is organized as follows. Section 2.2 reviews the previous literature, while Section 2.3 introduces the testable hypotheses. Section 2.4 describes the dataset gathering process and the methodology design. Section 2.5 provides the empirical results. The robustness tests are discussed in Section 2.6. Section 2.7 concludes the chapter.

2.2 Related literature

2.2.1 Motivations for corporate takeovers

Prior studies on M&A can be divided into two main groups. The first investigates value creation through M&A, while the second distinguishes the motives behind corporate takeovers. Extensive literature exploring whether or not M&As outside the banking industry create value for shareholders reveals that target shareholders enjoy significant positive abnormal returns through the takeover process, whereas acquiring shareholders, on average, experience significant negative abnormal returns, or at best no value loss (Jensen and Ruback, 1983; Bradley et al., 1988; Firth, 1991; Loughran and Vijh, 1997; Andrade et al., 2001).[5] In the banking sector, as discussed in the

[5] For target shareholders involved in M&As, Jensen and Ruback (1983) indicate that target shareholders always benefit over the merger announced period, whereas Bradley et al. (1988) suggest that target shareholders enjoy the most positive abnormal returns over time. For acquiring shareholders, Firth (1991) suggests a negative stock market return for acquiring firms. Loughran and Vijh (1997) find a significant negative abnormal return for acquiring shareholders with stock-financed mergers. Andrade et al. (2001) indicate an insignificant relation between US mergers and stock returns to the bidder side.

introduction, most studies show similar results, as suggested by the findings of industrial firm merger studies. The booming merger business and lack of positive returns to acquiring firms have stimulated research interest in the motives behind corporate takeovers. The financial literature gives three main motives. First is the synergy gain motive, whereby the value of the new merged firm should be larger than the sum of the values of the bidding and target firms. Firms involved in M&A are driven by the objectives of achieving cost reductions, economies of scale, and/or technological innovation (Brown and Sarma, 2007).

The second motive refers to the agency problem between executive managers and corporate shareholders. Managers may carry out mergers to pursue their personal benefits rather than to maximize shareholder wealth. Moreover, CEOs with sufficient cash flows undertake 'pet' projects that can benefit themselves (Jensen and Meckling, 1976; Jensen, 1986). In M&A, for example, target CEOs can negotiate their personal benefits at the expense of lower premiums from acquiring firms, whereas acquiring CEOs can undertake a merger just to increase firm size and thus enjoy greater executive compensation (Houston and James, 1995; Hartzell et al., 2004; Wulf, 2004).

The third motive is managerial hubris, first identified by Roll (1986). The author suggests that individuals who face uncertain outcomes are not always rational and that this kind of behavioural bias can affect decision making in financial practice. The hubris hypothesis indicates that some mergers are motivated by the managerial

overvaluation bias, whereby managers are too optimistic to rule out noisy synergistic signals. Unlike the first two motives for M&A, prior research into the managerial hubris effect on the valuation of corporate takeovers is limited, and even non-existent in the banking sector.

2.2.2 Managerial overconfidence, dominance, and corporate takeovers

Managerial overconfidence, also known as the 'better than average' effect, is a hypothesis derived from the psychological finding that individuals are usually overconfident and self-attribution biased, especially when they experience power centralization and believe that outcomes are under control (Frank, 1935; Wolosin et al., 1973; Miller and Ross, 1975; Moore and Cain, 2007). According to Weinstein (1980, p. 806): 'People are unrealistically optimistic because they focus on factors that improve their own chances of achieving desirable outcomes and fail to realize that others may have just as many factors in their favour.' In their research into overconfidence among firm managers, Larwood and Whittaker (1977) conclude that self-serving managers, who regard themselves as better than their peers, perform overoptimistically in future planning. Gervais et al. (2007) find that CEOs are more likely to be overconfident than are other managers within a firm, due to the selection bias. However, since overconfident CEOs desire better outcomes and behave persistently in difficult situations, some studies argue that overconfident CEOs are not always bad for company growth (Taylor and Brown, 1988; Benabou and Tirole, 2003).

Goel and Thakor (2002) find that the negative effect of overconfident managers is exaggerated by some studies. The authors argue that reasonably overconfident managers are better for firm operations than are rational or even underconfident managers. With higher risk endurance, which closes to risk-neutral shareholders, overconfident CEOs are reluctant to underinvest in projects.

Literature on the overconfidence effect in corporate takeovers is limited. Hambrick and Cannella (1993) find that some takeovers are motivated by overoptimistic acquiring CEOs rather than by poor management in target firms. Similar to Roll (1986), Hayward and Hambrick (1997) report that acquiring shareholders experience wealth losses when overconfident CEOs overpay target firms. However, without a proper measurement of overconfidence, those findings are not very convincing. Recent studies provide further investigation of the managerial hubris effect in takeovers with more financially related overconfidence measurements. Malmendier and Tate (2004, 2005, 2008) derive new overconfidence measurement from CEOs' timing of compensation packages. The authors' results show a positive relation between overconfident acquiring managers and the likelihood of value-reducing mergers. Moreover, because external funds are viewed as expensive by overconfident CEOs, overconfident acquiring CEOs in cash-rich firms are more willing to undertake mergers than are those in cash-poor firms. Doukas and Petmezas (2007) identify CEOs who perform five or more acquisitions in three years as overconfident. The authors find that acquisitions undertaken by overconfident acquiring CEOs produce

lower abnormal returns over the announcement period, or poorer post-merger performance, than acquisitions undertaken by rational CEOs in the UK market.

Unlike prior studies focused on the possible overconfidence of acquiring CEOs, Brown and Zorn (2006) discuss 336 mergers by US publicly listed industrial firms and find that overconfident target CEOs earn higher abnormal returns for target shareholders over the announcement period than do rational CEOs, since they negotiate higher premiums from bidding firms. Liu and Toffler (2008) also consider overconfident target CEOs in corporate takeovers. The authors find similar results for overconfident acquiring CEOs, whereas overconfident target CEOs have a negative relation with the stock market returns of acquiring firms in the short run. Since CEO overconfidence is a kind of psychological behavioural bias, CEO dominance is a management power factor that can enhance this effect on corporate investment decisions. Paredes (2005) suggests that corporate governance provides a safeguard against CEO overconfidence. Large compensation packages provide positive signals of personal success, and the substantial CEO position in particular may be the source of higher confidence level. Furthermore, when CEOs have extensive executive powers, they can become overconfident due to rare challenges from other executive managers. In line with Paredes (2005), Adams et al. (2005) suggest that less powerful CEOs may make more moderate investment decisions and have less influence power on firm performance, since they must compromise with other powerful individuals in the top management team.

Frinkelstein (1992) investigates a group of 1763 top managers and finds that powerful managers are more likely to choose diversification strategies and undertake more acquisitions than are those who are not powerful. Lorsch and MacIver (1989) describe CEOs who are also chair of the board as possessing ‘superior power of management’. Pi and Timme (1993) find that conflicts of interest between managers and shareholders are exacerbated when the CEO is also the chair of the board. The authors investigate 112 US banks, on average, they suggest that chair-CEO managers lead the inefficiency performance problem. That is, when compared with banks with non-chair-CEO managers, banks whose managers are both CEO and chair of the board demonstrate poorer performance, especially for operating performance measured by return on assets (ROA). Tsui et al. (2001) use the chair-CEO attribute as a proxy for CEO dominance; they find that chair-CEO managers result in higher audit fees and that firms with chair-CEO managers have less efficient internal regulation mechanisms, which can also destroy firm growth opportunities.

With regard to corporate takeovers, Hambrick et al. (1996) confirm the findings by Frinkelstein (1992) and describe powerful managers as a double-edged sword, since they react more actively to their competitors than do less powerful managers. Jensen and Zajac (2004) control for CEO power and suggest that CEOs with different power levels lead to different corporate strategy structures. The authors support the findings of prior studies, that powerful CEOs prefer diversification strategies and are more acquisitive than less powerful CEOs. Brown and Sarma (2007) use CEO dominance

as an explanatory factor in Australian acquisition activities, and conclude that dominating CEOs share the same importance in Australian acquisition decisions. In detail, they find that dominating CEOs undertake more acquisitions than do non-dominating CEOs. Moreover, compared with non-dominating CEOs, CEOs with dominating power are more likely to acquire other firms in different industries.

2.3 Empirical predictions

In general, mergers, acquisitions or takeovers are usually regarded as similar corporation financial decisions. However, unlike acquisitions or takeovers could also have hostile cases, a merger normally involves the mutual decision of both target and bidder firms as they will be merged as one entity. Therefore, a merger is friendly, full of negotiations with two relatively equal parts (Reed and Lajoux, 1998; Lin and Wei, 2006). Roll (1986) indicates a general three-step merger process. First, acquiring firms find suitable target firms. Second, based on expected synergy gains and the present value estimation of specific target firms, acquiring firms bid for target firms. In friendly mergers, this process can be negotiated between management teams from the target and acquiring firms. Third, if the offer is satisfactory to both sides, the merger will be undertaken.

Therefore, it is essential to develop empirical predictions that cover the merger procedure as well as perspectives based on bidder, target and combined side,

respectively. The core spirit for developing empirical predictions is to detect whether there exists the wealth transfer process from bidders to targets under the situation that CEOs may behave as either overconfident or dominant. Moreover, different with prior study by Malmendier and Tate (2008), target CEOs are also included to investigate cognitive bias effects on determining terms of merger since executive compensation data could be gathered from the EDGAR database. Following prior studies (Malmendier and Tate, 2005, 2008; Brown and Zorn, 2006; Liu and Taffler, 2008; Brown and Sarma, 2007), six main hypotheses are developed based on the target, bidder, and combined sides.

2.3.1 Target side

Overconfident, dominating, and overconfident-dominating target CEOs can be overoptimistic in the current operating process within their firms. They can issue overoptimistic estimations on firm value to attract better offers from acquiring firms (Malmendier and Tate, 2004; Hribar and Yang, 2010). For example, a report from the *Economic Times* (September 2008) describes Dick Fuld, CEO-Chairman of Lehman Brothers, as follows: ‘Mr Dick Fuld had typical hubris that any long term CEO has: “I built this thing, and it’s got more value than the marketplace understands”.’ As a result, Lehman Brothers rejected the bid offer from Korea Development Bank, which included a 30% premium for transferring management control. Based on this tendency, two testable predictions are formulated, as follows:

H_1: *Overconfident, dominating, and overconfident-dominating target CEOs negotiate for higher merger premiums than do other types of target CEOs.*

H_2: *If overconfident, dominating, and overconfident-dominating target CEOs bargain for higher merger premiums from bidding firms, they have a positive effect on creating value for target shareholders.*

2.3.2 Bidder side

Prior literature indicates that overconfident acquiring CEOs can overpay to acquire favourable target firms and to put off other potential competitors (Hayward and Hambrick, 1997). In addition, Cooper et al. (1988) and Odean (1998) suggest that overconfident managers are more likely to be aggressive in corporate decisions that involve entering an unfamiliar existing industry to demonstrate their above-average abilities. Further, Brown and Sarma (2007) also find overpayment and the diversification preference phenomenon among dominating CEOs. Therefore, it is essential to determine whether or not overconfident, dominating, and overconfident-dominating acquiring CEOs pay higher premiums to target firms and prefer diversifying mergers. Subsequently, if these hypotheses are proven, it is expected that overconfident, dominating, or overconfident-dominating CEOs cause lower abnormal returns for shareholders than do their CEO peers, since there is good evidence that overbidding or diversifying mergers cause wealth loss for acquiring shareholders (DeLong, 2001; Brown and Zorn, 2006):

H_3: *Overconfident, dominating, and overconfident-dominating acquiring CEOs pay*

higher premiums than do other types of acquiring CEOs.

H_4: *Overconfident, dominating, and overconfident-dominating acquiring CEOs are more likely to undertake diversifying mergers than are other types of acquiring CEOs.*

H_5: *Overconfident, dominating, and overconfident-dominating acquiring CEOs produce lower abnormal returns for their shareholders than do other types of acquiring CEOs.*

2.3.3 Combined side

The relation between overconfident, dominating, and overconfident-dominating CEOs and synergistic gains has not been tested in prior literature. If mergers can be regarded as a wealth transfer process from bidder to target firms, the wealth gain for one side implies a wealth loss for the other side. The difference is that since acquiring firms are more often in the predominating position, the stock market may react more significantly for mergers undertaken by overconfident acquiring CEOs than for those by overconfident target CEOs. Since overconfident, dominating, and overconfident-dominating target CEOs bargain for higher premiums from acquiring firms, which means more wealth loss for acquiring shareholders, it is expected that overconfident, dominating, and overconfident-dominating CEOs from both the target and bidder sides have a negative impact on synergistic value:

H_6: *Overconfident, dominating, and overconfident-dominating acquiring/target CEOs have negative impact on merger synergistic gains.*

2.4 Data and methodology

2.4.1 Sample of bank mergers

The merger sample comprises US publicly listed firms with three-digit Standard Industrial Classification (SIC) codes 602 (banks) and 671 (bank holding companies) from Thomson One Banker over the period 1996-2006. The sample period starts in 1996 because, although the EDGAR database provides proxy statements since 1994, relevant information to measure CEO overconfidence or dominance variables is not comprehensive for merged banks from 1994 to 1995. The sample stops at 2006 because it is essential to set aside three years to analyze the long-term post-performance of merged banks for overconfident, dominating, and overconfident-dominating CEOs. The initial sample comprises 578 bank mergers based on the following criteria: (1) All takeovers must be completed before December 31, 2006; (2) The percentage of shares owned after transactions by acquiring firms should be no less than 50.1% (to gain control of the target firms). Although the deal attitude is set as friendly, hostile, or unsolicited, all deals are described as friendly mergers in the Thomson One Bank merger descriptions. This is common, since hostile mergers in the banking industry are rare (e.g., Zhang, 1998) and previous research finds fewer than 10 hostile or unsolicited mergers in their sample and excludes the hostile dummy (Becher et al, 2005). In addition, friendly mergers are ideal for discussing the role of target CEOs, since they are involved in merger negotiations.

Three deals are excluded on the grounds that multiple bidders are involved. The initial sample also excludes 276 deals because of unavailable stock return information from the Center for Research in Security Prices (CRSP) (253 deals) or because firm identifiers, such as the CUSIP, GVKEY, and PERMNO, cannot be matched with each other (29 deals). In Delong and DeYoung (2007), lack of necessary stock return information from the CRSP results in their sample losing 271 out of 616 merger deals overall (around 44%) between 1987 and 1999. For the remaining 293 merger deals to be included in the final sample, several conditions must be met: (1) Both the bidder's and target's total assets are no less than $100 million (four deals are excluded because they fail to meet this requirement); (2) The relative size difference between the target and bidder is no less than 10% (which leads to the exclusion of 131 merger deals).

According to Malmendier and Tate (2008), if target firms are too small compared with bidders (non-trivial targets), it is not necessary for acquiring CEOs to be involved in those deals; (3) Merger premium information must be available. Six deals are excluded because this information is missing. As a result, this leads to the sample of 152 mergers from 1996 to 2006 before checking the executive information from EDGAR. To identify the persistent CEO overconfidence effect, as suggested by Malmendier and Tate (2005), 52 merger deals are excluded, since they fail to provide CEO stock option exercise information based on the two continuous years level from the proxy statements (DEF-14A) of either the acquiring or target banks. The final sample comprises 100 bank mergers over the period 1996-2006.

2.4.2 CEO overconfidence and dominance measurements

Hall and Murphy (2002) indicate that since CEOs are unable to diversify their exposed risks due to fully invested human capital, they are willing to exercise their in-the-money stock options when these are already above 67%. CEOs who choose to hold options that are already above 67% in-the-money (Holder 67) are overconfident for the future operating performance of their firms. Therefore, following prior studies by Malmendier and Tate (2005) and Brown and Zorn (2006), Holder 67 is applied as the proxy for CEO overconfidence in this chapter. However, it can be argued that such late exercising behaviour may be due to the market's good timing. CEOs often have access to inside information and thus may be inclined to hold in-the-money stock options if they believe their firms can perform better in the near future (Misra and Shi, 2007). To capture the persistent overconfidence effect, as in Malmendier and Tate (2005), CEOs are classified as overconfident if they delay exercising their already 67% in-the-money stock options at least twice during their tenure.

Following studies by Core and Guay (2002), Sudarsanam and Huang (2006), and Brown and Zorn (2006), a two-step approach is developed to calculate the percentage of CEOs' in-the-money stock options. First, the average profit of stock options is calculated as the value of unexercised exercisable stock options divided by the number of unexercised exercisable stock options. Average profit is then subtracted from the fiscal year end stock price, which refers to the average exercise price for

these unexercised exercisable stock options. Second, the percentage of in-the-money stock options is computed as the difference between the fiscal year end stock price and the average exercise price, divided by the average exercise price.[6] Equations (2.1), (2.2) and (2.3) give the calculations:

$$Average\ Profit = VUESO/NUESO \tag{2.1}$$

$$Average\ Exercise\ Price = SP - Average\ Profit \tag{2.2}$$

$$CEO\ Holding\ Percentage = \frac{SP - Avergae\ Exercise\ Price}{Average\ Exercise\ Price} \tag{2.3}$$

where VUESO and NUESO are the value and number of unexercised exercisable stock options, respectively, and SP is the fiscal year end stock price.

Based on the holder percentage results, once a CEO's holding percentage is above the benchmark 67% twice, the CEO is identified as overconfident and will hold the same overconfidence label for the remainder of his or her tenure. For example, James Byrnes, CEO of Tompkins Financial Corporation, held 77.49%, 111.30%, and 113.36% of in-the-money stock options in 1996, 1997, and 1998, respectively, and thus he is

[6] The proxy statement (DEF-14A) provides the summary table of aggregated stock options exercised by top executive managers, such as the chair, CEO, chief financial officer (CFO), and chief operating officer (COO). The number and value of unexercised exercisable stock options can be found there. As usual in the literature, the footnote of the table also states the fiscal year stock price; if there is no such information, the fiscal year end stock price can be found from the CRSP from the Wharton Research Data Service.

classified as overconfident over his tenure. On the other hand, Rufus Fulton, CEO of Fulton Financial Corporation, is not overconfident, since he held 109.14% in-the-money stock options only once, in 1997.

For the CEO dominance measurement, Adams et al. (2005) suggest that CEOs with more concentrated titles (e.g. CEO-chairman) are usually important and play a crucial role in the corporate decision making process. Therefore, in line with prior literature (Pi and Timme, 1993; Tsui et al., 2001; Brown and Sarma, 2007), the CEO-chair variable is selected as the proxy for CEO dominance. Any CEO who is also chair of the board at the end of the fiscal year before the merger announcement date is classified as a dominating CEO.

2.4.3 Control variables

2.4.3.1 Merger-related variables

Relative size: Following Cheng et al. (1989) and Houston et al. (2001), relative size (RS) is defined as the fiscal year end book value of total assets in target banks divided by the book value of total assets in bidder banks before the announcement date. Prior evidence shows that smaller banks attract higher premiums than larger banks. The higher the relative size between targets and bidders, the lower the premium will be (Fraser and Kolari, 1987; Moeller, 2005). In addition, Asquith et al. (1983) find that

larger targets lead to lower abnormal returns for bidders. Therefore, relative size is expected to have a negative effect on the target premium and a positive effect on the bidder's abnormal returns.

Payment method: The free cash flow hypothesis developed by Jensen (1986) indicates that cash-financed takeovers result in lower abnormal returns for bidder shareholders than do stock-financed takeovers. However, Travlos (1987) and Martin (1996) conclude that bidder shareholders enjoy higher abnormal returns with cash payments than with payment by stock. The overconfidence hypothesis by Roll (1986) suggests that overconfident CEOs are more willing to pay cash since they regard their firms as undervalued and are unwilling to share future gains with the targets.[7] However, if the firm is overvalued by the market, overconfident CEOs tend to finance the deal with stock (Shleifer and Vishny, 2003). In the banking industry, it is not easy to identify which payment method is superior in creating value for acquirer shareholders, since Baradwaj et al. (1991) support the argument that cash payments outperform equity payments, whereas Cornett and De (1991) find no significant difference between the two methods. The payment method involves a dummy variable that equals one if a deal is financed with more than 50% cash, and zero otherwise.

Diversifying: Similar to findings in the non-financial industry, diversifying bank

[7] See Malmendier and Tate (2004). Additionally, according to the control hypothesis of Stulz (1988), powerful CEOs with higher ownership percentages are more likely to pay cash, since stock payments can weaken their control of the firm.

mergers are suggested to be value destroying, according to Delong (2001), Cornett et al. (2003), and Gupta and Misra (2007). Following Delong (2001), both geography-(GEO_D) and activity-diversifying (ACT_D) mergers are considered in the sample. Geography-diversifying mergers are those where the bidder and target are located in different states. For activity-diversifying mergers, following Morck et al. (1990) and Cornett et al. (2003), the correlation coefficients of the daily stock returns for bidders and targets are calculated over the 120-day period (t_1 = -136, t_2 = -16) before the merger year. If the stock return correlation coefficient is lower than the sample median, the deal will be considered activity diversifying.

2.4.3.2 Firm-related variables

Size: This variable is the logarithmic value of the fiscal year end book value of total assets for acquiring (target) firms.[8] Moeller et al. (2004) introduce a size effect on abnormal returns around merger announcement dates, since they find that larger firms gain significantly lower abnormal returns than smaller firms.

Profitability: The ROA and return on equity (ROE) are two common proxies for the profitability of a firm. Cornett and Tehranian (1992) suggest that in the banking industry the ROE is the more direct measurement for evaluating the return to shareholders, since the ROA is better for interpreting asset management. Therefore,

[8] Hereafter, the fiscal year end refers to the last fiscal year prior to the merger announcement date.

the ROE is adopted as a proxy for profitability, which is calculated as the fiscal year end net income available divided by the fiscal year end book value of the common equity of shareholders.

Market-to-book ratio: The market-to-book (MB) ratio is computed as the sum of total assets and the market value of equity minus the book value of equity, divided by total assets (Cuny et al., 2009). Based on the trade-off theory of Hovakimian et al. (2001), a higher target MB ratio indicates higher growth opportunities for target firms and can attract higher premiums from bidders. However, since the MB ratio is the reciprocal of the book-to-market value (Fama and French, 1993), Jensen (2005) suggests the higher MB ratio may be a signal of the overvaluation effect. Therefore, target firms with higher MB ratios may receive lower premiums, since they are overvalued by the market. Here, the relation between merger premiums and MB ratio is ambiguous.

Capital-to-asset ratio: Following Palia (1993) and Shawky et al. (1996), the book-to-market capital-to-asset (CA) ratio is used as a proxy for the measurement of capital adequacy. It is calculated as the sum value of tier 1 and tier 2 capital divided by the total assets one year prior to the merger year. Palia (1993) regards a higher target CA ratio as negatively related to the premium, since it is the sign of inefficient capital allocation. However, Shawky et al. (1996) suggest that targets with higher CA ratios can attract a higher premium, since bidders want to reduce capital holdings and then increase the ROE. Since the Federal Reserve System (FRS) requires banks or

bank holding companies to maintain the capital ratio above specific levels, there is ambiguous results of the CA effect on the merger premium or bidder abnormal return, which aligns with Hannan and Rhoades (1987).[9]

CEO ownership percentage: The ownership percentage (OP) is calculated as the number of shares held by the CEO divided by the number of whole shares outstanding times 1,000,000 at the end of the year prior to the announcement (Anderson et al., 2004). For the target premium, Moeller (2005) finds that a lower target CEO ownership percentage leads to higher premiums. In the banking industry, Palia (1993) finds a positive relation between target CEO ownership percentage and premiums. Therefore, the target ownership percentage is expected to have either a negative or a positive effect on merger premiums.[10] The impact of the bidder ownership percentage on abnormal returns is expected to be positive, since bidder CEOs with higher managerial ownership pay lower premiums and thus create positive abnormal returns for their shareholders (Cornett et al., 2003).

Efficient board size: Jensen (1993) finds that smaller boards can provide more efficient regulation for CEOs than can larger boards. Yermack (1996) shows that board size has a negative impact on firm value in non-financial industries, while

[9] Based on Basel I and the FRS, for example, to be well capitalized, a bank holding company should keep its CA ratio above 10%. For a firm to be adequately capitalized, the minimum level for a CA ratio is 8%.

[10] Indeed, Palia (1993) finds a positive relation between managerial ownership and the premium, based on the career risk diversification hypothesis. However, the author finds a negative relation for managerial ownership and premiums when target CEOs hold more than 48.32% ownership in a firm.

Adams and Mehran (2003) suggest a positive relation in the banking sector. Other results in the banking industry show the insignificant effect of board size on either target premiums or bidder returns (Brewer et al., 2000; Cornett et al., 2003). Following Malmendier and Tate (2008), the efficient board size (EBS) equals one if the number of directors on the board is between four and 12, and zero otherwise.

2.4.4 Regression models

In line with Gaspar et al. (2005), for the first and second hypotheses the target firm characteristics are controlled in the regression model, while when testing the third, fourth and fifth hypotheses the bidder firm characteristics are controlled. Finally, when testing the merger synergistic value, which is the sixth hypothesis, both target and bidder firm characteristics, such as relative size, are controlled. Equations 2.4.1 to 2.4.6 show the regression model testing whether overconfident, dominating and overconfident-dominating target CEOs negotiate higher merger premiums and thus significantly generates higher merger premiums from acquiring firms during the merger negotiation process:

$$Premium = \alpha_0 + \alpha_1 OV_{T_{i,t}} + \alpha_2 PM + \alpha_3 GEO\_D + \alpha_4 ACT\_D + \alpha_5 SIZE_{T_{i,t}} + \alpha_6 ROE_{T_{i,t}} + \alpha_7 MB_{T_{i,t}} + \alpha_8 CA_{T_{i,t}} + \alpha_9 OP_{T_{i,t}} + \alpha_{10} EBS_{T_{i,t}} + \varepsilon_{i,t} \quad (2.4.1)$$

$$Premium = \lambda_0 + \lambda_1 DOM_{T_{i,t}} + \lambda_2 PM + \lambda_3 GEO\_D + \lambda_4 ACT\_D + \lambda_5 SIZE_{T_{i,t}} + \lambda_6 ROE_{T_{i,t}} + \lambda_7 MB_{T_{i,t}} + \lambda_8 CA_{T_{i,t}} + \lambda_9 OP_{T_{i,t}} + \lambda_{10} EBS_{T_{i,t}} + \varepsilon_{i,t} \quad (2.4.2)$$

$$Premium = \varphi_0 + \varphi_1 OV\_DOM_{T_{i,t}} + \varphi_2 PM + \varphi_3 GEO\_D + \varphi_4 ACT\_D + \varphi_5 SIZE_{T_{i,t}} + \varphi_6 ROE_{T_{i,t}} + \varphi_7 MB_{T_{i,t}} + \varphi_8 CA_{T_{i,t}} + \varphi_9 OP_{T_{i,t}} + \varphi_{10} EBS_{T_{i,t}} + \varepsilon_{i,t} \quad (2.4.3)$$

$$TCAR = \alpha_0 + \alpha_1 OV_{T_{i,t}} + \alpha_2 PM + \alpha_3 GEO\_D + \alpha_4 ACT\_D + \alpha_5 SIZE_{T_{i,t}} + \alpha_6 ROE_{T_{i,t}} + \alpha_7 MB_{T_{i,t}} + \alpha_8 CA_{T_{i,t}} + \alpha_9 OP_{T_{i,t}} + \alpha_{10} EBS_{T_{i,t}} + \varepsilon_{i,t} \quad (2.4.4)$$

$$TCAR = \lambda_0 + \lambda_1 DOM_{T_{i,t}} + \lambda_2 PM + \lambda_3 GEO\_D + \lambda_4 ACT\_D + \lambda_5 SIZE_{T_{i,t}} + \lambda_6 ROE_{T_{i,t}} + \lambda_7 MB_{T_{i,t}} + \lambda_8 CA_{T_{i,t}} + \lambda_9 OP_{T_{i,t}} + \lambda_{10} EBS_{T_{i,t}} + \varepsilon_{i,t} \quad (2.4.5)$$

$$TCAR = \varphi_0 + \varphi_1 OV\_DOM_{T_{i,t}} + \varphi_2 PM + \varphi_3 GEO\_D + \varphi_4 ACT\_D + \varphi_5 SIZE_{T_{i,t}} + \varphi_6 ROE_{T_{i,t}} + \varphi_7 MB_{T_{i,t}} + \varphi_8 CA_{T_{i,t}} + \varphi_9 OP_{T_{i,t}} + \varphi_{10} EBS_{T_{i,t}} + \varepsilon_{i,t} \quad (2.4.6)$$

where the merger premium is the one-week offer price prior to the merger announcement date from Thomson One Banker. $TCAR$ is three-day CARs computed by the market model. Following Gupta and Misra (2007), the market model coefficients are estimated with the CRSP value-weighted portfolio over the period (-250, -21) (the merger announcement day is denoted as day 0). $OV_{T_{i,t}}$, $DOM_{T_{i,t}}$ and $OV\_DOM_{T_{i,t}}$ refer to overconfident, dominating, and overconfident-dominating target CEOs for bank i in fiscal year t, respectively. These variables will be examined

separately and are expected to have a positive effect on merger premiums. All target firm-related variables are included in the model, such as $SIZE_{T_{i,t}}$, $ROE_{T_{i,t}}$, $MB_{T_{i,t}}$, $CA_{T_{i,t}}$, $OP_{T_{i,t}}$, and $EBS_{T_{i,t}}$ while merger-related variables, PM, GEO_D and ACT_D are included in all regression estimations.

A similar regression model is adopted to estimate the merger premiums and stock market responses to deals undertaken by overconfident, dominating, and overconfident-dominating acquiring CEOs:

$$Premium = \beta_0 + \beta_1 OV_{A_{i,t}} + \beta_2 PM + \beta_3 GEO\_D + \beta_4 ACT\_D + \beta_5 SIZE_{A_{i,t}} + \beta_6 ROE_{A_{i,t}} + \beta_7 MB_{A_{i,t}} + \beta_8 CA_{A_{i,t}} + \beta_9 OP_{A_{i,t}} + \beta_{10} EBS_{A_{i,t}} + \varepsilon_{i,t} \quad (2.5.1)$$

$$Premium = \gamma_0 + \gamma_1 DOM_{A_{i,t}} + \gamma_2 PM + \gamma_3 GEO\_D + \gamma_4 ACT\_D + \gamma_5 SIZE_{A_{i,t}} + \gamma_6 ROE_{A_{i,t}} + \gamma_7 MB_{A_{i,t}} + \gamma_8 CA_{A_{i,t}} + \gamma_9 OP_{A_{i,t}} + \gamma_{10} EBS_{A_{i,t}} + \varepsilon_{i,t} \quad (2.5.2)$$

$$Premium = \phi_0 + \phi_1 OV\_DOM_{A_{i,t}} + \phi_2 PM + \phi_3 GEO\_D + \phi_4 ACT\_D + \phi_5 SIZE_{A_{i,t}} + \phi_6 ROE_{A_{i,t}} + \phi_7 MB_{A_{i,t}} + \phi_8 CA_{A_{i,t}} + \phi_9 OP_{A_{i,t}} + \phi_{10} EBS_{A_{i,t}} + \varepsilon_{i,t} \quad (2.5.3)$$

$$BCAR = \beta_0 + \beta_1 OV_{A_{i,t}} + \beta_2 PM + \beta_3 GEO\_D + \beta_4 ACT\_D + \beta_5 SIZE_{A_{i,t}} + \beta_6 ROE_{A_{i,t}} + \beta_7 MB_{A_{i,t}} + \beta_8 CA_{A_{i,t}} + \beta_9 OP_{A_{i,t}} + \beta_{10} EBS_{A_{i,t}} + \varepsilon_{i,t} \quad (2.5.4)$$

$$BCAR = \gamma_0 + \gamma_1 DOM_{A_{i,t}} + \gamma_2 PM + \gamma_3 GEO\_D + \gamma_4 ACT\_D + \gamma_5 SIZE_{A_{i,t}} + \gamma_6 ROE_{A_{i,t}} + \gamma_7 MB_{A_{i,t}} + \gamma_8 CA_{A_{i,t}} + \gamma_9 OP_{A_{i,t}} + \gamma_{10} EBS_{A_{i,t}} + \varepsilon_{i,t} \quad (2.5.5)$$

$$BCAR = \phi_0 + \phi_1 OV\_DOM_{A_{i,t}} + \phi_2 PM + \phi_3 GEO\_D + \phi_4 ACT\_D + \phi_5 SIZE_{A_{i,t}} + \phi_6 ROE_{A_{i,t}} + \phi_7 MB_{A_{i,t}} + \phi_8 CA_{A_{i,t}} + \phi_9 OP_{A_{i,t}} + \phi_{10} EBS_{A_{i,t}} + \varepsilon_{i,t} \quad (2.5.6)$$

All regression variables hold the same definition in prior regression models (2.4.1) to (2.4.6) since equations (2.5.1) to (2.5.6) consider the situation of bidder side. Coefficients of $OV_{A_{i,t}}$, $DOM_{A_{i,t}}$ and $OV\_DOM_{A_{i,t}}$ are expected to be significant positively related with merger premium and negatively related with the market response to acquiring firms.

Equations (2.6.1) to (2.6.3) show the regression model on the merger synergistic value. Control variables in equations (2.6.1) to (2.6.3) contain both target- and bidder-side characteristics, including *ROE, MB, CA, OP, and EBS*. Following Houston et al. (2001), both the target and bidder sizes are replaced by the merger-related variable *RS*, which is a relevant size measurement:

$$CCAR = a_0 + a_1 OV_{A_{i,t}} + a_2 OV_{T_{i,t}} + a_3 RS + a_4 PM + a_5 GEO\_D + a_6 ACT\_D + \sum_{n=7}^{16} a_n Control + \varepsilon_{i,t} \quad (2.6.1)$$

$$CCAR = b_0 + b_1 DOM_{A_{i,t}} + b_2 DOM_{T_{i,t}} + b_3 RS + b_4 PM + b_5 GEO\_D + b_6 ACT\_D + \sum_{n=7}^{16} b_n Control + \varepsilon_{i,t} \quad (2.6.2)$$

$$CCAR = c_0 + c_1 OV\_DOM_{A_{i,t}} + c_2 OV\_DOM_{T_{i,t}} + c_3 RS + c_4 PM + c_5 GEO\_D + c_6 ACT\_D + \sum_{n=7}^{16} c_n Control + \varepsilon_{i,t} \quad (2.6.3)$$

where $CCAR$ is the synergistic value, which is calculated as follows (Houston and Ryngaert, 1994):

$$CCAR = \frac{MV_{A,i} \times CAR_{A,i} + MV_{T,i} \times CAR_{T,i}}{MV_{A,i} + MV_{T,i}} \quad (2.7)$$

In equation (2.7), $MV_{A,i}$ and $MV_{T,i}$ are the data market values three day priors to the merger announcement for the acquiring and target firms, respectively, and $CAR_{A,i}$ and $CAR_{T,i}$ are three-day CARs computed by the market model, which is already shown in equation (2.4.4) and (2.5.4).

All regression models are robust to Huber-White estimator of variance. Although the traditional OLS regression produces the most efficient and consistent estimating results among other estimators from the parameterization model under the assumption of Gauss-Markov theorem, the OLS estimator becomes inefficient when regression errors are not independent identically distributed (i.i.d). In fact, Baum (2006) indicates two methods, the robustness and efficiency approach in dealing with the

conditional heteroskedasticity problem over model regression procedures. Comparing with the efficiency approach, the author suggests that the robustness approach relaxes more restrictions on the estimator since the rational of the approach is to correct the variance-covariance estimator (VCE) of the regressor when the consistency of the estimator is sufficiently good. Although the efficiency approach may provide a more efficient estimator than the robustness approach, the procedure is more complicated and uncertain as it requires integrating "an explicit specification" of the non-i.i.d distribution of error terms to the regression models.

The Huber-White (also known as Huber-White-Sandwich) estimator of variance is a general type of the robustness approach which is introduced by Huber (1967) and White (1982). The Huber-White method produces consistent covariance matrix regardless the distributional assumptions of error terms and the incorrect coefficient estimators. Therefore, because of these unique advantages, the Huber-White estimator of variance is widely adopted in empirical panel data regression models, such as generalized regression models and multivariate regression models (Crowder., 2001). Therefore, as suggested in Carroll et al., (1998) that Huber-White estimator is favored since it only estimates one variable's consistent variance under the asymptotic normal distribution and needs no precise estimation of the covariance matrix.

Finally, the logistic regression is introduced to examine whether CEOs are more likely to perform diversifying mergers which are suggested as "bad-quality" deals by Malmendier and Tate (2004):

$$Y = \theta_0 + \theta_1 OV_{A_{i,t}}\left(DOM_{A_{i,t}}, OV\_DOM_{A_{i,t}}\right) + \sum_{n=2}^{7} \theta_n Control_{A_{i,t}} \qquad (2.8)$$

where Y is a dummy variable that equals one if the merger is either geography- or activity-diversifying and $OV_{A_{i,t}}$, $DOM_{A_{i,t}}$, and $OV\_DOM_{A_{i,t}}$ are regressed separately, while the control variables are for the bidder side only, such as *SIZE*, *ROE*, *MB*, *CA*, *OP*, and *EBS*.

2.5 Empirical results

2.5.1 Summary statistics for the bank merger sample

Table 2.1 presents summary statistics on the merger distribution and merger-related characteristics over the sample period 1996-2006. As shown in panel A of Table 2.1, the number of mergers increased smoothly from 1996 and reached its peak in 1999 (15 mergers in 1999, out of 100 mergers between 1996 and 2006, or approximately 15%). Panel A of Table 2.1 also reports the mean and median values for annual mergers. Although there were 15 mergers in 1999, they only account for 2.17% of the overall sum value of mergers in the sample. On average (median), mergers with the

largest value appeared in 2004 (1997), with about $8445.92 ($1131.17) million.[11] Panel B of Table 2.1 presents the statistics for the merger-related information. In line with previous findings (Anderson et al., 2004; Houston and Ryngaert, 1994; Becher, 2000), on average, acquiring shareholders experience a significant loss of 3.03% (p-value < 0.01) wealth through merger deals, while target shareholders enjoy a significant wealth gain of 19.37% (p-value < 0.01). The combined returns show significantly average wealth gains of 0.99% (p-value < 0.1). The median value of synergistic gain is 0.37%, which is insignificantly different from zero. For the remaining results shown in panel B of Table 2.1, target firms are, on average, smaller than acquiring firms, since the average relative size is 36.78%. Similar with findings by DeLong (2003), around 90% of bank mergers in the sample are financed by stock.[12] Moreover, during the sample period, 46% of mergers were interstate bank mergers. For the activity mergers, following Cornett et al. (2003), the median value of the daily stock return correlation coefficient for the whole sample is 0.1093. Therefore, mergers undertaken by bidder and target banks whose correlation coefficient of the daily stock return is lower than 0.1093, are regarded as activity-diversifying mergers. This leads to 49% activity-diversifying mergers over the sample period 1996-2006.

[11] There were two megamergers in 2004. JP Morgan Chase & Co acquired Bank One Corporation, with a transaction value of $58663.15 million, and Wachovia Corp acquired South Trust Corporation, with a deal value of $14115.80 million.

[12] Although Malmendier and Tate (2008) indicate that overconfident CEOs are more likely to use cash to finance a merger, since CEOs are not willing to share future gains with target firms, the authors also confirm that overconfident managers are willing to finance deals with stocks when their firms have a Tobin Q value higher than the median level of the industry.

Table 2.1 Summary Statistics for the Sample of 100 Bank Mergers Over 1996-2006

Panel A reports the value and distribution of 100 bank mergers from 1996 to 2006. Panel B presents the merger-related information. Here CCAR is the three-day bidder and target combined CARs calculated by the market model. The market model coefficients are estimated with the CRSP value-weighted portfolio over the period (-250, -21) (where the announcement day is denoted day 0). The weights of bidders and targets are calculated based on their market value two days prior to the merger announcement date. Bidder (BCAR) and target (TCAR) are the three-day window prediction error from an ordinary least square (OLS) regression of the market model estimated for each firm through the period (-250, -21) (where the announcement day is denoted day 0), respectively. Here PREMIUM is the one-week prior to merger announcement date premium reported by Thomson One Banker; RS is relative size, computed as the ratio of target total assets to bidder total assets; PM is a binary variable equal to one if a merger is financed more than 51% in cash, and zero otherwise; GEO_D and ACT_D are dummy variables equal to one if mergers involve geographical and activity diversification, and zero otherwise. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

Panel A. Summary statistics on the merger value and distribution

Year	Number of Bank Mergers	%	Sum Value of Mergers ($Mil)	%	Mean Value of Mergers ($Mil)	Median Value of Mergers ($Mil)
1996	5	5.00	9951.5	3.94	1990.3	85.28
1997	9	9.00	28834.23	11.40	3203.8	1131.17
1998	13	13.00	51197.08	20.25	3938.24	413.4
1999	15	15.00	5487.4	2.17	365.83	108.95
2000	11	11.00	19398.32	7.67	1763.48	1028.35
2001	11	11.00	1214.2	0.48	110.38	74.02
2002	2	2.00	101.31	0.04	50.66	50.66
2003	12	12.00	54673.99	21.62	4556.17	198.48
2004	9	9.00	76013.28	30.06	8445.92	317.07
2005	11	11.00	5522.56	2.18	502.05	178.06
2006	2	2.00	436.07	0.17	218.03	218.03
Overall	100	100	252829.94	100	2528.30	210.91

Panel B. Summary statistics for merger-related characteristics

Sample Firm	Mean	Median	Minimum	Maximum
CCAR	0.99%	0.37%	-10.86%	22.78%
	[0.058]*	[0.129]		
BCAR	-3.03%	-3.06%	-18.72%	28.22%
	[0.000]***	[0.000]***		
TCAR	19.37%	17.17%	-5.19%	65.68%
	[0.000]***	[0.000]***		
PREMIUM	34.59%	32.11%	0.57%	93.33%
RS	36.78%	25.06%	10.09%	298.86%
PM	0.1000	0	0	1
GEO_D	0.4600	0	0	1
ACT_D	0.4900	0	0	1
Observations	100	100	100	100

In order to investigate whether CEO attributes are volatile or centralized based on different time periods, a comprehensive descriptive analysis of the CEO attribute, bidder and target CEOs are sorted out in terms of cognitive bias types like overconfident, dominating, overconfident-dominating and none overconfident-dominating characteristics. As discussed in Brown and Sarma (2007) and Malmendier and Tate (2008), CEO cognitive bias may also be affected by market environment and thus CEO beliefs may behave as centralized or fluctuated over different time periods. Panels A and B of Table 2.2 show the annual distribution of overconfident, dominating, overconfident-dominating and none overconfident-dominating target and acquiring CEOs, respectively. Briefly, overconfident, dominant and overconfident-dominant target CEOs are concentrated from 1997 to 2000 whilst same evidence could not be obtained for those percentages of acquiring CEO attributes.

The largest number of overconfident target and acquiring CEOs is found in 1999 (16.67% for target CEOs and 19.30% for acquiring CEOs), which is also the year with the most merger transactions. Since the Gramm-Leach-Bliley Act was valid in 1999, this might indicate that booming merger volume is affected by the extent of deregulation in the banking industry. Further, for target firms from 1996 to 2000, the percentage of dominating CEOs increases steadily from 5.77% to 15.38%, while the percentage of overconfident-dominating CEOs increases from 5.56% to 19.44%. The percentage of dominating acquiring CEOs reaches its peak at 15.09% in 1999,

followed by a decline to 9.43% in 2000. The percentage difference for overconfident-dominating acquiring CEOs in 1996 and 2000 is only 2.63%. From the perspective of the whole sample year, the number of acquiring overconfident-dominating CEOs is less volatile than that of target overconfident-dominating CEOs while the percentage of none overconfident-dominating target CEOs is less volatile than its peered acquiring CEOs.

Panel C exhibits the fundamental characteristics for targets and bidders. Generally in line with Houston and Rygaert (1994), Houston et al. (2001), and Anderson et al. (2004), bidder banks are significantly larger and more profitable and have higher growth opportunities (higher market valuation) than target banks. However, bidder and target banks do have similar CA ratios, which indicate that the liquidity problem is not a significant reason for target firms to be acquired. In the corporate governance sector, target CEOs hold more ownerships than acquiring CEOs, and the board size of target banks is smaller than that of acquiring banks.

Table 2.2 Summary Statistics for Bank Mergers with Overconfident, Dominating, and Overconfident–Dominating CEOs

This table shows the summary statistics for bank mergers with overconfident, dominating, and overconfident-dominating CEOs. Panel A reports the distribution of target CEOs with these three attributes over the period 1996-2006, while the distribution of bidder CEOs with these three attributes is shown in panel B. The variables OV_T, DOM_T, OV_DOM_T and Non_OV_DOM_T are for overconfident, dominating, overconfident-dominating and none overconfident-dominating target CEOs, respectively, while OV_A, DOM_A, OV_DOM_A and Non_OV_DOM_A are for overconfident, dominating, overconfident-dominating and none overconfident-dominating acquiring CEOs, respectively. Firm-related fundamental characteristics are presented in panel C. Size is the logarithmic value of the book value of total assets; ROE is calculated as the net income available divided by the fiscal year end book value of the common equity of shareholders; MB is the market-to-book ratio, computed as the sum of total assets and the market value of equity, minus the book value of equity, divided by total assets; CA is the CA ratio, which equals to the sum of tier 1 and tier 2 capital divided by the risky weighted average assets. Here OP is CEO ownership percentage, calculated as the percentage of the number of shares held by the CEO divided by the company's common shares outstanding × 1,000,000. EBS is the efficient board size, a dummy variable equal to one if the board size is between four and 12 directors, and zero otherwise. The subscripts A and T indicate acquiring banks and target banks, respectively. All variables are measured at the end of the fiscal year prior to the merger announcement date. The p-values are in parentheses below the coefficients. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

Panel A: Bank mergers with overconfident, dominating, and overconfident-dominating target CEOs by year

Year	OV_T	%	DOM_T	%	OV_DOM_T	%	Non_OV_DOM_T	%
1996	2	3.33	3	5.77	2	5.56	2	8.70
1997	6	10.00	7	13.46	6	16.67	2	8.70
1998	7	11.67	8	15.38	4	11.11	1	4.35
1999	10	16.67	6	11.54	5	13.89	4	17.39
2000	10	16.67	8	15.38	7	19.44	0	0.00
2001	5	8.33	5	9.62	1	2.78	2	8.70
2002	0	0.00	1	1.92	0	0.00	1	4.35
2003	6	10.00	6	11.54	4	11.11	4	17.39
2004	4	6.67	3	5.77	2	5.56	4	17.39
2005	8	13.33	4	7.69	4	11.11	3	13.04
2006	2	3.33	1	1.92	1	2.78	0	0.00
Overall	60	100	52	100	36	100	23	100

Panel B: Bank mergers with overconfident, dominating, and overconfident-dominating acquiring CEOs by year

Year	OV_A	%	DOM_A	%	OV_DOM_A	%	Non_OV_DOM_A	%
1996	4	7.02	4	7.55	4	10.53	1	3.57
1997	6	10.53	5	9.43	4	10.53	2	7.14
1998	5	8.77	7	13.21	3	7.89	4	14.29
1999	11	19.30	8	15.09	5	13.16	1	3.57
2000	8	14.04	5	9.43	5	13.16	3	10.71
2001	5	8.77	5	9.43	3	7.89	4	14.29
2002	2	3.51	1	1.89	1	2.63	0	0.00
2003	5	8.77	5	9.43	4	10.53	6	21.43
2004	5	8.77	6	11.32	4	10.53	2	7.14
2005	5	8.77	6	11.32	4	10.53	4	14.29
2006	1	1.75	1	1.89	1	2.63	1	3.57
Overall	57	100	53	100	38	100	28	100

Panel C: Firm-related fundamental characteristics

Firm Characteristics	Mean	Difference	Median	Difference	Minimum	Maximum
$SIZE_A$	3.7295	0.5740	3.5655	0.585	2.5522	5.887
$SIZE_T$	3.1555	[0.000]***	2.9806	[0.000]***	2.0763	5.514
ROE_A	0.1377	0.0179	0.1414	0.0192	0.0115	0.2793
ROE_T	0.1198	[0.009]***	0.1222	[0.011]**	0.008	0.2813
MB_A	1.1143	0.0427	1.1022	0.0355	0.9348	1.5482
MB_T	1.0716	[0.000]***	1.0667	[0.000]***	0.9783	1.2247
CA_A	0.1353	-0.0044	0.1268	-0.0053	0.0801	0.28
CA_T	0.1397	[0.175]	0.1321	[0.661]	0.099	0.287
OP_A	0.0209	-0.0152	0.0085	-0.0115	0.0001	0.475
OP_T	0.0361	[0.030]**	0.0199	[0.000]***	0.0004	0.5397
EBS_A	0.46	-0.2000	0	-1	0	1
EBS_T	0.66	[0.001]***	1	[0.003]***	0	1

2.5.2 Univariate analysis

The univariate analysis is a kind of preliminary statistical analysis that contains the measurements applied for the unit analysis based on the specific time window one at a time. The main purpose of adopting univariate analysis is to investigate the average condition where variance and standard deviation figures are gathered.

Comparing with other analysis methods, univariate analysis is predominant in several aspects. First, univariate analysis is more straightforward in interpreting statistical results as multivariate models may usually produce unexpected results that are difficult to be explained. Second, as data used in univariate analysis is assured, results based on the univariate analysis are more reliant in providing accurate predictions

than other types of analysis approach in signaling multivariate results. Third, univariate analysis is flexible for researchers to change analysis scenarios as it shows modified results when one variable changes and other factors remain unchanged.

Univariate analysis also owns significant shortcomings and thus should be further enhanced through multivariate analysis. As multivariate analysis provides statistical estimation results from more than one response variable at a time, univariate analysis is unable to perform such systematic analysis and less comprehensive in the panel data set. Furthermore, univariate analysis fails to display the statistical relationship among different variables since it only considers one variable at a time.

In summary, univariate analysis is a direct statistical approach in discussing simple information for obtained data while it also shows reasonable predictions of multivariate analysis results. However, due to the inherent limitations, univariate analysis results usually acts as the prior-step of the multivariate analysis where results should be further improved through multivariate models (Altman, 1968).

Table 2.3 shows the comparison analysis of the overconfidence, dominance, and overconfidence-dominance effects on merger premiums, abnormal returns, and combined synergistic value to shareholders. Specifically, the results of target and bidder overconfidence effects on the terms of mergers are shown in panels A and B of Table 2.3. On average, overconfident acquiring CEOs pay higher premiums than do

non-overconfident acquiring CEOs, while there is no statistical evidence to indicate that overconfident target CEOs are positively related with higher merger premiums. As a result, when compared with the insignificant 0.38% wealth loss for acquiring shareholders with non-overconfident CEOs, acquiring shareholders with overconfident CEOs experience a significant 5.03% wealth loss. The mean and median differences are significant, -4.65% and -3.96%, respectively. The mean and median differences of the combined synergistic value for acquiring shareholders with overconfident and non-overconfident CEOs are also significant, -5.80% and -4.39%, respectively. No significant differences are found between overconfident and non-overconfident target CEOs in stock market abnormal returns and the market-value weighted combined synergistic value.

Panels C and D of Table 2.3 describe the dominance effect on merger valuation outcomes. Similar to the findings in panel A of Table 2.3, limited evidence has been found to distinguish whether dominating target CEOs lead to more abnormal returns for target shareholders and decrease the synergistic value of mergers. However, the only significant, 7.54%, difference in average merger premiums between the dominating and non-dominating target CEOs supports the hypothesis that dominating target CEOs, on average, negotiate higher merger premiums from bidders. The bidder side dominance effect is shown in panel D of Table 2.3. Similar to the findings in panel B, on average, dominating acquiring CEOs earn lower abnormal returns (mean difference is 3.92%, p-value < 0.01) and give a lower synergistic value (mean

difference 4.64%, p-value < 0.01) for acquiring shareholders when compared with non-dominating acquiring CEOs.

The results for overconfident-dominating targets and acquiring CEOs are displayed in panels E and F of Table 2.3. As shown in panel E, overconfident-dominating target CEOs negotiate higher merger premiums (8.13%, p-value < 0.05) for shareholders than do non-overconfident-dominating target CEOs. In addition, based on the median difference, overconfident-dominating target CEOs decrease synergistic value by 1.39% (p-value < 0.10). The results in panel F of Table 2.3 for the bidder side overconfidence-dominance effect show a similar picture to those in panels B and D; that is, overconfident-dominating acquiring CEOs do destroy the wealth of acquiring shareholders.

Overall, the findings presented in Table 2.3 indicate that while overconfident, dominating, and overconfident-dominating acquiring CEOs lead to lower stock market returns and synergistic losses for acquiring shareholders, such evidence is lacking for the target side; that is, only when target CEOs are both overconfident and dominating do they bargain higher premiums from bidders on the average level and decrease the synergistic value on the median level.

Table 2.3 Comparison Analysis of Valuation Effects of Mergers with Overconfident, Dominating, and Overconfident-Dominating CEOs

Table 2.3 shows the results of a comparison analysis of valuation effects on bank mergers with overconfident (OV), dominating (DOM), and overconfident-dominating (OV_DOM) CEOs and their opposite types of CEOs based on the target and bidder sides. Panels A and B refer to overconfident target CEOs and acquiring CEOs respectively. Panels C and D are the results for dominating target and acquiring CEOs respectively. Panels E and F are comparison results for overconfident-dominating target and acquiring CEOs respectively. Here PREMIUM, TCAR, and BCAR have the same definitions as in Table 2.1. Observations are for the number of CEOs with specific attributes in each group. The p-values are in parentheses below the coefficients. *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

Panel A. Valuation effects with OV target CEOs and NOV target CEOs

Variables	OV		NOV			
	Mean	Median	Mean	Median	Mean Diff	Median Diff
PREMIUM	34.47%	31.17%	34.77%	33.31%	-0.30%	-2.14%
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.529]	[0.768]
TCAR	19.13%	15.10%	19.73%	19.31%	-0.60%	-4.21%
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.584]	[0.452]
CCAR	0.62%	-0.11%	1.56%	0.69%	-0.94%	0.83%
	[0.183]	[0.900]	[0.041]**	[0.069]*	[0.194]	[0.156]
Observations	60	60	40	40		

Panel B. Valuation effects with OV acquiring CEOs and NOV acquiring CEOs

PREMIUM	34.91%	32.63%	34.16%	31.45%	0.75%	1.18%
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.425]	[0.876]
BCAR	-5.03%	-4.57%	-0.38%	-0.61%	-4.65%	-3.96%
	[0.000]***	[0.000]***	[0.327]	[0.138]	[0.000]***	[0.000]***
CCAR	-1.50%	-1.11%	4.30%	3.28%	-5.80%	-4.39%
	[0.002]***	[0.004]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Observations	57	57	43	43		

Panel C. Valuation effects with DOM target CEOs and NDOM target CEOs

Variables	DOM		NDOM			
	Mean	Median	Mean	Median	Mean Diff	Median Diff
PREMIUM	38.21%	32.47%	30.67%	31.32%	7.54%	1.15%
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.027]**	[0.192]
TCAR	21.06%	17.39%	17.55%	17.08%	3.51%	0.31%
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.101]	[0.579]
CCAR	0.42%	-0.25%	1.62%	0.71%	-1.20%	-0.96%
	[0.273]	[0.848]	[0.028]**	[0.065]*	[0.131]	[0.196]
Observations	52	52	48	48		

Panel D. Valuation effects with DOM acquiring CEOs and NDOM acquiring CEOs

PREMIUM	36.64%	32.63%	32.28%	31.91%	4.36%	0.72%
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.134]	[0.546]
BCAR	-4.87%	-4.07%	-0.95%	-0.86%	-3.92%	-3.21%
	[0.000]***	[0.000]***	[0.125]	[0.029]**	[0.000]***	[0.000]***

CCAR	-1.19%	-0.99%	3.45%	2.13%	-4.64%	-3.12%
	[0.016]**	[0.048]**	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Observations	53	53	47	47		

Panel E. Valuation effects with OV_DOM target CEOs and NOV_DOM target CEOs

Variables	OV_DOM		NOV_DOM			
	Mean	Median	Mean	Median	Mean Diff	Median Diff
PREMIUM	39.79%	31.89%	31.66%	32.27%	8.13%	-0.38%
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.023]**	[0.196]
TCAR	21.23%	15.90%	18.33%	18.21%	2.90%	-2.31%
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.156]	[0.841]
CCAR	0.16%	-0.66%	1.46%	0.73%	-1.30%	-1.39%
	[0.425]	[0.545]	[0.019]**	[0.046]**	[0.121]	[0.077]*
Observations	36	36	64	64		

Panel F. Valuation effects with OV_DOM acquiring CEOs and NOV_DOM acquiring CEOs

PREMIUM	35.39%	33.25%	34.10%	31.68%	1.29%	1.57%
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.375]	[0.876]
BCAR	-5.44%	-4.67%	-1.55%	-1.60%	-3.89%	-3.07%
	[0.000]***	[0.000]***	[0.011]**	[0.000]***	[0.000]***	[0.000]***
CCAR	-2.18%	-2.14%	2.94%	1.84%	-5.12%	-3.98%
	[0.000]***	[0.002]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Observations	38	38	62	62		

To detect the source of negative abnormal returns to acquiring shareholders, following DeLong (2001), the wealth effect of diversifying and focusing bank mergers is reported in Table 2.4. Panel A of Table 2.4 refers to the comparison analysis between the geography- or activity-diversifying merger and the focusing merger. The average three-day abnormal return for acquiring shareholders in diversifying mergers is -4.34%, which is highly significant at 1%. Shareholders in focusing mergers receive positive but statistically insignificant stock market responses. No significant positive combined returns are detected for diversifying mergers, while the average synergistic value for focusing mergers is 5.90% (p-value < 0.01). Again, when bidder bank shareholders in diversifying and focusing mergers are compared, the mean (median)

difference, -5.45% (-4.10%; both p-values < 0.01), of BCAR and the mean (median) difference, -6.46% (-6.28%; both p-values < 0.01), of CCAR suggest that diversifying mergers do destroy shareholders' wealth. Pure geography- and activity-diversifying mergers are further sorted from the bank merger sample. The comparison results are shown in panels B and C of Table 2.4. Generally, pure geography- and activity-diversifying mergers cause significant negative abnormal returns for bidder shareholders and no significant synergistic value is gathered from these types of mergers. The strongly significant difference between geography- (activity-) diversifying mergers and focusing mergers firmly confirms the wealth loss for bidder shareholders involved in diversifying mergers. The results for the extreme case, when the merger is both geography- and activity-diversifying, are shown in panel D of Table 2.4. The results show that, on average, shareholders suffer the greatest wealth loss, -6.27%, when mergers are both interstate and activity diversified. One important finding is that there appears to be a 2.40% (p-value < 0.01) and 2.02% (p-value < 0.05) synergistic value loss for geography- and activity-diversifying mergers based on the average and median levels, respectively. Overall, in line with findings in prior literature (DeLong, 2001; Cornett et al., 2003), diversifying mergers, whether geography- or activity-diversifying, or both, are discounted by the stock market, while focusing mergers lead to insignificant positive abnormal returns for bidder bank shareholders. Evidence of diversifying mergers destroying synergistic value is only valid for geography-activity diversifying mergers, while other types of diversifying mergers have insignificant positive or negative effects on synergistic value.

Table 2.4 Comparison Analysis of Market Responses to Diversifying Mergers and Focusing Mergers

Table 2.4 presents the wealth effect of diversifying mergers when compared with focusing mergers. The purely geography (activity)-diversifying mergers are mergers that are not activity (geography)-diversifying. Mergers that are both activity- and geography-diversifying involve target and acquiring firms with different activities from different states. Focusing mergers refer to neither geography- nor activity-diversifying. The p-values are in parentheses below. *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

Panel A. Market responses for geography- or activity-diversifying mergers

Variables	Diversifying Mergers		Focusing Mergers			
	Mean	Median	Mean	Median	Mean Diff	Median Diff
BCAR	-4.34%	-3.59%	1.11%	0.51%	-5.45%	-4.10%
	[0.000]***	[0.000]***	[0.208]	[0.627]	[0.000]***	[0.000]***
CCAR	-0.56%	-0.64%	5.90%	5.64%	-6.46%	-6.28%
	[0.122]	[0.174]	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Observations	76	76	24	24		

Panel B. Market responses for purely geography-diversifying mergers

Variables	Pure Geography-Diversifying Mergers		Focusing Mergers			
	Mean	Median	Mean	Median	Mean Diff	Median Diff
BCAR	-4.14%	-3.54%	1.11%	0.51%	-5.25%	-4.05%
	[0.000]***	[0.000]***	[0.208]	[0.627]	[0.001]***	[0.001]***
CCAR	-0.27%	-0.99%	5.90%	5.64%	-6.17%	-6.63%
	[0.387]	[0.494]	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Observations	27	27	24	24		

Panel C. Market responses for purely activity-diversifying mergers

Variables	Pure Activity-Diversifying Mergers		Focusing Mergers			
	Mean	Median	Mean	Median	Mean Diff	Median Diff
BCAR	-3.29%	-3.15%	1.11%	0.51%	-4.40%	-3.66%
	[0.036]**	[0.002]***	[0.208]	[0.627]	[0.001]***	[0.000]***
CCAR	0.36%	0.35%	5.90%	5.64%	-5.54%	-5.29%
	[0.278]	[0.607]	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Observations	30	30	24	24		

Panel D. Market responses for mergers that are both geography- and activity-diversifying

Variables	Mergers that are Both Activity- and Geography-Diversifying		Focusing Mergers			
	Mean	Median	Mean	Median	Mean Diff	Median Diff
BCAR	-6.27%	-5.12%	1.11%	0.51%	-7.38%	-5.63%
	[0.000]***	[0.000]***	[0.208]	[0.627]	[0.000]***	[0.000]***
CCAR	-2.40%	-2.02%	5.90%	5.64%	-8.30%	-7.66%
	[0.009]***	[0.027]**	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Observations	19	19	24	24		

2.5.3 Multivariate analysis

2.5.3.1 Multicollinearity test

Multicollinearity is a statistical problem when at least two explanatory variables in a regression model are highly correlated. A multicollinearity phenomenon could lead to the high P-value while the confidence interval is wide and thus decreases the significance level of main explanatory variables. In order to detect the potential multicollinearity problem over regression models from 2.4.1 to 2.6.3, three correlation matrices have been developed and results are shown in Table 2.5.

Panels A, B and C of Table 2.5 indicate the correlation results of regression models for target, bidder and combined side, respectively. In general, the correlation coefficients of main independent variables, such as overconfidence, dominance and overconfidence-dominance, do not show the extreme correlation with each other while there is also no evidence that main explanatory variables are highly correlated with other control variables.

Table 2.5 Correlation Matrices of Explanatory Variables

Table 2.5 shows the preliminary correlation analysis for explanatory variables of regression models 2.4.1 to 2.6.3. Panels A, B and C display the correlation matrix of estimation models for target, bidder and combined side, respectively. Premium is the one-week offer price prior to the merger announcement date from Thomson One Banker. $TCAR$ and $BCAR$ refer to market responses for target and acquiring firms, which is the three-day CARs computed by the market model with the CRSP value-weighted portfolio over the period (-250, -21) (the merger announcement day is denoted as day 0).The variables OV_T, DOM_T and OV_DOM_T are for overconfident, dominating and overconfident-dominating target CEOs, respectively, while OV_A, DOM_A and OV_DOM_A are for overconfident, dominating and overconfident-dominating acquiring CEOs, respectively. The payment method (PM) involves a dummy variable that equals one if a deal is financed with more than 50% cash, and zero otherwise; GEO_DIV and ACT_DIV refer to geography diversifying and activity diversifying mergers; Relative size (RS) is defined as the fiscal year end book value of total assets in target banks divided by the book value of total assets in bidder banks before the announcement date. Size is the logarithmic value of the book value of total assets; ROE is calculated as the net income available divided by the fiscal year end book value of the common equity of shareholders; MB is the market-to-book ratio, computed as the sum of total assets and the market value of equity, minus the book value of equity, divided by total assets; CA is the CA ratio, which equals to the sum of tier 1 and tier 2 capital divided by the risky weighted average assets; OP is CEO ownership percentage, calculated as the percentage of the number of shares held by the CEO divided by the company's common shares outstanding × 1,000,000; EBS is the efficient board size, a dummy variable equal to one if the board size is between four and 12 directors, and zero otherwise. The subscripts A and T indicate acquiring banks and target banks, respectively. All variables are measured at the end of the fiscal year prior to the merger announcement date.

Panel A. Correlation results of regression models for target side

	PREMIUM	TCAR (-1,1)	OV _T	DOM _T	OV_ DOM_T	PM	GEO _DIV	ACT _DIV	SIEZ _T	ROE _T	MB _T	CA _T	OP _T	EBS _T
PREMIUM	1	0.57	-0.01	0.19	0.2	-0.03	0.02	0.14	-0.13	-0.06	-0.23	-0.02	-0.14	0.08
TCAR(-1,1)	0.57	1	-0.02	0.13	0.1	0.13	-0.21	-0.06	-0.23	-0.19	-0.27	0.06	-0.09	0.1
OV_T	-0.01	-0.02	1	0.16	0.4	-0.07	0.06	0.02	0.13	0.28	0.38	-0.11	-0.08	-0.24
DOM_T	0.19	0.13	0.16	1	0.42	-0.15	0.16	-0.02	0.23	0.01	0.06	-0.05	0.17	-0.14
OV_DOM_T	0.2	0.1	0.4	0.42	1	-0.18	0.14	0.06	0.19	0.17	0.22	-0.12	0	-0.17
PM	-0.03	0.13	-0.07	-0.15	-0.18	1	-0.04	-0.19	-0.23	-0.2	-0.25	0.31	0.07	0.17
GEO_DIV	0.02	-0.21	0.06	0.16	0.14	-0.04	1	-0.14	0.55	0.23	0.29	-0.1	0.05	-0.35
ACT_DIV	0.14	-0.06	0.02	-0.02	0.06	-0.19	-0.14	1	-0.27	0.14	-0.11	0.02	0.06	0.28
SIEZ_T	-0.13	-0.23	0.13	0.23	0.19	-0.23	0.55	-0.27	1	0.32	0.47	-0.27	-0.28	-0.6
ROE_T	-0.06	-0.19	0.28	0.01	0.17	-0.2	0.23	0.14	0.32	1	0.48	-0.22	-0.17	-0.21
MB_T	-0.23	-0.27	0.38	0.06	0.22	-0.25	0.29	-0.11	0.47	0.48	1	-0.22	-0.31	-0.43
CA_T	-0.02	0.06	-0.11	-0.05	-0.12	0.31	-0.1	0.02	-0.27	-0.22	-0.22	1	0.17	0.21
OP_T	-0.14	-0.09	-0.08	0.17	0	0.07	0.05	0.06	-0.28	-0.17	-0.31	0.17	1	0.28

EBS_T	0.08	0.1	-0.24	-0.14	-0.17	0.17	-0.35	0.28	-0.6	-0.21	-0.43	0.21	0.28	1

Panel B. Correlation results of regression models for bidder side

	PREMIUM	BCAR (-1,1)	OV _A	DOM _A	OV_ DOM_A	PM	GEO _DIV	ACT _DIV	SIZE _A	ROE _A	MB _A	CA _A	OP _A	EBS _A
PREMIUM	1	-0.37	0.02	0.11	0.03	-0.03	0.02	0.14	-0.15	-0.01	-0.02	0.1	-0.05	-0.03
BCAR(-1,1)	-0.37	1	-0.41	-0.36	-0.34	0.19	-0.33	-0.25	-0.23	-0.23	-0.14	0.05	0.03	0.15
OV_A	0.02	-0.41	1	0.25	0.45	-0.18	0.27	0.29	0.29	0.46	0.13	-0.1	0.16	0.03
DOM_A	0.11	-0.36	0.25	1	0.48	-0.22	0.43	0.12	0.37	0.16	-0.1	0	0.16	-0.18
OV_DOM_A	0.03	-0.34	0.45	0.48	1	-0.12	0.39	0.22	0.37	0.31	-0.1	-0.12	0.23	-0.02
PM	-0.03	0.19	-0.18	-0.22	-0.12	1	-0.04	-0.19	-0.15	-0.14	-0.24	0.04	-0.02	0.23
GEO_DIV	0.02	-0.33	0.27	0.43	0.39	-0.04	1	-0.14	0.57	0.2	0.13	-0.01	-0.07	-0.37
ACT_DIV	0.14	-0.25	0.29	0.12	0.22	-0.19	-0.14	1	-0.24	0.11	-0.05	-0.01	0.09	0.3
SIZE_A	-0.15	-0.23	0.29	0.37	0.37	-0.15	0.57	-0.24	1	0.33	0.13	-0.19	-0.22	-0.41
ROE_A	-0.01	-0.23	0.46	0.16	0.31	-0.14	0.2	0.11	0.33	1	0.48	-0.16	0.06	-0.02
MB_A	-0.02	-0.14	0.13	-0.1	-0.1	-0.24	0.13	-0.05	0.13	0.48	1	0.11	-0.02	-0.05
CA_A	0.1	0.05	-0.1	0	-0.12	0.04	-0.01	-0.01	-0.19	-0.16	0.11	1	0.04	0.08
OP_A	-0.05	0.03	0.16	0.16	0.23	-0.02	-0.07	0.09	-0.22	0.06	-0.02	0.04	1	0.18
EBS_A	-0.03	0.15	0.03	-0.18	-0.02	0.23	-0.37	0.3	-0.41	-0.02	-0.05	0.08	0.18	1

Panel C. Correlation results of regression models for combined side

	CCAR (-1,1)	OV _T	DOM _T	OV_ DOM_T	OV _A	DOM _A	OV_ DOM_A	RS	PM	GEO _DIV	ACT _DIV	ROE _T	ROE _A	MB _T	MB _A	CA _T	CA _A	OP _T	OP _A	EBS _T	EBS _A
CCAR(-1,1)	1	-0.09	-0.11	-0.12	-0.54	-0.44	-0.47	0.3	0.23	-0.37	-0.31	-0.22	-0.3	-0.09	-0.1	0.07	0.1	-0.07	-0.05	0.11	0.06
OV_T	-0.09	1	0.16	0.4	0.16	0.05	0.09	0	-0.07	0.06	0.02	0.28	0.07	0.38	0.2	-0.11	-0.07	-0.08	0.04	-0.24	0.02
DOM_T	-0.11	0.16	1	0.42	-0.03	0.26	0.09	0.02	-0.15	0.16	-0.02	0.01	-0.18	0.06	-0.14	-0.05	0.09	0.17	-0.09	-0.14	-0.24
OV_DOM_T	-0.12	0.4	0.42	1	0.1	0.21	0.1	0.02	-0.18	0.14	0.06	0.17	-0.04	0.22	-0.02	-0.12	0.05	0	-0.1	-0.17	-0.11
OV_A	-0.54	0.16	-0.03	0.1	1	0.32	0.45	-0.21	-0.18	0.27	0.29	0.18	0.46	0.05	0.13	-0.09	-0.1	0.03	0.16	-0.11	0.03

DOM_A	-0.44	0.05	0.26	0.21	0.32	1	0.48	-0.04	-0.22	0.43	0.12	0.14	0.16	0.02	-0.1	-0.14	0	0.09	0.16	-0.13	-0.18
OV_DOM_A	-0.47	0.09	0.09	0.1	0.45	0.48	1	-0.16	-0.12	0.39	0.22	0.18	0.31	0.04	-0.1	-0.06	-0.12	0.06	0.23	-0.09	-0.02
RS	0.3	0	0.02	0.02	-0.21	-0.04	-0.16	1	-0.14	0.07	-0.21	-0.05	-0.14	0.2	0.15	-0.09	0.19	-0.12	-0.06	-0.18	-0.03
PM	0.23	-0.07	-0.15	-0.18	-0.18	-0.22	-0.12	-0.14	1	-0.04	-0.19	-0.2	-0.14	-0.25	-0.24	0.31	0.04	0.07	-0.02	0.17	0.23
GEO_DIV	-0.37	0.06	0.16	0.14	0.27	0.43	0.39	0.07	-0.04	1	-0.14	0.23	0.2	0.29	0.13	-0.1	-0.01	0.05	-0.07	-0.35	-0.37
ACT_DIV	-0.31	0.02	-0.02	0.06	0.29	0.12	0.22	-0.21	-0.19	-0.14	1	0.14	0.11	-0.11	-0.05	0.02	-0.01	0.06	0.09	0.28	0.3
ROE_T	-0.22	0.28	0.01	0.17	0.18	0.14	0.18	-0.05	-0.2	0.23	0.14	1	0.41	0.48	0.29	-0.22	-0.02	-0.17	-0.14	-0.21	-0.24
ROE_A	-0.3	0.07	-0.18	-0.04	0.46	0.16	0.31	-0.14	-0.14	0.2	0.11	0.41	1	0.27	0.48	-0.02	-0.16	-0.14	0.06	-0.15	-0.02
MB_T	-0.09	0.38	0.06	0.22	0.05	0.02	0.04	0.2	-0.25	0.29	-0.11	0.48	0.27	1	0.59	-0.22	-0.07	-0.31	-0.15	-0.43	-0.21
MB_A	-0.1	0.2	-0.14	-0.02	0.13	-0.1	-0.1	0.15	-0.24	0.13	-0.05	0.29	0.48	0.59	1	-0.04	0.11	-0.25	-0.02	-0.16	-0.05
CA_T	0.07	-0.11	-0.05	-0.12	-0.09	-0.14	-0.06	-0.09	0.31	-0.1	0.02	-0.22	-0.02	-0.22	-0.04	1	0.18	0.17	0.07	0.21	0.15
CA_A	0.1	-0.07	0.09	0.05	-0.1	0	-0.12	0.19	0.04	-0.01	-0.01	-0.02	-0.16	-0.07	0.11	0.18	1	-0.04	0.04	0.07	0.08
OP_T	-0.07	-0.08	0.17	0	0.03	0.09	0.06	-0.12	0.07	0.05	0.06	-0.17	-0.14	-0.31	-0.25	0.17	-0.04	1	0.24	0.28	0.01
OP_A	-0.05	0.04	-0.09	-0.1	0.16	0.16	0.23	-0.06	-0.02	-0.07	0.09	-0.14	0.06	-0.15	-0.02	0.07	0.04	0.24	1	0.17	0.18
EBS_T	0.11	-0.24	-0.14	-0.17	-0.11	-0.13	-0.09	-0.18	0.17	-0.35	0.28	-0.21	-0.15	-0.43	-0.16	0.21	0.07	0.28	0.17	1	0.41
EBS_A	0.06	0.02	-0.24	-0.11	0.03	-0.18	-0.02	-0.03	0.23	-0.37	0.3	-0.24	-0.02	-0.21	-0.05	0.15	0.08	0.01	0.18	0.41	1

However, Baum (2006) points out that the preliminary correlation matrix may not show strong evidence in detecting the multicollinearity problem. In order to undertake an efficient statistical diagnosis, many empirical studies adopt the variation inflation factors (VIF) to identify the multicollinearity phenomenon (Lin, 2008; Alheety and Gore, 2009; Redmayne et al., 2011).The main aim of VIF analysis is to test the increasing level of each regressor's variance because of the multicollinearity problem. The traditional VIF analysis contains two steps. The first step is to run an OLS regression with one specific explanatory variable as the dependent variable and other explanatory elements as independent variables. The second step is to calculate the VIF with the coefficient determination (R_i^2) derived from the first step, which is shown in equation 2.9:

$$\text{VIF} = \frac{1}{1-R_i^2} \qquad (2.9)$$

Following Baum (2006), the average VIF value is generated based on the OLS regression models where year dummy variables are also included. The multicollinearity problem can be detected if the largest VIF value is greater than 10. Table 2.6 shows VIF results with the descending order of regression models for target, bidder and combined side through equations 2.4.1 to 2.6.3. As mean value of each model presented in all three panels of Table 2.6 is smaller than 4 while the largest VIF value of each model is also smaller than 10, it is thus comfortable to suggest that the multicollinearity problem does not affect the precise of estimating results through regression models 2.4.1 to 2.6.3.

Table 2.6 Variance Inflation Factor (VIF) Analysis of Multicollinearity

Table 2.6 shows the VIF analysis for explanatory variables of OLS regression models 2.4.1 to 2.6.3 where year dummy variables are also included. Panels A, B and C display the VIF results for target, bidder and combined side, respectively. The variables OV_T, DOM_T and OV_DOM_T are for overconfident, dominating and overconfident-dominating target CEOs, respectively, while OV_A, DOM_A and OV_DOM_A are for overconfident, dominating and overconfident-dominating acquiring CEOs, respectively. The payment method (PM) involves a dummy variable that equals one if a deal is financed with more than 50% cash, and zero otherwise; GEO_DIV and ACT_DIV refer to geography diversifying and activity diversifying mergers; Relative size (RS) is defined as the fiscal year end book value of total assets in target banks divided by the book value of total assets in bidder banks before the announcement date. Size is the logarithmic value of the book value of total assets; ROE is calculated as the net income available divided by the fiscal year end book value of the common equity of shareholders; MB is the market-to-book ratio, computed as the sum of total assets and the market value of equity, minus the book value of equity, divided by total assets; CA is the CA ratio, which equals to the sum of tier 1 and tier 2 capital divided by the risky weighted average assets; OP is CEO ownership percentage, calculated as the percentage of the number of shares held by the CEO divided by the company's common shares outstanding × 1,000,000; EBS is the efficient board size, a dummy variable equal to one if the board size is between four and 12 directors, and zero otherwise. Variables Y1 to Y10 refer to year dummy variables which indicate year 1996 to year 2005. The subscripts A and T indicate acquiring banks and target banks, respectively. All variables are measured at the end of the fiscal year prior to the merger announcement date.

Panel A. Variance inflation factor (VIF) analysis for target side

Target CEO Overconfidence			Target CEO Dominance			Target CEO Overconfidence-Dominance		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
Y4	7.75	0.13	Y4	7.69	0.13	Y4	7.70	0.13
Y3	7.51	0.13	Y3	7.21	0.14	Y3	7.24	0.14
Y8	6.70	0.15	Y8	6.56	0.15	Y8	6.56	0.15
Y6	6.58	0.15	Y6	6.48	0.15	Y6	6.54	0.15
Y5	6.48	0.15	Y5	6.46	0.15	Y5	6.45	0.16
Y10	6.09	0.16	Y10	6.07	0.16	Y10	6.06	0.17
Y2	5.70	0.18	Y2	5.66	0.18	Y2	5.63	0.18
Y9	5.42	0.18	Y9	5.24	0.19	Y9	5.25	0.19
Y1	3.86	0.26	Y1	3.80	0.26	Y1	3.79	0.26
MB_T	2.75	0.36	SIZE_T	2.85	0.35	SIZE_T	2.72	0.37
SIZE_T	2.71	0.37	MB_T	2.58	0.39	MB_T	2.62	0.38
Y7	2.33	0.43	Y7	2.26	0.44	Y7	2.28	0.44
EBS_T	2.11	0.47	EBS_T	2.04	0.49	EBS_T	2.03	0.49
GEO_DIV	1.99	0.50	GEO_DIV	1.97	0.51	GEO_DIV	1.96	0.51
ROE_T	1.92	0.52	ROE_T	1.91	0.52	ROE_T	1.88	0.53
PM	1.61	0.62	PM	1.61	0.62	PM	1.61	0.62
OV_T	1.44	0.69	OP_T	1.48	0.67	CA_T	1.43	0.70
CA_T	1.43	0.70	CA_T	1.43	0.70	ACT_DIV	1.42	0.70
ACT_DIV	1.42	0.71	ACT_DIV	1.41	0.71	OP_T	1.40	0.71
OP_T	1.39	0.72	DOM_T	1.27	0.79	OV_DOM_T	1.24	0.81
Mean VIF	3.86		Mean VIF	3.80		Mean VIF	3.79	

Panel B. Variance inflation factor (VIF) analysis for bidder side

Acquiring CEO Overconfidence			Acquiring CEO Dominance			Acquiring CEO Overconfidence-Dominance		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
Y4	8.25	0.12	Y4	8.31	0.12	Y4	8.41	0.12
Y3	7.42	0.13	Y3	7.37	0.14	Y3	7.48	0.13

Y8	7.20	0.14	Y8	7.24	0.14	Y8	7.25	0.14
Y6	6.66	0.15	Y6	6.70	0.15	Y6	6.76	0.15
Y5	6.41	0.16	Y5	6.54	0.15	Y5	6.48	0.15
Y10	6.03	0.17	Y10	6.03	0.17	Y10	6.07	0.16
Y2	5.85	0.17	Y2	5.98	0.17	Y2	5.97	0.17
Y9	5.48	0.18	Y9	5.48	0.18	Y9	5.50	0.18
Y1	3.94	0.25	Y1	3.95	0.25	Y1	3.94	0.25
SIZE_A	2.51	0.40	SIZE_A	2.58	0.39	SIZE_A	2.58	0.39
ROE_A	2.32	0.43	MB_A	2.29	0.44	ROE_A	2.24	0.45
MB_A	2.10	0.48	ROE_A	2.17	0.46	MB_A	2.22	0.45
Y7	2.07	0.48	GEO_DIV	2.12	0.47	GEO_DIV	2.13	0.47
GEO_DIV	1.96	0.51	Y7	2.06	0.49	Y7	2.06	0.48
EBS_A	1.83	0.55	EBS_A	1.82	0.55	OV_DOM_A	1.96	0.51
OV_A	1.76	0.57	DOM_A	1.76	0.57	EBS_A	1.83	0.55
PM	1.54	0.65	PM	1.59	0.63	PM	1.55	0.65
ACT_DIV	1.53	0.65	CA_A	1.46	0.68	ACT_DIV	1.54	0.65
CA_A	1.41	0.71	ACT_DIV	1.46	0.68	CA_A	1.41	0.71
OP_A	1.20	0.83	OP_A	1.25	0.80	OP_A	1.30	0.77
Mean VIF	3.87		Mean VIF	3.91		Mean VIF	3.93	

Panel C. Variance inflation factor (VIF) analysis for combined side

CEO Overconfidence			CEO Dominance			CEO Overconfidence-Dominance		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
Y4	8.35	0.12	Y4	8.44	0.12	Y4	8.56	0.12
Y3	8.20	0.12	Y3	7.94	0.13	Y3	8.11	0.12
Y8	7.53	0.13	Y8	7.55	0.13	Y8	7.53	0.13
Y6	7.20	0.14	Y6	7.25	0.14	Y6	7.30	0.14
Y5	6.78	0.15	Y5	6.98	0.14	Y5	6.87	0.15
Y2	6.29	0.16	Y2	6.53	0.15	Y2	6.44	0.16
Y10	6.15	0.16	Y10	6.16	0.16	Y10	6.20	0.16
Y9	5.71	0.18	Y9	5.57	0.18	Y9	5.61	0.18
Y1	4.09	0.24	Y1	4.11	0.24	Y1	4.06	0.25
MB_T	3.35	0.30	MB_T	3.30	0.30	MB_T	3.29	0.30
MB_A	2.64	0.38	MB_A	2.78	0.36	MB_A	2.79	0.36
ROE_A	2.55	0.39	ROE_A	2.42	0.41	ROE_A	2.44	0.41
Y7	2.42	0.41	Y7	2.36	0.42	Y7	2.37	0.42
ROE_T	2.16	0.46	EBS_A	2.09	0.48	ROE_T	2.07	0.48
EBS_T	2.12	0.47	ROE_T	2.09	0.48	EBS_A	2.05	0.49
EBS_A	2.09	0.48	EBS_T	2.01	0.50	EBS_T	2.00	0.50
ACT_DIV	1.85	0.54	GEO_DIV	1.96	0.51	GEO_DIV	1.96	0.51
PM	1.85	0.54	PM	1.90	0.53	OV_DOM_A	1.88	0.53
OV_A	1.81	0.55	DOM_A	1.83	0.54	PM	1.88	0.53
GEO_DIV	1.71	0.59	ACT_DIV	1.75	0.57	ACT_DIV	1.83	0.55
CA_T	1.53	0.66	CA_A	1.54	0.65	RS	1.51	0.66
OV_T	1.52	0.66	RS	1.53	0.66	CA_T	1.51	0.66

RS	1.51	0.66	CA_T	1.52	0.66	CA_A	1.50	0.67
CA_A	1.51	0.66	OP_T	1.48	0.67	OP_T	1.45	0.69
OP_T	1.44	0.70	DOM_T	1.48	0.68	OP_A	1.33	0.75
OP_A	1.25	0.80	OP_A	1.29	0.78	OV_DOM_T	1.29	0.78
Mean VIF	3.60		Mean VIF	3.61		Mean VIF	3.61	

2.5.3.2 Target side

Table 2.7 reports the multivariate regression analysis results of whether overconfident, dominating, and overconfident-dominating target CEOs create shareholder wealth through bargaining higher premiums. Models (1) to (4) are for merger premiums, while models (5) to (8) are for target abnormal returns. Model (1) is the regression on control variables without the overconfident, dominating, and overconfident-dominating variable. Control variables, such as payment methods, diversifying mergers, size, and profitability, have insignificant effectiveness on merger premiums. In line with the findings of Palia (1993), Jensen (2005) and Moeller (2005), the significant negative coefficient of the MB ratio (-1.0735, p-value < 0.05) shows that overvalued target firms receive lower premiums from bidder banks. The marginally negative effect on merger premiums of the target CA ratio (coefficient is -0.9905, p-value < 0.1) supports the result by Palia (1993) that inefficient capital allocation in target banks leads to lower merger premiums. CEO ownership percentage is also negatively related to merger premiums (coefficient is -0.8154, p-value < 0.05). Model (2) refers to the target CEO overconfidence effect on merger premiums. The market-to-book ratio, CA ratio, and CEO ownership ratio are still significantly related with merger premiums, while the significant positive coefficient

of the target overconfidence factor confirms part of the first hypothesis, that overconfident target CEOs negotiate higher premiums from acquiring firms. The CEO dominance and overconfidence-dominance effects on merger premiums are examined in models (3) and (4) respectively. As expected, both factors have a significant positive relation with merger premiums, where the coefficient of the overconfident-dominating effect is the largest (0.1291, p-value < 0.01) when compared with the coefficients of the other two factors. Therefore, one could suggest that when target managers are jointly the CEO and chair, they bargain for higher premiums than do isolated overconfident or dominating CEOs.

Models (5) to (8) are the multivariate regression analysis results for target abnormal returns. Initially, only the CEO ownership ratio has a significant negative impact on target abnormal returns (the coefficient is -0.4924, p-value < 0.10). The overconfidence factor is then added in model (6). Results show that the overconfidence factor does not have significant positive power to explain the target shareholders' gain (the coefficient is 0.0539, p-value = 0.104). The CEO dominance effect is discussed in model (7). Results show a significant relation between dominating CEOs and target returns (the coefficient is 0.0704, p-value < 0.05). Meanwhile, they also suggest that larger target firms receive lower abnormal returns from the market, which confirms the size effect in corporate takeovers (Moeller et al., 2004). Finally, the CEO overconfidence-dominance effect on target abnormal returns is investigated in model (8). Once again, the overconfidence-dominance factor shows

strong significance in interpreting the target abnormal returns (the coefficient is 0.0809, p-value < 0.01). Moreover, the market-to-book ratio is negatively related to shareholder gains from the stock market, which indicates that the stock market may discount overvalued target firms after their mergers are completed.

Overall, consistent with Brown and Zorn (2006) and Liu and Taffler (2008), results from Table 2.7 suggest that overconfident, dominating, and overconfident-dominating target CEOs negotiate for higher merger premiums, especially when the overconfident CEO is also the chair of the firm board. Overconfident-dominating target CEOs create most of the significant wealth for target shareholders, while the pure overconfidence effect is insignificantly effective in determining target abnormal returns.

Table 2.7 Multivariate Regression Analysis of Target CEO Overconfidence, Dominance and Overconfidence-Dominance Effects

Table 2.7 shows the regression analysis of target CEO overconfidence (OV_T), dominance (DOM_T), and overconfidence-dominance (OV_DOM_T) effects on the terms of mergers. Models (1) to (4) are for PREMIUM, while models (5) to (8) are for TCAR. In detail, models (1) and (5) are the OLS regressions with control variables. Models (2) and (6) are regression models with the overconfidence effect on merger premium and target abnormal returns, respectively. Models (3) and (7) are regression models with dominance effects on PREMIUM and TCAR. Models (4) and (8) are estimations of the CEO overconfidence-dominance effect on PREMIUM and TCAR. All variables have the same definitions as in Tables 2.1 and 2.2. The p-values are reported in parentheses below the coefficients. Standard errors are adjusted using the Huber-White sandwich estimator of variance. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

	Model (1) PREMIUM	Model (2) PREMIUM	Model (3) PREMIUM	Model (4) PREMIUM	Model (5) TCAR	Model (6) TCAR	Model (7) TCAR	Model (8) TCAR
OV_T		0.0763				0.0539		
		[0.075]*				[0.104]		
DOM_T			0.1071				0.0704	
			[0.006]***				[0.020]**	
OV_DOM_T				0.1291				0.0809
				[0.001]***				[0.009]***
PM	0.0303	0.0212	0.0423	0.0444	0.0119	0.0055	0.0198	0.0207
	[0.682]	[0.772]	[0.552]	[0.525]	[0.835]	[0.923]	[0.722]	[0.707]
GEO_D	0.0645	0.0754	0.0732	0.0702	-0.0069	0.0008	-0.0011	-0.0033
	[0.193]	[0.126]	[0.124]	[0.132]	[0.856]	[0.983]	[0.975]	[0.928]
ACT_D	0.0170	0.0116	0.0133	0.0044	-0.0389	-0.0427	-0.0413	-0.0468
	[0.683]	[0.778]	[0.740]	[0.911]	[0.230]	[0.184]	[0.189]	[0.136]
$SIZE_T$	-0.0367	-0.0340	-0.0612	-0.0455	-0.0391	-0.0372	-0.0552	-0.0446
	[0.347]	[0.376]	[0.112]	[0.217]	[0.195]	[0.213]	[0.068]*	[0.127]
ROE_T	-0.1993	-0.3238	-0.0437	-0.1850	-0.1629	-0.2509	-0.0606	-0.1540
	[0.667]	[0.484]	[0.922]	[0.671]	[0.649]	[0.484]	[0.863]	[0.655]
MB_T	-1.0735	-1.3093	-1.1114	-1.2722	-0.5450	-0.7117	-0.5699	-0.6696
	[0.038]**	[0.014]**	[0.025]**	[0.010]***	[0.170]	[0.081]*	[0.140]	[0.083]*
CA_T	-0.9905	-1.0240	-0.9330	-0.9413	-0.3841	-0.4077	-0.3462	-0.3532
	[0.099]*	[0.085]*	[0.106]	[0.096]*	[0.406]	[0.373]	[0.441]	[0.427]
OP_T	-0.8154	-0.8772	-1.0701	-0.9754	-0.4924	-0.5360	-0.6598	-0.5927
	[0.017]**	[0.010]***	[0.002]***	[0.003]***	[0.060]*	[0.040]**	[0.013]**	[0.021]*
EBS_T	0.0243	0.0425	0.0166	0.0256	0.0083	0.0211	0.0032	0.0091
	[0.646]	[0.424]	[0.743]	[0.606]	[0.840]	[0.608]	[0.936]	[0.817]
CONSTANT	0.6061	0.7807	0.6541	0.7826	0.9013	1.0246	0.9329	1.0112
	[0.016]**	[0.013]**	[0.019]**	[0.022]**	[0.055]*	[0.044]**	[0.063]*	[0.031]**
Fixed Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	20.27%	22.47%	26.72%	29.50%	2.53%	4.57%	7.89%	9.75%
F-Statistics	2.32***	2.43***	2.81***	3.07***	1.14	1.24	1.42	1.52*
Observations	100	100	100	100	100	100	100	100

2.5.3.3 Bidder side

Model (1) in Table 2.8 is the regression of merger premiums on control variables from the bidder side. No fundamental characteristics of bidder banks have significant effects on the merger premium. In model (2), it seems that the overconfidence factor has no significant impact on deciding merger premiums, since its coefficient is insignificantly different from zero. Regarding the dominance factor in model (3), evidence shows that dominating acquiring CEOs pay higher premiums to target firms (the coefficient is 0.0982, p-value < 0.05). Moreover, consistent with Moeller (2005), the significant negative coefficient of the ownership percentage indicates that acquiring CEOs with higher concentrated shares of the firm pay lower premiums to target firms. Model (4) shows the insignificant effectiveness of CEO overconfidence-dominance on merger premiums. Models (5) to (8) present the results of regression analysis of abnormal returns on the bidder side. Similar to the findings of Gasper et al. (2005), bidder-side fundamentals have limited effectiveness in determining abnormal returns; only geography-diversifying (coefficient -0.0265, p-value < 0.10) and activity-diversifying (coefficient -0.0326, p-value < 0.01) mergers are significant negatively related with bidder abnormal returns, whereas other firm-level characteristics have an insignificant impact on explaining abnormal returns. One important finding is that overconfident CEOs do hurt shareholder wealth, since the coefficient of the overconfidence factor is -0.0288, which is significant at the 5% (p-value < 0.05) level. The activity-diversifying factor still has a negative relation

(coefficient is -0.0237, p-value < 0.10) with shareholder stock return, while the coefficient of the geography-diversifying factor is negative but statistically insignificant. Similar with negative overconfidence effectiveness, the CEO dominance and overconfidence-dominance factors are also negatively related to shareholder value and significant at the 10% and 5% levels, respectively. The largest coefficient of the CEO overconfidence-dominance variable indicates that shareholders suffer the largest wealth loss from mergers undertaken by overconfident-dominating CEOs. Activity-diversifying mergers still impose negative effects on bidder abnormal returns throughout models (7) and (8).

In sum, for the merger premium, limited evidence has been found to prove that overconfident and overconfident-dominating bidder CEOs pay higher premiums to target firms. Indeed, only dominating acquiring CEOs have a positive effect on the issue of overpayment. For the stock market response to acquiring shareholders, mergers by overconfident CEOs, dominating CEOs, and overconfident-dominating CEOs receive negative reactions from the market and the largest value reduction is achieved when CEOs are both overconfident and dominating. Additionally, the activity-diversifying merger variable is significant negatively related with abnormal returns, while the negative effect of geography-diversifying mergers is only valid when the main explanatory variables are not added to the model.

Table 2.8 Multivariate Regression Analysis of Acquiring CEO Overconfidence, Dominance, and Overconfidence-Dominance Effects

Table 2.8 represents the regression analysis of bidder CEO overconfidence (OV_A), dominance (DOM_A), and overconfidence-dominance (OV_DOM_A) effects on the terms of mergers. Models (1) to (4) are for PREMIUM, while models (5) to (8) are for BCAR. In detail, models (1) and (5) are the OLS regressions with the control variables. Models (2) and (6) are regression models with the overconfidence effect on the merger premium and bidder abnormal returns, respectively. Models (3) and (7) are regression models with a dominance effect on PREMIUM and BCAR. Models (4) and (8) are estimations of the CEO overconfidence-dominance effect on PREMIUM and BCAR. All variables have the same definitions as in Tables 2.1 and 2.2. The p-values are reported in parentheses below the coefficients. Standard errors are adjusted using the Huber-White sandwich estimator of variance. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

	Model (1) PREMIUM	Model (2) PREMIUM	Model (3) PREMIUM	Model (4) PREMIUM	Model (5) BCAR	Model (6) BCAR	Model (7) BCAR	Model (8) BCAR
OV_A		-0.0073				-0.0288		
		[0.884]				[0.015]**		
DOM_A			0.0982				-0.0246	
			[0.046]**				[0.069]*	
OV_DOM_A				0.0555				-0.0329
				[0.303]				[0.049]**
PM	0.0439	0.0434	0.0721	0.0496	-0.0045	-0.0069	-0.0116	-0.0075
	[0.569]	[0.576]	[0.350]	[0.521]	[0.831]	[0.734]	[0.585]	[0.720]
GEO_D	0.0269	0.0282	-0.0078	0.0086	-0.0265	-0.0206	-0.0178	-0.0169
	[0.601]	[0.591]	[0.884]	[0.875]	[0.064]*	[0.141]	[0.229]	[0.250]
ACT_D	0.0352	0.0372	0.0172	0.0208	-0.0326	-0.0237	-0.0280	-0.0251
	[0.425]	[0.424]	[0.697]	[0.652]	[0.008]***	[0.056]*	[0.024]**	[0.047]**
$SIZE_A$	-0.0417	-0.0407	-0.0601	-0.0513	-0.0083	-0.0039	-0.0037	-0.0033
	[0.280]	[0.300]	[0.124]	[0.197]	[0.434]	[0.701]	[0.732]	[0.756]
ROE_A	-0.3808	-0.3553	-0.5417	-0.5216	-0.1463	-0.0312	-0.1059	-0.0733
	[0.515]	[0.563]	[0.351]	[0.386]	[0.363]	[0.847]	[0.508]	[0.651]
MB_A	-0.0722	-0.0727	0.1004	0.0003	0.0292	0.0268	-0.0142	-0.0085
	[0.807]	[0.807]	[0.739]	[0.999]	[0.719]	[0.733]	[0.865]	[0.918]
CA_A	-0.4959	-0.4982	-0.7854	-0.5184	0.0058	-0.0042	0.0784	0.0174
	[0.517]	[0.518]	[0.305]	[0.498]	[0.978]	[0.983]	[0.710]	[0.933]
OP_A	-0.5130	-0.5042	-0.7046	-0.6456	0.0347	0.0745	0.0827	0.1035
	[0.190]	[0.206]	[0.077]*	[0.118]	[0.746]	[0.478]	[0.447]	[0.351]
EBS_A	-0.0175	-0.0169	-0.0115	-0.0214	0.0177	0.0199	0.0162	0.0197
	[0.729]	[0.738]	[0.817]	[0.672]	[0.203]	[0.141]	[0.238]	[0.150]
CONSTANT	0.5671	0.5635	0.4518	0.5261	-0.0042	-0.0198	0.0247	0.0171
	[0.124]	[0.129]	[0.216]	[0.155]	[0.967]	[0.839]	[0.805]	[0.864]
Fixed Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	10.13%	9.02%	13.50%	10.21%	14.68%	17.75%	17.18%	19.91%
F-Statistics	1.59*	1.49	1.77**	1.56*	1.90**	2.07**	2.03**	2.23***
Observations	100	100	100	100	100	100	100	100

2.5.3.4 Combined synergistic value

The CEO overconfidence, dominance, and overconfidence-dominance effects on merger synergistic values are reported in Table 2.9. Model (1) refers to the regression analysis that only includes control variables. The significant positive coefficient of the target-bidder relative size (coefficient is 0.0368, p-value < 0.01) suggests that larger target firms bring more synergy gains to the merged firm as operation efficiency is achieved, which is supported by Levy (1991). Geography- and activity-diversifying mergers are significant negatively related with the synergistic value, since the coefficients are -0.0413 and -0.0214, respectively.

The overconfidence effect from both target and bidder CEOs on the combined value is tested in model (2) of Table 2.9. Only bidder-side overconfident factors show a significant negative relation with the target-bidder paired abnormal returns, while target-side overconfidence is highly insignificant. The coefficients of relative size and geography diversification are still significant (coefficients are 0.0344 and -0.0329; p-value < 0.05 and p-value < 0.01, respectively).

The activity-diversifying effect, however, is now insignificantly negatively related with synergistic value. Model (3) of Table 2.9 refers to the target and bidder CEO dominance aspect. Similar to the overconfidence effect, CEO dominance from the target side does not show significant impact on the merger synergistic gain, while

bidder CEO dominance is negatively related with synergy gains (coefficient is -0.0241, p-value < 0.5). Concerning influence power from overconfident-dominating target and bidder CEOs on the combined return, the target side still shows an insignificant relation, while the overconfident-dominating bidder CEO shares the largest significant explanatory ability in interpreting synergistic gains (the coefficient is -0.0333, p-value < 0.05).

Therefore, the evidence presented in Table 2.9 suggests that mergers undertaken by overconfident, dominating, and overconfident-dominating acquiring CEOs are not economically desirable, since they are negatively related to synergistic value. Moreover, mergers in which bidders merge with larger targets are positively related to synergy gains, while geography-diversifying mergers are economically synergy value-destroying. Nevertheless, regarding target-side overconfidence, dominance, and overconfidence-dominance effects, no significant relations are found, which indicates that the target-side managerial cognitive bias effect does not have a strong effect on gathering merger synergy gains.

To sum up here, estimating findings shown in Tables 2.7， 2.8 and 2.9 confirm the phenomenon that overconfident CEOs do affect the terms of mergers in some extents, especially when overconfident CEOs own dominating decision power. This kind of improvement could also be recognized through the increasing adjusted R^2 (around 20% and 5% for target premiums and target CARs) when comparing with the adjusted R^2

(around 13% and 7%, respectively) in Brown and Zorn (2006). Similarly, the adjusted R^2 of bidder side model is about 9% and 17% for merger premiums and bidder CARs while that number is approximately 12% and 10% in Brown and Zorn (2006) and 8% for acquirer CARs in Malmendier and Tate (2008).

Table 2.9 Synergistic Values and Overconfident, Dominating, and Overconfident-Dominating CEOs

This table reports the OLS regression estimates of various model specifications on the relation between synergistic value (CCAR) and overconfident (OV), dominating (DOM), and overconfident-dominating (OV_DOM) CEOs for 100 bank mergers during the period 1996-2006 based on the target and bidder sides, simultaneously. Model (1) reports regression estimates using a set of standard control variables. Model (2) reports regression estimates for mergers with overconfidence based on both bidder and target CEOs, with three attributes accounting for other effects, while model (3) reports regression estimates for mergers with dominating target and acquiring CEOs. Model (4) reports regression estimates using target and bidder CEO overconfidence-dominance factors accounting for other effects from control variables. All variables are in line with the definitions in Table 2.1 and 2.2. Here the p-value is reported in parentheses below the coefficients. Standard errors are adjusted using the Huber-White sandwich estimator of variance. *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

	Model (1)	Model (2)	Model (3)	Model (4)
	CCAR	CCAR	CCAR	CCAR
OV_T		0.0007		
		[0.950]		
OV_A		-0.0292		
		[0.036]**		
DOM_T			-0.0054	
			[0.615]	
DOM_A			-0.0241	
			[0.047]**	
OV_DOM_T				-0.0055
				[0.598]
OV_DOM_A				-0.0333
				[0.021]**
RS	0.0368	0.0344	0.0358	0.0358
	[0.009]***	[0.011]**	[0.010]***	[0.009]***
PM	0.0234	0.0218	0.0156	0.0176
	[0.253]	[0.270]	[0.443]	[0.382]
GEO_D	-0.0413	-0.0329	-0.0294	-0.0281
	[0.000]***	[0.005]***	[0.020]**	[0.025]**
ACT_D	-0.0214	-0.0119	-0.0174	0.0138
	[0.072]*	[0.313]	[0.141]	[0.248]
ROE_T	-0.1192	-0.1467	-0.1188	-0.1268
	[0.341]	[0.234]	[0.335]	[0.299]
ROE_A	-0.1757	-0.0395	-0.1298	-0.0905

	[0.230]	[0.791]	[0.381]	[0.540]
MB_T	0.0755	0.0595	0.0556	0.1049
	[0.605]	[0.679]	[0.702]	[0.468]
MB_A	0.0214	0.0252	-0.0213	-0.0258
	[0.789]	[0.744]	[0.791]	[0.748]
CA_T	0.0789	0.0389	0.0459	0.0894
	[0.617]	[0.799]	[0.767]	[0.561]
CA_A	-0.0686	-0.0763	0.0441	-0.0658
	[0.719]	[0.679]	[0.527]	[0.723]
OP_T	-0.0377	-0.0275	-0.0273	-0.0429
	[0.667]	[0.745]	[0.755]	[0.619]
OP_A	-0.0228	0.0058	0.0136	0.0368
	[0.813]	[0.952]	[0.888]	[0.707]
EBS_T	0.0159	0.0109	0.0142	0.0141
	[0.240]	[0.412]	[0.284]	[0.288]
EBS_A	-0.0050	-0.0037	-0.0086	-0.0035
	[0.698]	[0.772]	[0.504]	[0.780]
CONSTANT	-0.0798	-0.0567	-0.0533	-0.0588
	[0.594]	[0.700]	[0.583]	[0.689]
Fixed Year	Yes	Yes	Yes	Yes
Adjusted R^2	29.26%	32.84%	32.25%	34.61%
F-Statistics	2.71***	2.86***	2.81***	3.02***
Observations	100	100	100	100

2.5.3.5 Merger quality

As reported in the previous regression results, diversifying mergers do destroy acquiring shareholders' wealth through abnormal returns and combined synergistic value. In fact, there is a growing debate as to whether corporate diversification destroys shareholder wealth. A number of studies suggest that diversified firms are not discounted by the market, since they can gain better position in accessing the capital market or merged firms can be alleviated from the liquidity discount in their stock prices (Chang and Yu, 1999; Hadlock et al., 2001). Moreover, Demsetz and Strahan

(1997) and Dietsch and Oung (2002) find that, through geography-diversifying mergers, banks achieve lower volatility of their stock returns. For the cost of diversification, many studies suggest that diversification destroys shareholder value due to inefficiency in capital allocation, overinvestment, or poorer short- and long-term performance (Agrawal et al., 1992; Shin and Stulz, 1998; Scharfstein, 1998). In the banking sector, DeLong (2001) suggests the market discount on diversifying mergers (either geography or activity), while Morgan and Samolyk (2003) find that geography-diversifying bank mergers do not improve loan quality and operating performance.

Following the description of 'bad-quality' diversifying mergers (Malmendier and Tate, 2004), further investigation is conducted to detect whether overconfident, dominating, and overconfident-dominating CEOs are more likely to undertake diversifying mergers. Panel A of Table 2.10 shows the logistic regression estimation on diversifying mergers. Generally, overconfident (coefficient is 1.3834, p-value < 0.10), dominating (coefficient is 1.8806, p-value < 0.05), and overconfident-dominating CEOs (coefficient is 2.4441, p-value < 0.05) are more likely to carry out diversifying mergers. In terms of geography and activity diversification, the coefficients of CEO dominance and overconfidence-dominance remain positive throughout the models of geography- and activity-diversifying mergers, while the overconfidence factor is only significantly positive for activity-diversifying mergers. Moreover, when the results are compared with the prior literature (Yermack, 1996; Anderson et al., 2000), smaller

boards do have a positive effect on the likelihood of activity-diversifying mergers. This phenomenon can be explained based on two aspects. First, prior study on corporate governance and corporate diversification does not distinguish geography or activity diversification from the general diversification behaviour. If one follows that approach, the efficient board size factor remains insignificant throughout models (1) to (3) in panel A of Table 2.10. Second, Coles et al. (2008) indicate that a focused firm may be diversified to increase its board size to the optimal level.[13] Since mergers are an efficient way to increase board size (Adams and Mehran, 2003), banks and bank holding companies with relatively smaller boards may increase the board size through activity-diversifying mergers. Subsequently, to show the economic marginal effect from CEO overconfidence, dominance, and overconfidence-dominance effects on diversifying mergers, the d-probit regression analysis is performed in panel B of Table 2.10. Based on the results of models (1) to (3), CEOs who are overconfident, dominating, or overconfident-dominating, increase the probability of diversifying mergers by 15.21% (p-value < 0.10), 22.57% (p-value < 0.05), and 20.25% (p-value < 0.05), respectively. If one excludes the insignificant positive relation between CEO overconfidence and geography-diversifying mergers, all other managerial overconfidence or dominance factors maintain a significant positive effect in geography- or activity-diversifying decisions.

[13] In the US, based on regulation requirements, the board of a national bank can have no fewer than five directors and no more than 25 (Adams and Mehran, 2003).

Table 2.10 Overconfident, Dominating, and Overconfident-Dominating CEOs with Diversifying Mergers

Table 2.10 represents the logit regression estimates for the likelihood of overconfident, dominating, and overconfident-dominating CEOs taking part in diversifying mergers. Models (1) to (3) are estimations of the likelihood of diversifying mergers for overconfident, dominating, and overconfident-dominating bidder CEOs. Models (4) to (6) are estimations of the likelihood of geography-diversifying mergers, while models (7) to (9) are estimations of the likelihood of activity-diversifying mergers with overconfident, dominating, and overconfident-dominating acquiring CEOs. Results of the d-probit regression with the same variables are shown in panel B of Table 2.7. Here DIV, GEO_D, and ACT_D have the same definitions as in Table 2.4, while other variables are in line with the discussions in Table 2.1and 2.2. The p-values are reported in parentheses below the coefficients. Standard errors are adjusted using the Huber-White sandwich estimator of variance. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

Panel A. Logistic regression analysis on diversifying mergers

Variables	Model (1) DIV	Model (2) DIV	Model (3) DIV	Model (4) GEO_D	Model (5) GEO_D	Model (6) GEO_D	Model (7) ACT_D	Model (8) ACT_D	Model (9) ACT_D
OV_A	1.3834			0.6715			1.8353		
	[0.060]*			[0.325]			[0.004]***		
DOM_A		1.8806			1.2608			1.4788	
		[0.021]**			[0.079]*			[0.018]**	
OV_DOM_A			2.4441			1.7077			2.1096
			[0.021]**			[0.031]**			[0.003]***
$SIZE_A$	1.7609	1.4209	1.5989	2.9724	2.5492	2.5685	-1.0054	-1.1184	-1.2834
	[0.011]**	[0.052]*	[0.035]**	[0.000]***	[0.002]***	[0.001]***	[0.032]**	[0.032]**	[0.015]**
ROE_A	-2.7495	-0.1962	-4.3298	4.9128	4.5328	1.0766	7.4914	12.7899	9.0897
	[0.778]	[0.983]	[0.655]	[0.622]	[0.640]	[0.915]	[0.362]	[0.133]	[0.290]
MB_A	-1.7319	0.5698	0.5384	-4.3231	-1.7379	-1.5491	-5.0737	-4.1342	-3.4304
	[0.766]	[0.913]	[0.921]	[0.339]	[0.697]	[0.736]	[0.230]	[0.432]	[0.493]
CA_A	5.6177	1.3819	3.4467	12.1647	8.8842	11.9846	-0.3510	-3.1456	-0.4252
	[0.649]	[0.906]	[0.766]	[0.252]	[0.440]	[0.282]	[0.971]	[0.738]	[0.964]
OP_A	42.7724	33.2993	38.5531	2.4672	0.7841	-0.9774	-3.8900	-4.0075	-6.4052
	[0.162]	[0.269]	[0.234]	[0.602]	[0.873]	[0.855]	[0.441]	[0.442]	[0.214]
EBS_A	0.2942	0.6481	0.3421	-0.7287	-0.4163	-0.6932	1.0291	1.3301	1.0573
	[0.681]	[0.404]	[0.651]	[0.308]	[0.580]	[0.356]	[0.069]*	[0.022]**	[0.064]*
CONSTANT	-6.6041	-8.1406	-8.5977	-7.3517	-8.8579	-9.1305	6.6271	5.6139	5.5513
	[0.305]	[0.167]	[0.162]	[0.063]*	[0.055]*	[0.041]**	[0.179]	[0.333]	[0.320]
Fixed Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	32.30%	34.63%	35.34%	44.01%	45.55%	46.96%	22.90%	20.48%	23.67%
Wald Chi	35.24***	37.78***	38.55***	59.62***	61.72***	63.63***	31.08**	27.79**	32.12***
Observations	100	100	100	100	100	100	100	100	100

Panel B. d-probit regression analysis on diversifying mergers

Variables	Model (1) DIV	Model (2) DIV	Model (3) DIV	Model (4) GEO_D	Model (5) GEO_D	Model (6) GEO_D	Model (7) ACT_D	Model (8) ACT_D	Model (9) ACT_D
OV_A	0.1521			0.1402			0.4102		
	[0.068]*			[0.358]			[0.003]***		

DOM_A		0.2257			0.2758			0.3376	
		[0.017]**			[0.064]*			[0.015]**	
OV_DOM_A			0.2025			0.3658			0.4796
			[0.019]**			[0.031]**			[0.002]***
$SIZE_A$	0.1998	0.1621	0.1508	0.6878	0.5897	0.5895	-0.2341	-0.2572	-0.3065
	[0.008]***	[0.044]**	[0.029]**	[0.000]***	[0.001]***	[0.001]***	[0.030]**	[0.027]**	[0.011]**
ROE_A	-0.1879	-0.0267	-0.4007	0.9669	0.8402	0.1495	1.7156	3.0859	2.1238
	[0.859]	[0.979]	[0.658]	[0.672]	[0.703]	[0.947]	[0.377]	[0.119]	[0.289]
MB_A	-0.2088	0.1022	0.0553	-0.9182	-0.4212	-0.3406	-1.2429	-1.0076	-0.7992
	[0.741]	[0.867]	[0.915]	[0.376]	[0.683]	[0.746]	[0.213]	[0.386]	[0.482]
CA_A	0.7871	0.0652	0.3107	2.9053	2.1489	2.7794	0.0996	-0.7921	-0.1159
	[0.569]	[0.963]	[0.785]	[0.239]	[0.411]	[0.276]	[0.966]	[0.723]	[0.958]
OP_A	4.8595	3.5992	3.7994	0.5898	0.2009	-0.2103	-0.8331	-0.9023	-1.4997
	[0.148]	[0.297]	[0.200]	[0.608]	[0.865]	[0.870]	[0.505]	[0.485]	[0.236]
EBS_A	0.0276	0.0754	0.0296	-0.1484	-0.0932	-0.1506	0.2408	0.3129	0.2638
	[0.721]	[0.366]	[0.665]	[0.347]	[0.572]	[0.353]	[0.069]*	[0.019]**	[0.049]**
Fixed Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	32.76%	35.36%	36.06%	44.20%	45.85%	47.07%	22.95%	20.68%	24.02%
Wald Chi	35.74***	38.58***	39.35***	59.88***	62.12***	63.78***	31.15**	28.06**	32.59***
Observations	100	100	100	100	100	100	100	100	100

Overall, since overconfident CEOs overestimate their personal abilities, they are more likely to enter fields they are not familiar with (i.e., corporate diversification) (Odean, 1998). In particular, consistent with Milbourn et al. (1999), results indicate that overconfident CEOs are more likely to conduct activity-diversifying mergers in order to increase the firm size and business scope. For geography-diversifying mergers, the overconfidence effect should be combined with the dominance effect. That is, if the overconfident CEO is also the firm chair, he/she prefers geography-diversifying rather than geography-focusing mergers. Nevertheless, as in Brown and Sarma (2007), dominating CEOs are suggested to have a strong effect on diversifying mergers.

2.6 Robustness and additional tests

2.6.1 Sample selection bias

Prior studies provide evidence that acquiring firms with overconfident or dominating CEOs carry out more mergers than do those with rational CEOs (Doukas and Petmezas, 2007; Brown and Sarma, 2007; Malmendier and Tate, 2008; Liu and Taffler, 2008). Therefore, the empirical sample in this chapter could have sample selection bias, since more observations in the sample may be due to the high acquisitiveness of overconfident or dominating CEOs. To address this issue, a Heckman (1979) two-step sample selection correction model is selected to check whether prior multivariate results are still robust when the selection bias is controlled for.

The first step of the Heckman selection bias correction test is to examine the likelihood of overconfident, dominating, and overconfident-dominating CEOs in M&As. In doing so, the sample is expanded with the addition of banks that are not involved in mergers in each specific year. Firms with three-digit SIC code 602 or 671 are gathered from the CRSP/Compustat Merged dataset. Firms remain in the sample if their SIC codes from the CRSP/Compustat Merged dataset are matched with information provided by the CRSP. Further selection criteria are as follows: 1) Firms should appear during at least one year in the sample period; 2) At least two proxy statements can be gathered from the EDGAR system; 3) Stock returns and other

fundamental information are available from the CRSP and Compustat; 4) Firms are not involved in a merger deal in a specific year. Thus, 502 banks and bank holding companies are added to the previous sample, with the Heckman test. The first-step probit regression is:

$$\Pr\{Y_{i,t} = 1\} = N\{\gamma_0 + \gamma_1 OV_{A_{i,t}}(DOM_{A_{i,t}}, OV\_DOM_{A_{i,t}}) + \sum_{n=2}^{7} \gamma_n Control_{A_{i,t}}\} \quad (2.10)$$

where Y is a dummy variable equal to one if the firm is a bidder or target, and zero otherwise, and the remaining variables have the same definitions as previously.

The second step is to run the OLS regression on terms of mergers under probit controls, as shown in equations (2.3) to (2.7). Results for the target, bidder, and combined sides are shown in Tables 2.11.1, 2.11.2, and 2.11.3, respectively. Generally, the Heckman lambdas for all regression models in Tables 2.11.1, 2.11.2, and 2.11.3 are statistically insignificant, which indicates there is no selection bias in the sample. For the target side, from panel A of Table 2.11.1, there is no evidence that firms with overconfident CEOs are more likely to be target firms. However, firms with dominating and overconfident-dominating CEOs are more likely to be targets, since the coefficients of dominating and overconfident-dominating are 0.2693 (p-value < 0.01) and 0.3392 (p-value < 0.01), respectively. Furthermore, there is no evidence for a significant effect from any of the three types of target CEOs on merger premiums and target abnormal returns.

Table 2.11.1 Heckman Two-Step Sample Selection Correction between Target CEOs, PREMIUM, and TCAR

This table reports the Heckman (1979) sample-selection correction for the relation between overconfident, dominating, and overconfident-dominating target CEOs and wealth effects from bank mergers. Panel A reports estimates of a probit regression that models the likelihood of being a target, which is used as the first step of the sample selection correction. The sample comprises the universe of banks for which we are able to gather information from the CRSP, Compustat, proxy statements, and 10-K reports. The expanded sample comprises 2967 firm-year observations during the period 1996-2006. The dependent variable is a dummy variable that equals one if a bank is a target for that year, and zero otherwise. The independent variables are overconfidence, dominance, and overconfidence-dominance, with other control variables having the same definitions as in Tables 2.1 and 2.2. Panel B reports estimates of merger performance regressions using Heckman (1979) sample-selection correction for the likelihood of being a target bank. These regressions are estimated using the 100-bank merger sample. The p-values are reported in parentheses below the coefficients. Standard errors are adjusted using the Huber-White sandwich estimator of variance. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

Panel A:	Likelihood of Being a Target Bank		Likelihood of Being a Target Bank		Likelihood of Being a Target Bank	
	Coefficient	p-Value	Coefficient	p-Value	Coefficient	p-Value
OV_T	0.1120	0.233				
DOM_T			0.2693	0.005***		
OV_DOM_T					0.3392	0.001***
SIZE	0.1562	0.050**	0.0957	0.232	0.1061	0.195
ROE	0.3057	0.607	0.4328	0.367	0.3061	0.603
MB	-1.1367	0.138	-1.0566	0.157	-1.3501	0.081*
CA	-0.1523	0.891	-0.3832	0.733	-0.2716	0.806
OP	-1.1813	0.086*	-1.5865	0.033**	-1.4236	0.049**
EBS	-0.0155	0.883	-0.0079	0.941	-0.0257	0.809
CONSTANT	-1.0122	0.176	-1.0262	0.202	-0.7139	0.291
Observation	2967		2967		2967	
Panel B:	PREMIUM		PREMIUM		PREMIUM	
	Coefficient	p-Value	Coefficient	p-Value	Coefficient	p-Value
OV_T	2.4444	0.682				
DOM_T			1.6695	0.597		
OV_DOM_T					1.2960	0.369
PM	-0.0631	0.695	-0.0446	0.609	-0.0463	0.393
GEO_D	0.1036	0.533	0.1005	0.686	0.0957	0.791
ACT_D	0.0303	0.491	0.0239	0.569	0.0225	0.479
$SIZE_T$	3.2516	0.982	0.4621	0.797	0.3029	0.279
ROE_T	6.6253	0.911	2.6657	0.379	1.1101	0.699
MB_T	-5.5457	0.821	-7.2482	0.791	-6.0238	0.579
CA_T	-3.5861	0.298	-2.5167	0.729	-1.1766	0.560
OP_T	-6.6946	0.983	-10.4765	0.971	-6.1421	0.461
EBS_T	-0.3175	0.388	-0.0413	0.908	-0.0837	0.688
CONSTANT	0.4571	0.464	0.5744	0.501	0.6102	0.398
LAMBDA	24.4643	0.982	10.6187	0.975	4.0233	0.966
Fixed Year	Yes		Yes		Yes	
Wald Chi	3.46		4.59		5.92	

Observation	100		100		100	
Panel C:	TCAR		TCAR		TCAR	
	Coefficient	p-Value	Coefficient	p-Value	Coefficient	p-Value
OV_T	1.3553	0.298				
DOM_T			-1.4085	0.679		
OV_DOM_T					-1.4283	0.869
PM	0.0111	0.595	0.0213	0.502	0.0166	0.512
GEO_D	-0.0119	0.392	-0.0148	0.472	-0.0159	0.279
ACT_D	-0.0291	0.379	-0.0319	0.513	-0.0366	0.493
$SIZE_T$	1.7971	0.482	-0.5659	0.279	-0.5019	0.466
ROE_T	3.5288	0.398	-2.4228	0.402	-1.4613	0.663
MB_T	-4.0831	0.281	5.2013	0.377	5.2827	0.709
CA_T	-1.9044	0.522	2.0814	0.435	1.2215	0.422
OP_T	-4.6744	0.603	8.2322	0.372	5.9191	0.502
EBS_T	-0.1862	0.633	0.0298	0.431	0.0983	0.279
CONSTANT	2.3871	0.499	2.5432	0.398	2.7611	0.300
LAMBDA	13.3371	0.439	-6.2916	0.577	-5.0666	0.492
Fixed Year	Yes		Yes		Yes	
Wald Chi	2.39		3.49		4.72	
Observation	100		100		100	

The bidder-side results are shown in Table 2.11.2. There is no evidence that firms with overconfident, dominating, and overconfident-dominating CEOs are more likely to become acquiring firms. For merger premiums, these three CEO attributes do not show significant effects. For the bidder abnormal returns, both overconfident CEOs and dominating CEOs fail to have significant negative relations with stock returns, while the CEO overconfidence-dominance proxy is significantly negative at 10%, with a coefficient of -0.0222.

Table 2.11.2 Heckman Two-Step Sample Selection Correction between Acquiring CEOs, PREMIUM, and BCAR

This table reports Heckman (1979) sample selection corrections for the relation between overconfident, dominating, and overconfident-dominating bidder CEOs and wealth effects from bank mergers. Panel A reports the estimates of a probit regression that models the likelihood of being a bidder bank, which are used as the first step of the sample selection correction. The sample comprises the universe of banks for which we are able to gather information from the CRSP, Compustat, proxy statements, and 10-K reports. The expanded sample comprises 2967firm-year observations during the period 1996-2006. The dependent variable is a dummy variable that equals one if a bank is a bidder for that year, and zero otherwise. The independent variables are overconfidence; dominance, and overconfidence-dominance, with other control variables having the same definitions as in Tables 2.1 and 2.2. Panel B reports estimates of merger performance regressions using Heckman (1979) sample-selection correction for the likelihood of being a bidder bank. These regressions are estimated using the 100-bank merger sample. The p-values are reported in parentheses below the coefficients. Standard errors are adjusted using the Huber-White sandwich estimator of variance. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

Panel A:	Likelihood of Being a Bidder Bank		Likelihood of Being a Bidder Bank		Likelihood of Being a Bidder Bank	
	Coefficient	p-Value	Coefficient	p-Value	Coefficient	p-Value
OV_A	-0.0703	0.488				
DOM_A			0.0372	0.723		
OV_DOM_A					0.1067	0.341
SIZE	0.5544	0.000***	0.5412	0.000***	0.5299	0.000***
ROE	-0.1417	0.848	-0.2103	0.770	-0.2614	0.711
MB	1.0387	0.073*	1.0003	0.083*	0.9508	0.101
CA	-0.3187	0.829	-0.2289	0.876	-0.1761	0.903
OP	-2.0571	0.033**	-2.1899	0.029**	-2.2707	0.025**
EBS	-0.1111	0.294	-0.1165	0.270	-0.1239	0.242
CONSTANT	0.3766	0.280	0.4711	0.195	0.4671	0.161
Observation	2967		2967		2967	
Panel B:	PREMIUM		PREMIUM		PREMIUM	
	Coefficient	p-Value	Coefficient	p-Value	Coefficient	p-Value
OV_A	-0.1417	0.843				
DOM_A			0.2191	0.774		
OV_DOM_A					0.3449	0.719
PM	-0.0134	0.972	0.0127	0.489	-0.0104	0.289
GEO_D	0.0578	0.426	0.0321	0.323	0.0472	0.388
ACT_D	0.0402	0.343	0.0272	0.632	0.0301	0.396
$SIZE_A$	1.1435	0.418	1.5453	0.818	1.2895	0.588
ROE_A	0.1467	0.769	-0.1555	0.579	-0.3076	0.494
MB_A	2.1981	0.777	3.1012	0.811	2.5008	0.713
CA_A	-0.2755	0.369	-0.4916	0.449	-0.0745	0.509
OP_A	-5.4929	0.476	-8.0037	0.597	-7.0868	0.717
EBS_A	-0.3018	0.408	-0.4129	0.697	-0.3889	0.582
CONSTANT	0.7933	0.299	0.6872	0.306	0.8112	0.172
LAMBDA	3.6826	0.800	3.6962	0.807	3.1739	0.791
Fixed Year	Yes		Yes		Yes	

Wald Chi	4.09		4.78		5.03	
Observation	100		100		100	
Panel C:	BCAR		BCAR		BCAR	
	Coefficient	p-Value	Coefficient	p-Value	Coefficient	p-Value
OV_A	-0.0402	0.168				
DOM_A			-0.0259	0.226		
OV_DOM_A					-0.0222	0.084*
PM	0.0058	0.762	0.0029	0.773	0.0074	0.676
GEO_D	-0.0252	0.057*	-0.0235	0.058*	-0.0245	0.051**
ACT_D	-0.0272	0.033**	-0.0314	0.004***	-0.0303	0.007***
$SIZE_A$	0.0612	0.803	0.0165	0.932	0.0041	0.982
ROE_A	0.0297	0.699	-0.0531	0.703	-0.0261	0.658
MB_A	0.0641	0.892	-0.1027	0.587	-0.0645	0.572
CA_A	-0.0131	0.565	0.0799	0.698	0.0267	0.888
OP_A	-0.1965	0.448	0.1347	0.880	0.0462	0.958
EBS_A	0.0212	0.677	0.0132	0.772	0.0112	0.718
CONSTANT	-0.0291	0.331	-0.0264	0.293	-0.0308	0.205
LAMBDA	0.1357	0.800	-0.0363	0.934	0.0481	0.671
Fixed Year	Yes		Yes		Yes	
Wald Chi	20.97**		27.08**		30.23**	
Observation	100		100		100	

Finally, for the synergistic value reported in Table 2.11.3, the first-step probit regression of the target side is controlled for first. Overconfident, dominating, and overconfident-dominating acquiring CEOs have a significant negative effect on combined abnormal returns, while all target CEOs with these three types of attributes still remain insignificant. When the first-step probit regression of the bidder side is controlled for, the CEO dominance and CEO overconfidence-dominance factors are significantly negatively related to the combined return (the coefficients are -0.0202 and -0.0326, with p-value < 0.10 and p-value < 0.05, respectively). However, the overconfidence factor becomes insignificant. Moreover, the results shown in panels A and B of Table 2.11.3 suggest that cash payments benefit the merger synergistic value,

which supports the idea that cash payments outperform equity payments in bank mergers (Baradwaj et al., 1991).

Overall, the results from the Heckman two-step sample selection correction model show that target CEO overconfidence, dominance, and overconfidence-dominance factors have no significant effect on the terms of mergers, such as premiums, target-side abnormal returns, and target-bidder paired abnormal returns. Generally, the Heckman lambdas throughout all models are statistically insignificant, which indicates that there is no selection bias for the examined sample. Overconfident, dominating, and overconfident-dominating acquiring CEOs do not have a significant impact on determining merger premiums, while only the joint CEO overconfidence-dominance factor is significantly negatively related with bidder-side abnormal returns. Further, results confirm that bank shareholders with these three types of acquiring CEOs suffer a synergistic loss, where the largest shareholder value loss refers to overconfident-dominating bidder CEOs.

Table 2.11.3 Heckman Two-Step Sample Selection Correction between Target and Acquiring CEOs and Merger Synergistic Value

This table reports the Heckman (1979) sample-selection correction for the relation between overconfident, dominating, and overconfident-dominating target and acquiring CEOs and wealth effects from bank mergers. Panel A reports the regression results when the likelihood of being a target firm is controlled for, while the likelihood of being a bidder is controlled for in panel B. The results for the likelihood of being a target or a bidder are shown in panel A of Table 2.9.1 and panel A of Table 2.9.2. The sample comprises the universe of banks for which we are able to gather information from the CRSP, Compustat, proxy statements, and 10-K reports. The expanded sample comprises 2967 firm-year observations during the period 1996-2006. Regressions in panels A and B are estimated using the 100-bank merger sample. The p-value is reported in parentheses below the coefficients. Standard errors are adjusted using the Huber-White sandwich estimator of variance. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

Panel A:	CCAR (target controlled)		CCAR (target controlled)		CCAR (target controlled)	
	Coefficient	p-Value	Coefficient	p-Value	Coefficient	p-Value
OV_T	0.0038	0.717				
OV_A	-0.0237	0.028**				
DOM_T			0.0085	0.772		
DOM_A			-0.0219	0.039**		
OV_DOM_T					0.0071	0.815
OV_DOM_A					-0.0289	0.016**
RS	0.0314	0.004***	0.0363	0.001***	0.0348	0.002***
PM	0.0279	0.076*	0.0253	0.118	0.0289	0.074*
GEO_D	-0.0325	0.002***	-0.0302	0.006***	-0.0313	0.004***
ACT_D	-0.0201	0.042**	-0.0246	0.012**	-0.0233	0.020**
ROE_T	-0.0467	0.654	-0.0578	0.586	-0.0214	0.841
ROE_A	0.0176	0.885	0.0361	0.760	-0.0415	0.732
MB_T	0.0149	0.902	0.0484	0.716	0.0479	0.755
MB_A	-0.0241	0.706	-0.0569	0.369	-0.0658	0.337
CA_T	-0.0338	0.792	-0.0437	0.725	-0.0041	0.976
CA_A	0.0429	0.774	0.0897	0.545	0.0376	0.807
OP_T	-0.0613	0.582	-0.0062	0.972	-0.0909	0.571
OP_A	0.0123	0.880	0.0405	0.617	0.0283	0.742
EBS_T	0.0054	0.651	0.0069	0.535	0.0088	0.489
EBS_A	-0.0068	0.497	-0.0081	0.411	-0.0079	0.439
CONSTANT	-0.0389	0.415	-0.0352	0.377	-0.0319	0.401
LAMBDA	0.0237	0.705	0.0481	0.665	0.0319	0.742
Fixed Year	Yes		Yes		Yes	
Wald Chi	80.09***		73.89***		72.45***	
Observation	100		100		100	
Panel B:	CCAR (bidder controlled)		CCAR (bidder controlled)		CCAR (bidder controlled)	
	Coefficient	p-Value	Coefficient	p-Value	Coefficient	p-Value
OV_T	0.0026	0.771				
OV_A	-0.0176	0.132				
DOM_T			-0.0003	0.975		
DOM_A			-0.0202	0.058*		

OV_DOM_T					-0.0002	0.983
OV_DOM_A					-0.0326	0.023**
RS	0.0266	0.018**	0.0317	0.005***	0.0301	0.008***
PM	0.0259	0.093*	0.0249	0.118	0.0278	0.081*
GEO_D	-0.0263	0.012**	-0.0262	0.017**	-0.0264	0.016**
ACT_D	-0.0234	0.017**	-0.0275	0.005***	-0.0269	0.007***
ROE_T	-0.0432	0.664	-0.0259	0.795	-0.0204	0.839
ROE_A	0.0492	0.691	-0.0443	0.712	-0.0182	0.881
MB_T	0.0491	0.661	0.0749	0.502	0.0901	0.426
MB_A	-0.0123	0.852	-0.0399	0.562	-0.0464	0.515
CA_T	-0.0368	0.764	-0.0267	0.832	-0.0043	0.973
CA_A	0.0144	0.925	0.0469	0.767	0.0082	0.929
OP_T	-0.0498	0.491	-0.0525	0.488	-0.0627	0.398
OP_A	-0.0727	0.454	-0.0674	0.514	-0.0656	0.543
EBS_T	0.0016	0.884	0.0059	0.605	0.0052	0.649
EBS_A	-0.0105	0.322	-0.0143	0.178	-0.0121	0.269
CONSTANT	-0.0482	0.502	-0.0368	0.433	-0.0415	0.405
LAMBDA	0.0311	0.101	0.0292	0.163	0.0318	0.134
Fixed Year	Yes		Yes		Yes	
Wald Chi	72.42***		62.94***		58.14***	
Observation	100		100		100	

2.6.2 Post-merger performance

Thus far, results show that overconfident, dominating, and overconfident-dominating acquiring CEOs do destroy shareholder value in the short term. However, it is not clear whether they destroy shareholder wealth in the long run. To investigate this, following Jaffe (1974), Fama and French (1993), and Doukas and Petmezas (2007), the Fama-French three-factor model with monthly calendar time is used to analyze the cross section of stock returns. In particular, the performances based on the one, two, and three years after the merger announcement date are examined. The results are shown in Table 2.12. For mergers undertaken by overconfident bidder CEOs, the

intercepts of the three-factor model in the one- and two-year period are -0.47% and -1.34%, respectively, statistically significant at the 10% and 5% levels, respectively. However, the intercept coefficient becomes insignificant from zero in the third year after the merger is announced. Meanwhile, intercepts of the model for dominating and overconfident-dominating acquiring CEOs are also significantly negative for the one- and two-year post-merger period, which indicates that dominating and overconfident-dominating acquiring CEOs do have a negative effect on post-merger performance. For mergers with non-overconfident-dominating CEOs, intercepts for one, two, and three years post-performance are statistically insignificant, which indicates that mergers undertaken by non-overconfident-dominating CEOs do not show significant value reduction to shareholders. Therefore, comparison analysis shows that the post-merger performance of overconfident, dominating, and overconfident-dominating CEOs is poorer than for non-overconfident-dominating CEOs, especially in the one- and two-year period after the merger is announced.

Table 2.12 Comparison Analysis of Post-Merger Performance and Overconfident CEOs

This table reports intercept estimates from calendar time portfolio regressions of long-term stock returns using the Fama-French three-factor model. The sample comprises 100 completed bank mergers over the period 1996-2006. For each month of the sample period, we form portfolios of bidder companies that have just completed a merger and keep them for a holding period of one, two, or three years. Portfolios are rebalanced each month to include companies that have just completed a takeover and to exclude companies that have reached the end of their holding periods. We form portfolios for (a) mergers with overconfident acquiring CEOs (OV_A), (b) mergers with dominating acquiring CEOs (DOM_A), (c) mergers with overconfident-dominating acquiring CEOs (OVDOM_A), and (d) mergers with non-overconfident-dominating CEOs (NOVDOM_A). The calendar time stock return is regressed through the Fama-French (1993) three-factor model.

$$R_{pt} - R_{ft} = = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB + h_i HML + \varepsilon_{it}$$

Heteroskedasticity-adjusted standard errors are shown in the table. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively.

	One Year		Two Years		Three Years	
		Heteroskedasticity		Heteroskedasticity		Heteroskedasticity
	Intercept	Consistent t	Intercept	Consistent t	Intercept	Consistent t
OV_A	-0.47%	-1.37*	-1.34%	-2.13**	-0.83%	-1.02
DOM_A	-0.70%	-2.02**	-1.21%	-2.01**	-0.46%	-0.56
OV_DOM_A	-0.55%	-1.44*	-1.31%	-2.08**	-0.77%	-0.93
NOV_DOM_A	-0.16%	-0.30	-0.67%	-0.47	-0.43%	-0.79

2.7 Conclusion

This chapter has investigated whether overconfident, dominating, and overconfident-dominating CEOs undertake value-destroying mergers that can hurt shareholder value. Generally, the results suggest that traditional corporate governance in monitoring M&A deals in the banking sector should be improved based on the managerial behavioural perspective. Through the sample of 100 bank mergers over the period 1996-2006, CEOs are classified as overconfident (if they hold above 67% in-the-money stock options at least twice during their tenure), dominating (if they are the chair in the fiscal year end prior to the merger announcement date), or overconfident-dominating (CEOs who have both of these features simultaneously). Through multivariate analysis based on the target and bidder sides separately, results

show that overconfident, dominating, and overconfident-dominating target CEOs negotiate higher premiums from bidders, while dominating and overconfident-dominating target CEOs have a positive impact on creating shareholder value. Although this finding is not robust when the sample selection correction is taken into consideration, it may be an alternative explanation for Malmendier and Tate (2004); that is, overconfident target CEOs benefit target shareholders but, since they are commonly not as powerful as acquiring CEOs in a corporate takeover, the target overconfidence effect may be limited.

For overconfident, dominating, and overconfident-dominating acquiring CEOs, evidence shows that only dominating CEOs pay higher premiums to target firms, while all three types of CEOs lead to negative abnormal returns for shareholders over the announced merger period. Furthermore, results show that overconfident, dominating, and overconfident-dominating CEOs destroy shareholder synergistic value, since they are more likely to undertake poor-quality mergers, such as geography- and activity-diversifying mergers. When the sample selection bias is controlled for, the results are still robust for overconfident-dominating CEOs destroying shareholder abnormal returns, and show that dominating CEOs or overconfident-dominating CEOs do undertake economically undesirable mergers that lead to synergistic loss, while the overconfidence effect becomes statistically insignificant. Furthermore, the result of this chapter reinforces the prior finding by Brown and Sarma (2007) and Malmendier and Tate (2008). That is, bidder CEO

overconfidence and dominance factors do destroy shareholder wealth, with the largest wealth loss for shareholders occurring when CEOs are simultaneously overconfident and dominating. Finally, for the post-merger performance for the Fama-French three-factor model, results show that mergers with overconfident, dominating, and overconfident-dominating CEOs have poorer one- and two-year performance when compared with those with non-overconfident-dominating CEOs.

Chapter 3

Managerial Overconfidence, Dominance, and Bank Payout Policy

3.1 Introduction

Building upon the efficient market hypothesis, the dividend irrelevance theory by Miller and Modigliani (1961) argues that any desired level of payments can be set by appropriate purchases and sales of firm equity. Therefore, investors should be indifferent to whether a firm pays dividends or not, and hence no premiums will be awarded for a particular dividend policy. However, in reality, firms that pay dividends tend to be rewarded by investors with higher valuations, which is dubbed by Black (1976) as the dividend puzzle. To explain this puzzle, extensive research has been conducted focusing on interpreting the puzzle with both business cycle- and firm-specific factors (Denis and Osobov, 2008; DeAngelo et al., 2009).

Many papers have tried to provide rational explanations for the puzzle, using economic determinants such as taxes, signaling to mitigate asymmetric information, incomplete contracts (agency), transaction costs, and institutional investors (Allen and Michaely, 2003). For example, there are the signaling hypothesis and the free cash flow hypothesis (Jensen, 1986; Bergheim and Wan, 1995; Lipson et al., 1998; Dingell et al., 2006). According to these, cash dividends allocated to shareholders convey a positive signal of future earnings and also alleviate the amount of free cash flow for

firm managers, which decrease agency costs. An alternative explanation of dividend payout policy is offered by the catering hypothesis of Baker and Wurgler (2004). Since market investors can display heterogeneous attitudes towards dividend payouts in different periods, managers pay dividends to shareholders when the market provides premiums for doing so. DeAngelo et al., (2009) regard catering as the situation, whereas rational managers cater to irrational investors.

While debate is ongoing as to whether rational theories can explain corporate dividend policy, studies on the role of behavioural factors in corporate dividend policy have started to emerge. This strand of literature tries to link managerial behavioural bias to corporate payout policy (Cordeiro, 2009). Chief among the managerial biases is the factor of CEO overconfidence, which has been under-researched so far.

According to Heaton (2002), Malmendier and Tate (2005, 2007), and Ben-David et al. (2007), the ways in which managerial overconfidence affects the investment decisions of industrial firms include the following: First, overconfident CEOs have a stronger self-attribution effect and invest more frequently than rational CEOs. Second, overconfident CEOs believe that their firms are undervalued by the capital market and thus are reluctant to raise projects through costly external funds. As a result, they pay more attention to internal fund enhancements to ensure that liquidity will not be a problem for their frequent investments. Therefore, since paying cash dividends decreases the amount of internal funds of a firm, overconfident CEOs tend to be reluctant to pay dividends to shareholders, and even when they do pay, the magnitude of dividends for overconfident CEOs is lower than that for rational CEOs. Empirical evidence provided by two recent studies by Deshmukh et al. (2009) and Cordeiro

(2009) into the managerial overconfidence effect on dividend policy and its consequences shows that overconfident CEOs pay lower dividends to shareholders.

Another CEO characteristic factor that is worth exploring refers to the CEO duality. A manager who wears the double hats of CEO-Chairman is the most powerful person within the firm, and this kind of power centralization can cause an agency problem that compromises firm performance (Jensen, 1986; Pi and Timme, 1993; Villalonga and Amit, 2006). According to Jensen and Meckling (1976) and Jensen (1986), CEO power centralization, or CEO dominance, is a proxy for the agency problem. For the dividend policy, the spirit of the agency problem hypothesis indicates that powerful CEOs have a lesser propensity to payout shareholders, since they prefer to enhance free cash flow for supporting their pet projects. However, empirical studies show conflicting results in this regard (Hu and Kumar, 2004; Pan, 2006; Zhang, 2008).

There is a scarcity of research on and hence understanding of the managerial psychological effects on bank payout policy, which motivates the current study. Although stimulating evidence is reported in the behavioural literature on corporate finance, prior studies typically exclude financial firms in their coverage of research interests, since the banking industry is heavily regulated. However, as a common human psychological bias, bank CEOs can also behave overconfidently, even in a regulatory environment that is arguably efficient (Shleifer and Vishny, 1997; Djankov et al., 2002). Furthermore, Harford et al. (2008) suggest that the conflicted empirical results on the relation between managerial power levels and corporate payouts may be due to industry and country effects. Complications arising from the mixture of these effects can pose a formidable challenge to investigation in this field.

With a unique sample of 4446 observations from 692 US public-listed banks and bank holding companies over the period 1996–2006, empirical evidence unearthed by this research shows that, in the banking industry, overconfident CEOs or dominating CEOs or overconfident and dominating CEOs are less likely to pay dividends to shareholders. This finding is further confirmed by the results of the random effect Tobit regression model of the dividend payout ratio, as overconfident and overconfident–dominating CEOs are found to be negatively associated with the dividend payout ratio. Similar to Deshmukh et al. (2009), testing the overconfidence and the overconfidence–dominance effects on the dividend payout ratio are conditioned on bank related characteristics such as bank size, growth opportunity, and profitability. Results show that the negative effect of overconfidence and overconfidence–dominance factors can be alleviated when banks have lower information asymmetry and with higher growth opportunities. However, no supporting evidence is found that the negative effect of managerial cognitive bias on the dividend payout ratio can be modified when profitability is higher. Overall, consistent with prior studies (Ben-David et al., 2007; Cordeiro, 2009; Deshmukh et al., 2009), managerial overconfidence has a negative effect on banks' dividend policy, likely caused by overconfident CEOs' propensity for enhancing free cash flows and viewing external financing as costly. Although dominating CEOs are less likely to pay dividends, the dominance effect turns out to be insignificant for the dividend payout ratio. Nevertheless, compared to CEO overconfidence and CEO dominance factors, the joint CEO overconfidence–dominance effect has the strongest influence on determining banks' dividend policy.

Further, Fama and French (2001) present the phenomenon wherein dividends are disappearing while the amount of shares repurchased from the open market is increasing. Grullon and Michaely (2002) explain the disappearing dividends based on the substitution of share repurchases. They find a substitution relation between cash dividends and share repurchases. However, a prior study by Allen et al. (2000) already rejects the substitution hypothesis. Dingell et al. (2009) highlight the importance of future research in identifying the motivation behind the boom in share repurchases.

This study also considers the relation between managerial judgement bias and share repurchases. The results obtained support a positive association of joint CEO overconfidence–dominance with buying back shares, while CEO overconfidence shows a similar positive effect in some regression models. CEO dominance is, however, found to not be a determinant of corporate share repurchases. Then, the total payout ratio that addresses both dividends and share repurchases is examined sequentially in relation to CEO overconfidence, dominance, and overconfidence–dominance effects. Once again, similar to the dividend payout ratio, CEO overconfidence and CEO overconfidence–dominance are negatively related with the bank's total payout. Such a negative effect is stronger in banks with a higher degree of information asymmetry and less growth opportunity.

Several robustness tests are performed in this chapter. First, sensitivity analysis is conducted when considering the tax effect, as suggested by Dingell et al. (2009). The whole sample is divided into two sub-samples based on the 2003 Jobs and Growth Tax Relief Reconciliation Act. Robust results are also obtained from testing the relation between CEO overconfidence and bank dividend payouts for the two

sub-samples over 2004–2006. A significantly positive relation is found to exist between CEO overconfidence–dominance and dividend payouts from 2000 to 2002. No evidence has been detected for the CEO dominance effect. Second, the market response to dividend increase (at least 3%) announcements by overconfident, dominating, and overconfident–dominating CEOs has been examined, respectively. Although there is still debate over whether the market provides positive feedback to a dividend increase by overconfident CEOs (Deshmukh et al., 2009; Bouwman, 2009), no significant differences can be detected between the market responses to increases in dividends paid and increases from all three types of CEOs, in terms of attributes.

Overall, this study contributes to the literature in several aspects. First, it adds to the traditional literature on corporate finance, since payout policies in the banking industry are seriously under-researched (Dingell et al., 2009). This study also enhances the behavioural finance literature, because the banking industry falls outside its scope of attention, due to arguments that the industry is extensively regulated. Second, in this chapter, payout policy is also examined with another managerial factor, that is, CEO dominance. The results obtained from this chapter add to the ongoing debate on whether CEO power centralization promotes dividend payments by confirming the free cash flow hypothesis, since CEOs with agency problems are reluctant to distribute cash dividends. Third, unlike prior studies that test only the relation between managerial overconfidence and dividend policy, this study also considers the impacts of share repurchase programs. Evidence shows that the increasing trend of share repurchases is, to a great extent, associated with the effects of CEO overconfidence and joint CEO overconfidence–dominance influences. These CEOs frequently regard their firms as undervalued. Fourth, this study is the first to

consider the joint CEO overconfidence–dominance effect on corporate payout policy. Results show that the joint effect plays a dominant role in affecting bank dividend policy in the estimation models developed in this chapter.

The remainder of this chapter is organized as follows. Section 3.2 provides essential background about corporate payout policy. Section 3.3 describes the development process of the empirical hypotheses. Section 3.4 is concerned with the dataset and design of the methodology. Empirical results, including those of univariate and multivariate analyses, are reported in Section 3.5. Section 3.6 represents the extended robustness test analysis. Section 3.7 concludes the main findings of the study.

3.2 Related literature

This section seeks to identify research gaps from reviewing the previous literature on corporate payout policy. In spite of the widely discussed signaling hypothesis and the free cash flow hypothesis for explaining the dividend puzzle in prior studies, evidence of effects of behavioural bias, especially cognitive managerial bias, on corporate payouts is scarce, which implies a critical research void worth further examining. Furthermore, since Fama and French (2001) find that dividends are disappearing while share repurchases are increasing, there has been an ongoing debate about whether dividends or share repurchases should be the main corporate payout method, which also warrants further exploration from the perspective of behavioural finance. To explain the booming practice of share repurchases, the substitution hypothesis has proved inadequate, and the behavioural biases of CEOs therefore seem to be a promising area for new research.

3.2.1 Signaling hypothesis

A milestone in modern dividend payout studies, Lintner (1956) claims that managers can use increases in dividends as a signal for positive future earnings, since dividends are the residuals of firm investments. Following the spirit of Lintner (1956), academic studies apply empirical models in investigating the extent to which the signaling hypothesis can explain the dividend puzzle. In general, the results of studies in the 1980s agree that dividend payouts are positively related to a firm's future earnings. Kane et al. (1984) investigate signaling theory based on the expectation model of dividends and earnings. The authors find that a percentage of unexpected change in the dividends is correlated with change of a similar magnitude in future earnings. Healy and Palepu (1988) suggest that firms with positive earnings are more likely to initiate dividends, while Dyl and Weigand (1988) find that a firm's systematic risk can be alleviated through initiating cash dividends.

Recent empirical studies give ambiguous results on dividend signaling theory. Garrett and Priestley (2000) develop a behavioural model that captures managerial payout cost minimization and find that unanticipated positive dividends changes contain information of potential increases in permanent earnings. This finding is confirmed by Nissim and Ziv (2001), since they find that dividends are helpful in predicting a firm's ordinary earnings levels. Benartzi et al. (1997) maintain that dividend payments can signal future earnings after sorting out dividend-paying from non–dividend-paying firms. The authors, however, find that the extent of changes in the dividend payments has no impact on predicting future earnings. Mougoue and Rao (2003) suggest there is a moderate relation between dividends and future earnings when conditional on firm

size. They study a sample of 143 non-utility firms and find that the signaling hypothesis is only valid for firms that are smaller size and which have lower rates of average total assets and higher leverage ratios. The authors find no difference in firm fundamental characteristics between companies with and without signaling effects. Bernhardt et al. (2005) apply nonparametric analysis as a robust test for the dividend signaling hypothesis. They find it is hard for the dividend signaling hypothesis to provide an explanation for the dividend puzzle after controlling for the size effect and the dividend yield factor.

In the banking industry, prior studies find that the dividend signaling hypothesis is less effective for financial firms. Through a sample of bank holding companies over the period 1973–1987, Filbeck and Mullineaux (1993) find that stock prices of bank holding companies after announcing dividends increase by 0.39%, which is less than for industrial firms.[1] Boldin and Leggett (1995) note that evidence is inconclusive on whether dividends convey the total information of bank financial health. The authors note a positive relation between dividends per share and bank quality ranking in their sample of 207 public US banking firms, as well as a negative relation between the dividend payout ratio (measured as dividends divided by earnings) and bank quality rating. Bessler and Nohel (2000) report a contagion effect of stock returns when bank dividends are omitted in an environment with asymmetric information. Since dividends convey information about bank financial conditions, outside investors may view the dividend cuts as a signal of the worsening quality of the bank's loan portfolio. Therefore, dividend-cutting banks receive negative abnormal returns from stock markets. Cornett et al. (2008) study the dividend signaling of 406 bank initial public

[1] Asquith and Mullins (1983) report an average abnormal return of 3.7% in industrial firms upon the impact of dividend initiations. Grullon et al. (2002) report an average 1.34% abnormal return from the stock market to dividend-increasing firms.

offerings (IPOs) in the US market. They report a positive relation between the likelihood of initiating dividends and future bank performance. Meanwhile, they also confirm the dividend policy as having a major effect on the bank's condition.

3.2.2 Free cash flow hypothesis

While Miller and Modigliani's (1961) dividend irrelevance model prohibits managers from maintaining free cash flows, Jensen (1986) argues that managers are willing to hold excess cash that enables them to afford pet projects, which can hurt the shareholder value. The author points out that the overinvestment problem arising from large amounts of free cash flow can be alleviated through paying dividends to shareholders. Further, Allen and Michaely (2003) describe a firm as a 'black box' where corporate decisions, such as payout policy, can be influenced by different forces within the firm and the interest conflicts between different groups. The authors also indicate that the central purpose of the corporate payout policy is to keep an optimal amount of free cash flow. Applying Tobin's Q as a proxy for overinvestment ($Q < 1$, overinvestment), Lang and Litzenberger (1989) find that stock markets respond positively to overinvested firms that increase cash dividends. To further test whether the finding by Lang and Litzenberger (1989) is still valid when applied to share repurchases and specially designated dividends (SDDs), Howe et al. (1992) study a sample with 55 tender offer repurchases and 60 SDD announcements in the US market from 1979 to 1989. They report an insignificant difference in abnormal returns with high- and low-Q firms over tender offer repurchases and the SDD announcement period. Therefore, they conclude that it is difficult for the free cash flow hypothesis to explain tender offer repurchases.

Another study by Denis et al. (1994) supports the view that dividends alleviate the overinvestment problem, since they find a negative relation between the firm's Q and its dividend yield. However, a similar study by Yoon and Starks (1995) fails to support the view of Lang and Litzenberger (1989), since the former fails to find evidence that stock prices respond more significantly to dividend changes for low-Q firms. Lie (2000) studies a more comprehensive sample consisting of special dividends, common dividends, and self-tender offers and finds that firms with excessive cash flows receive the most significant positive abnormal returns through larger SDDs and buyback changes. The author finds no evidence to suggest that small dividend changes can mitigate the agency problem. La Porta et al. (2000) investigate the correlation between corporate dividends and the agency problem from an international perspective. They find that the relation between agency problems and corporate dividend policy is influenced by the extent of protection given to small shareholders. Firms located in countries with better regulations in shareholder protection pay higher dividends. Moreover, shareholders in better shareholder-protecting countries are willing to accept dividend delays.

3.2.3 Behavioural bias hypothesis

Behavioural bias can be divided into two groups, the investor side and the manager side. For the investor side, the catering hypothesis introduced by Baker and Wrugler (2004) indicates that the dividend magnitude is driven by the investor's sentiment. That is, managers decide on the amount of corporate dividends based on market situations. Li and Lie (2006) extend the catering hypothesis when considering both dividend-increasing and dividend-decreasing possibilities. They find that the number

of dividends is more likely to be increased in the premium period, while the market reacts positively to dividend increasing when it poses a premium on those dividend changes. Chay and Suh (2009) adopt a sample of G7 countries over the period 1994–2005. They find that firms are less likely to pay dividends in the period when cash flows are uncertain.

Psychological studies confirm that behavioural biases such as overconfidence and power illusions are a familiar occurrence among managers (Miller and Ross, 1975; Weinstein, 1980; Gervais et al., 2007). Malmendier and Tate (2005) demonstrate that overconfident CEOs may prefer internal funds rather than costly external funds and would deem their firms to be undervalued. To enhance internal funds, overconfident managers are more likely to pay fewer cash dividends to shareholders. Ben-David et al. (2007) investigate the CFO overconfidence effect on corporate policy. Since overconfident CFOs tend to deploy a smaller discount factor to compute the value of cash flows, they are reluctant to pay dividends and more likely to buy back shares from the open market and prefer more long-term debt for making corporate investments. For the market reaction to dividend changes caused by overconfident CEOs, Deshmukh et al. (2009) find that the dividend payout also contains managerial overconfidence information. A higher dividend payout is associated with a lower likelihood of the overinvestment problem, and hence the stock market responds positively to this information.

Unlike the overconfidence effect on corporate decisions, the effect of CEO dominance on firm performance is ambiguous. The rent extraction hypothesis indicates that powerful CEOs (i.e., CEOs with a combined title) can destroy firm value, since

agency costs will be higher (Jensen and Meckling, 1976; Easterbrook, 1984; Jensen, 1986; Shleifer and Vishny, 1997). Several studies confirm that dominating CEOs also destroy firm value since the agency problem is even worse when CEOs are more powerful (Rechner and Dalton, 1991; Pi and Timmer, 1993; Villalonga and Amit, 2006; Bebchuk et al., 2009). However, the efficient management hypothesis indicates that CEO duality may be efficient, since CEO–chairs can regulate firms more efficiently than outside directors, since they have sufficient knowledge of the firm and can meet its special needs through alleviating ambiguous management possibilities (Finkelstein and D'Aveni, 1994; Adams and Ferreira, 2007; Coles et al., 2008). These theoretical insights have been empirically supported by, for example, Baliga et al. (1996) and Ghosh and Moon (2009).

Turn to the validity of two hypotheses in the banking industry, empirical research on the effect of CEO power and corporate payouts shows mixed results. According to the free cash flow hypothesis, managers with conflicting interests with shareholders may be reluctant to pay dividends, and this reluctance is even worse for powerful managers (Jensen, 1986). This kind of 'conventional wisdom' has been challenged by Pan (2006), since the author finds that it is entrenched managers who are more likely to distribute cash dividends to shareholders. Feng et al. (2007) indicates that the free cash flow hypothesis may hold for emerging markets, while under the better corporate governance system in the US, one would see a positive effect from entrenched managers on corporate payouts. However, although it is claimed that CEO dominance has limited influence under a strong efficient governance system, the joint position (CEO–chair) of managers is actually a governance system that is substantially sub-optimal (Daines et al., 2010; Ghosh and Moon, 2009).

3.2.4 Share repurchases and dividends

The debate on the choice of share repurchases or dividends has been ongoing in the literature. Fama and French (2001) conclude that firms have a decreasing propensity to pay dividends due to the recessionary trend in earnings and limited growth opportunities since 1978. Their results are robust when firm specific characteristics are controlled for. Dingell et al. (2004) argue that the phenomenon of disappearing dividends may be caused by the industry effects of the technology sector. The authors find that larger technology firms are hesitant to initiate dividends, since they would like to hold onto cash in finding better investment opportunities and hence maintain the firm's growth rate. Moreover, since the authors also use free cash to motivate employees through stock option-based compensations, the distribution of dividends by such firms is reduced. Other studies by Vermaelen (1981, 2005), Bagwell and Shoven (1989), and Grullon and Michaely (2002) explain that the trend of disappearing cash dividends may be caused by the continuous increasing trend of repurchasing shares from the open market. Compared with dividends, repurchases are regarded as a signal of firm undervaluation by these authors, since stock prices will increase after share repurchases are announced to the public. Moreover, repurchases are more flexible and cost less than dividends, since they do not have a stable issuing period and are taxed at a lower rate.

Another explanation for the boom in share repurchases highlights the substitution feature of share repurchases relative to cash dividends. However, it is controversial for dividends and share repurchases to be substitutes for each other. Allen et al. (2000) reject the notion of substitution, since the two are preferred by different groups of

investors. Dittmar (2000) performs a comprehensive analysis in exploring the motivations for repurchasing shares. Based on a sample that excludes financial and utility firms from 1977 to 1996, the author finds that firms buy back shares to diminish excess cash flows. However, there is inconclusive evidence of whether repurchases are a substitute for dividends, since repurchasing firms also pay higher dividends than non-repurchasing firms. Dingell et al. (2000) also find no supporting evidence of the perfect substitution hypothesis. Unlike these findings, building upon Lintner (1956), Grullon and Michaely (2002) find that firms are more likely to substitute repurchases for dividends after the validation of Rule 10b-18. These authors suggest a negative relation between estimating errors in dividends and repurchase behaviour, which confirms the substitution hypothesis. Another moderate finding by Jagannathan et al. (2000) shows that repurchases and dividends are used under different situations. Managers pay dividends to shareholders with permanent earnings, while share repurchases are adopted with temporary (extraordinary) earnings.

In summary, under a market with asymmetric information, dividend changes can convey corporate information to outside investors about inside managers. In relation to the signaling hypothesis, prior studies find that unexpected dividend increases can convey information of a firm's future earnings. For the free cash flow hypothesis, dividend policy is viewed as the instrument for alleviating the retaining level of free cash flows held by inside managers who may have overinvestment problems. While behavioural bias can explain corporate payouts to some extent, it is still unclear whether a linear relation exists between CEO judgement bias and corporate payout policy. In particular, the phenomenon of disappearing dividends and the trend of increasing share repurchases introduced by Fama and French (2001) still require

explanations. Although there is evidence that overconfident CEOs are reluctant to pay dividends due to the enhancement of internal funds, there is no convincing empirical evidence to suggest that they are more likely to buy back shares. The empirical finding about the CEO dominance effect on corporate payout policy is also ambiguous. Results so far do not clearly support or reject either the free cash flow hypothesis or the efficient management hypothesis. Therefore, according to Dingell et al. (2004, 2009), the effect of behavioural biases from the manager side on dividends and share repurchases should be further explored.

3.3 Empirical hypothesis development

3.3.1 Managerial overconfidence and corporate payout policy

Under efficient market conditions, firm financial strategies are commonly decided by two types of CEOs, rational and overconfident. Every CEO holds a private belief about the firm's future performance, such as earnings and growth opportunities. Compared to rational CEOs, overconfident CEOs tend to overestimate a firm's future performance. For example, they may overevaluate investment returns and are thus prone to believe in having found more investment opportunities than rational CEOs (Malmendier and Tate, 2005, 2007; Ben-David et al., 2007).

Following Deshmukh et al. (2009), overconfident CEOs can exaggerate the signals of invested projects and thus are more sensitive to cash flow sufficiency. In particular, overconfident CEOs can overreact to signals and lead to overinvestment when the project signal is above average. In this case, the amount of cash dividends, as the

residual of corporate investments, is relatively smaller than for rational CEOs. Meanwhile, Cordeiro (2009) indicates that overconfident CEOs do overestimate their abilities and skills. As a result, they believe that they can create more wealth to shareholders through investing in other positive net present value projects rather than by distributing cash dividends. Further, overconfident CEOs believe their firms are undervalued and thus avoid issuing undervalued equities to finance investments.

Building upon findings from prior studies, as in Heaton (2002), Malmendier and Tate (2005), Deshmukh et al. (2009), and Cordeiro (2009), the empirical hypotheses for the relations between managerial biases and dividends and share repurchases are presented as follows.

H_1: *Since overconfident CEOs undertake more investments and prefer internal funds instead of costly external funds, banks managed by overconfident CEOs may distribute fewer dividends to shareholders than banks managed by rational CEOs.*

H_2: *Since overconfident CEOs believe that their firms are undervalued, they are more willing to repurchase 'cheap' shares from the current market.*

H_3: Following Jagannathan et al. (2000) and Dingell et al. (2004, 2009), since dividend payments are still the main avenue for corporate payouts while share repurchases are only for temporary earnings distributions, *if the first and second hypotheses hold, the dividends and total payout ratio of firms managed by overconfident CEOs are lower than for firms managed by non-overconfident CEOs.*

3.3.2 Managerial dominance, joint overconfidence–dominance, and corporate payouts

As mentioned in the previous section, given the ongoing debate on both the free cash flow hypothesis and the entrenchment efficiency hypothesis, it is still unclear whether dominating CEOs have a higher or lower propensity to pay dividends or repurchase shares (Jensen, 1986; Shleifer and Vishny, 1997; Hu and Kumar, 2004; Pan, 2006). A recent study by Zhang (2008) investigates the Chinese market and finds that dominating CEOs pay fewer dividends to shareholders and that their firms' total payout ratios are lower, which provides further light on corporate payout policy. Furthermore, Harford et al. (2008) suggest that it is either the industry or country effect that impacts on corporate payout policy. These findings suggest that the CEO dominance factor may have an important bearing on corporate payouts, but determining how the effect works requires further empirical evidence (Wu, 2010). In this light, the banking industry provides a unique opportunity for researchers to explore whether CEO dominance has effects that are different from traditional channels on corporate payout policy. Following the agency problem framework, to test for potential effects, this study proposes the following hypotheses.

H_4: *Dominating CEOs have a negative effect on the amount of bank dividends to be paid.*

H_5: *Dominating CEOs tend to prefer buying back shares from the open market, and hence CEO dominance has a positive effect on share repurchases.*

H_6: *Dominating CEOs have a negative effect on the bank the dividend and total payout ratios.*

Further to the findings of Adams et al. (2005), Bebchuk et al. (2009), and Daines et al. (2010) that since powerful CEOs receive less opposition from other managers, they are more likely to act more in the interest of their personal benefits when the possibility of interest conflicts between managers and corporate shareholders arises. In this vein, managerial overconfidence can result in the worst effects if the CEO also dominates the board at the time. This study then proposes the following hypothesis.

H_7: *The joint CEO overconfidence–dominance factor has the strongest effects on corporate payout policy, including dividends and share repurchases, while the bank dividends and total payout ratio are the lowest for overconfident–dominating CEOs.*

3.4 Data and methodology

3.4.1 Sample construction and datasets

The initial sample contains firms with three-digit SIC codes 602 (commercial banks) and 671 (bank holding companies) from the Compustat dataset over the period 1996–2006. This step leads to a sample that has 816 banks and bank holding companies. These sample banks are further checked by comparing their SIC codes to those provided by the CRSP database, since the CRSP and Compustat may have conflicting SIC codes for the same firm, which can affect the accuracy of the research results (Guenther and Rosman, 1994).[2] This check leads to the exclusion of 64 firms

[2] Guenther and Rosman (1994) find that the difference between the SIC codes from the CRSP and those from Compustat is largely based on two-, three-, and four-digit SIC codes, respectively. The authors suggest that academic researchers should pay particular attention to this issue in their empirical works.

from the initial sample. According to the same procedure as Jagannathan et al. (2000), Grullon and Michaely (2002) and Cuny et al. (2009), firms are selected for the final sample as long as they meet several criteria, presented below:

(1) Firms included in the final sample should appear for at least one year over the sample observation period,

(2) Stock return information and other firm financial characteristics should be available from both the CRSP and Compustat datasets, and

(3) At least two DEF-14A proxy statements should be identified from the SEC EDGAR database for measuring the managerial overconfidence effect.

Following these criteria, the final sample contains 692 banks and bank holding companies and 4446 firm–year observations from 1996 to 2006.

One common approach to measuring share repurchases is to subtract the redemption value of the preferred stocks outstanding from the total expenditure on purchasing common and preferred shares based on the Compustat database (Jagannathan et al. 2000). Meanwhile, the Securities Data Company (SDC) is another frequently used source for repurchase data (Guay and Harford, 2000; Billet and Xue, 2007). Banyi et al. (2008) investigate the accuracy of share repurchase estimations based on both the Compustat and SDC databases. The authors find that the repurchase information from the Compustat database gives a more accurate estimation, while the SDC fails to provide comprehensive contents for all share repurchases from the open market. In

detail, they argue that the SDC fails to distinguish the repurchase program features and that it may have a ‘double-count’ problem for a single repurchase announcement. However, Grullon and Michaely (2002) confirm that the Compustat measurement of repurchase is unavailable for the banking industry. As a result, researchers such as Grullon and Michaely (2004), Lie (2005), and Massa et al. (2007) gather the repurchase data from the Thomson One Banker. Following those studies, this provides 691 repurchasing announcements for 692 banks and bank holding companies in America over the period 1996–2006.

3.4.2 Methodology

3.4.2.1 Variable definitions

The main dependent variables are the dividend payer and total payout ratios. Following Fama and French (2001), we define the firm as a dividend payer (dummy variable equals to one) if the dividends per share Ex-Date fiscal ratio (DVPSX_F) from Compustat is positive. The repurchase is also a dummy variable that equals one if firms buy back shares from the open market in the fiscal year t, and zero otherwise. The dividend ratio is calculated as the common stock dividends divided by the market value of the firm’s equity. The total payout ratio equals the sum of common stock dividends and share repurchases, divided by the market value of equity.

The CEO overconfidence (OV) variable is a dummy variable that equals one if a CEO reluctant at least twice during his tenure to exercise stock options when they are already above 67% in the money, and zero otherwise. Once the CEO is identified as

being overconfident, the CEO will keep this overconfident hat for his or her remaining tenure. CEO dominance (DOM) is also a dummy variable equalling one if a CEO is also a chair during the fiscal year, and zero otherwise. Further, the binary variable, OV_DOM, equals one if a CEO is both overconfident and dominating within the firm.

Several bank-based characteristics are also controlled for in the regression models. Following prior studies, three main determinants of corporate payouts are first considered. Fama and French (2001) indicate that larger firms with lower information asymmetry pay higher dividends to shareholders. Size is the logarithmic value of total assets. The market-to-book ratio, as a measure of growth opportunity, is the market value divided by the book value of the firm's assets. It is suggested that firms with higher growth opportunities allocate more capital to support their rapid growth rather than distribute payouts to shareholders (Garrett and Priestley, 2000; Grullon and Michaely, 2002). Given the signaling hypothesis that profitable firms allocate more payouts to shareholders, the variable of free cash flows (FCF), as a proxy for the bank's earnings performance, is calculated as the ratio of the firm's operating income before depreciation divided by the book value of total assets. The CA ratio as the proxy for regulation equals the sum value of tier 1 and tier 2 capital, divided by total average assets. The ownership percentage (OP) is the ratio of the number of stock shares held by the CEO divided by the amount of the firm's total shares outstanding in the same fiscal year, times 1,000,000. Board size (BS) is the number of directors in the board within a firm.

3.4.2.2 Regression approaches

Because standard errors can cluster across firms or years, panel data can have an individual-level effect or unexpected heterogeneity. For example, a specific firm can be correlated throughout the sample years, while a given sample year can be correlated throughout firms (Mittelhammer et al., 2000; Wooldridge, 2002). Given this possibility, it may be better to apply the fixed effect logistic regression model than the ordinary logistic regression model, since the ordinary approach can underestimate standard errors. Simulation findings show that estimating standard errors are biased through the OLS or the Fama–MacBeth approach. Petersen (2009) therefore suggests that the standard error clustering problem caused by firm and time effects should be controlled for through appropriate fixed effect or random effect models. However, compared to the fixed effect model, the random effect model is based on the condition where the individual-level effect is randomly allocated, and is thus more general than the fixed effect model since a random time effect is considered (Greene, 2002). Petersen (2009) also indicates that the random effect model improves the quality of results from the logit regression estimation when there is a strong firm effect.

In this light, both the fixed effect and random effect logistic regressions are performed in exploring the likelihood of bank payout decisions. Equations (3.1) to (3.3) show the logistic regression for testing the predicting effects of CEO overconfidence, dominance, and joint overconfidence–dominance on the likelihood of paying dividends. The specification of regression models of share repurchases from the open market are similar to that of dividends:

$$\Pr\{Y_{i,t} = 1|OV_{i,t}, X_{i,t}\} = G(\alpha_1 + \alpha_2 OV_{i,t} + X'_{i,t}A) \quad (3.1)$$

$$\Pr\{Y_{i,t} = 1|DOM_{i,t}, X_{i,t}\} = G(\beta_1 + \beta_2 DOM_{i,t} + X'_{i,t}B) \quad (3.2)$$

$$\Pr\{Y_{i,t} = 1|OV\_DOM_{i,t}, X_{i,t}\} = G(\theta_1 + \theta_2 OV\_DOM_{i,t} + X'_{i,t}C) \quad (3.3)$$

where $Y_{i,t}$ refers to the dividend payer or share repurchase variable equal to one if a bank i distributes dividends or buys back shares in the fiscal year t; $OV_{i,t}$,$DOM_{i,t}$, and $OV\_DOM_{i,t}$ are CEO overconfidence, dominance, and overconfidence–dominance measures, respectively; and $X_{i,t}$ is a vector that contains control variables, including bank size, growth opportunities, profitability, and corporate governance variables. Here A, B, and C are the coefficient vectors on the control variables under different regressions of CEO bias measures. Following Malmendier and Tate (2008), G is the logistic distribution, which is also robust as normally distributed. The null hypothesis is that the coefficients α_2 , β_2, and θ_2 are equal to zero, which indicates no effects of CEO overconfidence, dominance, or overconfidence–dominance on the likelihood of dividend payments or share repurchases.

Prior studies by Weisbenner (2000), Fenn and Liang (2001), Cuny et al. (2009), and Deshmukh et al. (2009) investigate dividends and total payout ratio based on fixed effect Tobit regressions. However, whether the fixed effect Tobit regression is an efficient econometric estimation approach is doubtful from the literature. Erez et al. (1996) note that the random effect Tobit model may be better than the fixed effect Tobit model, since it allows scholars to research situational variables under different specifications and to consider the unique feature of the data. Greene (2004) indicates

that the 'incidental parameters problem' is varied in the fixed effect Tobit model and thus leads to bias in the regression results. Cuny et al. (2009) recognize the shortcoming of the fixed effect Tobit regression model modelling the dividend payout ratio due to the biased standard errors estimation. However, they suggest the estimating bias may be alleviated as long as the time period of the panel is long enough. To account for the situation when there are unexpected rapid increases in dividends and clustered standard errors, this chapter follows Deshmukh et al. (2009) and Adjaoud and Amar (2010) to select the random effect Tobit regression model to estimate the effects of CEO overconfidence, dominance, and the joint overconfidence–dominance on bank dividends and total payout ratios. Equations (3.4) to (3.6) specify the regression models:

$$DP_{i,t}(TP_{i,t}) = a_0 + a_1 OV_{i,t} + \sum_{i=3}^{8} a_i \, Control_{i,t} + \varepsilon_{i,t} \qquad (3.4)$$

$$DP_{i,t}(TP_{i,t}) = b_0 + b_1 DOM_{i,t} + \sum_{i=3}^{8} b_i \, Control_{i,t} + \varepsilon_{i,t} \qquad (3.5)$$

$$DP_{i,t}(TP_{i,t}) = c_0 + c_1 OV\_DOM_{i,t} + \sum_{i=3}^{8} c_i \, Control_{i,t} + \varepsilon_{i,t} \qquad (3.6)$$

where $DP_{i,t}$ and $TP_{i,t}$ are the dividend payout ratio and total payout ratio of bank i in year t. The remaining variables on the right-hand side of equations (3.4) to (3.6) have the same definitions as in equations (3.1) to (3.3). The null hypothesis is that a_1, b_1, and c_1 equal zero, respectively, if overconfident, dominating, and overconfident–dominating CEOs do not affect bank payout decisions. A detailed definition of each regression variable is presented in Table 3.1.

Table 3.1 Definitions of Dependent and Independent Variables

The table below presents the detailed definition of each variable in the regression models.

Variable	Definition
Panel A. Dependent and main explanatory variables	
DIVPAYOUT (DP)	The dividend payout ratio is calculated as the common stock dividends divided by the market value of equity.
TOTPAYOUT (TP)	The total payout ratio equals the sum of common dividends and share repurchases divided by the market value of equity.
OV	A dummy variable equal to one if a CEO maintains the stock option even when it is greater than 67% in the money at least twice, and zero otherwise. Once the CEO is defined as being overconfident, he or she will hold the title throughout the tenure.
DOM	A dummy variable equal to one if a manager is both CEO and the chair, and zero otherwise.
OV_DOM	A dummy variable equalling to one if a CEO is identified as both overconfident and dominating, and zero otherwise.
Panel B. Control variables	
SIZE	SIZE is the logarithmic value of a firm's total assets. It is a proxy for a firm's information asymmetry. Larger size means a lower level of asymmetric information.
MB	MB is the market-to-book ratio, calculated as the ratio of the firm's market value to the book value of total assets. Here MB is a proxy for growth opportunity. A higher MB ratio implies a higher growth opportunity.
FCF	FCF equals the operating income before depreciation divided by the book value of the firm's total assets. Here FCF is a proxy for profitability. Higher profitability leads to a greater value of FCF.
CA	The sum of tier 1 and tier 2 capital divided by a bank's total average assets. Here CA is a proxy for regulation.
OP	The percentage of the number of shares held by the CEO divided by the firm's common shares outstanding × 1,000,000 in that fiscal year.
BS	BS is the number of directors in the corporate board.

3.5 Empirical findings

3.5.1 Univariate analysis

Table 3.2 reports the annual payout trend for the sample period 1996–2006. Consistent with the prior literature (Allen and Michaely, 2003; Grullon and Michaely, 2002; Hirtle, 2004), the repurchase earnings percentage (value of repurchases divided by the bank's operating income) increases from 9.38% in 1996 to 12.48% in 2006, an approximately 33.05% increase in the repurchase percentage as a function of operating income in the banking industry. For the dividend percentage, these results confirm the findings by Dingell et al. (2004), that is, the dividend earnings percentage increases steadily from 1996 (13.53%) to 2006 (18.91%), an increase of about 39.87% over the sample period. Finally, the related percentage of repurchases to dividends is, on average, 60.07% and is lowest (26.52%) in 2002 and highest (99.04%) in 1999. The results in Table 3.2 show that share repurchases are more volatile than cash dividends. This also supports the finding by Boldin and Leggett (1995) that dividends are more likely to be a signal of bank quality and should be distributed smoothly.

Further, Figures 3.1 and 3.2 show the median value of the dividend and total payout ratios for the overall sample and the sample of consistent dividend payers, respectively. Again, no evidence supports the view that dividends are disappearing. In the meantime, it is shown that the total payout ratio is fluctuates more than the dividend payout ratio due to the volatility of repurchases.

Table 3.2 Annual Payout Informatio

Table 3.2 reports the annual dividends and repurchase and earnings information based on a bank sample over 1996–2006 with 4446 observations. The sums of dividends (DIV), repurchases (REP), and earnings (EARN) are presented in the table. The dividend data are gathered from the Compustat database, while the repurchase data are collected from the SDC.

Year	N	DIV	REP	EARN	DIV/EARN	REP/EARN	REP/DIV
1996	329	13654.01	9467.52	100921.88	13.53%	9.38%	69.34%
1997	338	14055.38	7930.61	107695.59	13.05%	7.36%	56.42%
1998	388	17521.70	7557.45	116299.97	15.07%	6.50%	43.13%
1999	428	20679.94	20480.74	130586.60	15.84%	15.68%	99.04%
2000	433	21397.61	9684.31	126942.80	16.86%	7.63%	45.26%
2001	437	21739.49	18514.90	122910.14	17.69%	15.06%	85.17%
2002	444	22773.85	6039.89	138388.06	16.46%	4.36%	26.52%
2003	427	19891.71	14183.99	122069.61	16.30%	11.62%	71.31%
2004	427	28828.59	13585.36	162657.13	17.72%	8.35%	47.12%
2005	410	31401.65	16178.27	169221.00	18.56%	9.56%	51.52%
2006	385	34239.70	22593.81	181039.29	18.91%	12.48%	65.99%

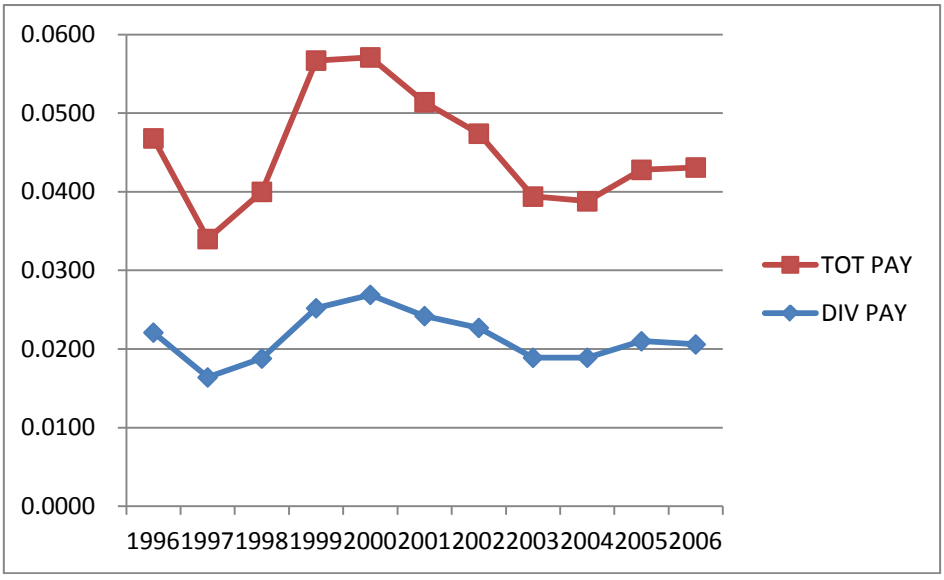

Figure 3.1 Whole Sample

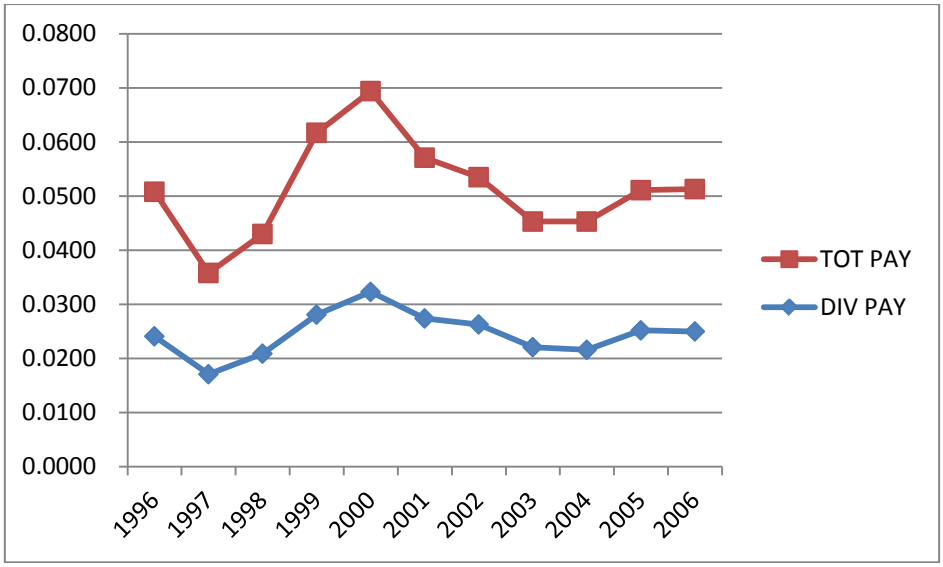

Figure 3.2 Continuous Dividend Payers

In Table 3.3, firms are sorted by both dividends and repurchases (DIV > 0, REP > 0), only dividends payers (DIV > 0, REP = 0), only share repurchases (DIV = 0, REP > 0), and non-payers (DIV = 0, REP = 0), respectively. The most important finding is that the average percentages of overconfident and dominating CEOs are both lowest for dividend-paying firms (DIV > 0, REP = 0), with mean values of 37.83% and 39.33%, respectively. On average, the share repurchase firms (DIV = 0, REP > 0) have the highest percentage of overconfident CEOs (58.54%), and the dividend repurchase firms (DIV > 0, REP > 0) have the highest average proportion of dominating CEOs (48.00%). Subsequently, both dividend and share repurchase firms (DIV > 0, REP > 0) have the highest amount of overconfident–dominating CEOs (27.85%), while it is only 17.34% for dividend-paying firms (DIV > 0, REP = 0).

Similar to prior studies (Jagannathan et al., 2000; Grullon and Michaely, 2002; Hirtle, 2004; Cuny et al., 2009), on average, size, earnings, and growth opportunities vary between payout (at least one kind of payout) firms and non-payout firms. Firms that

both pay dividends and carry out repurchases (DIV > 0, REP > 0) have the largest logarithmic value of size (mean 3.3911, median 3.2211), while non-payout firms (DIV = 0, REP = 0) have the lowest logarithmic value of size (mean 2.7071, median 2.6443). Firms with high earnings also distribute more to shareholders. The average earning ratio for non-payout firms (DIV = 0, REP = 0) is also the lowest (2.08%) when compared to the ratios 2.71%, 2.56%, and 2.47% for the dividend repurchase firms (DIV > 0, REP > 0), the dividend payer firms (DIV > 0, REP = 0), and the repurchase firms (DIV = 0, REP > 0), respectively. The non-payout firms (DIV = 0, REP = 0) have the highest average growth opportunity, measured by the market-to-book ratio at 1.9298 (median, 1.7482), among three other types of firms.

Dickens et al. (2002) find that the CA ratio, as a regulation proxy for the banking industry, has a positive effect on determining the dividend policy. In the empirical sample, the CA ratio for non-payout firms (DIV = 0, REP = 0) is 13.60%, which is the lowest ratio compared to other three types of firms. Similar to Fenn and Liang (2001), the higher the ownership percentage of CEOs, the lower will be the amount of dividends, since the higher ownership percentage can be viewed as a way to potentially alleviate the agency problem. Evidence is shown to support the findings by Fenn and Liang (2001), since the average ownership percentage is the highest (6.62%) for non-payout firms (DIV = 0, REP = 0), while firms that both pay dividends and undertake repurchases (DIV > 0, REP > 0) have the lowest mean value (2.80%). For board size, if one conditions on the dividend repurchase (DIV > 0, REP > 0) and dividend-paying firms (DIV > 0, REP = 0), the median number of directors is 11, while the median value of board director numbers for firms that repurchase stock (DIV = 0, REP > 0) but without dividend payouts (DIV = 0, REP = 0) is 9.

Table 3.3 Descriptive Statistics

Table 3.3 reports the descriptive statistics on all regression variables sorted by corporate payout circumstances. Here DIV > 0 means firms distribute dividends to shareholders, while DIV = 0 is for firms that omit common dividends. Similarly, REP > 0 and REP = 0 refer to positive and zero repurchase values reported by the SDC in a specific fiscal year. The definition of each variable is presented in Table 3.1.

Variable	DIV > 0, REP > 0			DIV > 0, REP = 0		
	Mean	Median	Stdev	Mean	Median	Stdev
OV	0.4431	0.0000	0.4971	0.3783	0.0000	0.4850
DOM	0.4800	0.0000	0.5000	0.3933	0.0000	0.4886
OV_DOM	0.2785	0.0000	0.4486	0.1734	0.0000	0.3787
DIV PAYOUT	0.0262	0.0252	0.0153	0.0271	0.0226	0.1246
TOT PAYOUT	0.0907	0.0736	0.1254	0.0271	0.0226	0.1246
SIZE	3.3911	3.2211	0.7932	3.1913	3.0501	0.6953
MB	1.8831	1.8325	0.6717	1.8771	1.7943	0.6384
FCF	0.0271	0.0269	0.0073	0.0256	0.0248	0.0096
CA	0.1448	0.1320	0.0535	0.1407	0.1316	0.0391
OP	0.0280	0.0148	0.0436	0.0415	0.0161	0.0771
BS	12.1354	11.0000	4.3584	11.6852	11.0000	4.0775
Observations	650	650	650	3148	3148	3148
Variable	DIV = 0, REP > 0			DIV = 0, REP = 0		
	Mean	Median	Stdev	Mean	Median	Stdev
OV	0.5854	1.0000	0.4988	0.5189	1.0000	0.5001
DOM	0.4634	0.0000	0.5049	0.4695	0.0000	0.4995
OV_DOM	0.2683	0.0000	0.4486	0.2603	0.0000	0.4392
DIV PAYOUT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
TOT PAYOUT	0.0935	0.0486	0.1919	0.0000	0.0000	0.0000
SIZE	2.8405	2.7402	0.4140	2.7071	2.6443	0.4490
MB	1.8391	1.7369	0.6315	1.9298	1.7482	0.7210
FCF	0.0247	0.0246	0.0093	0.0208	0.0199	0.0109
CA	0.1496	0.1318	0.0508	0.1360	0.1260	0.0401
OP	0.0497	0.0262	0.0611	0.0662	0.0369	0.1028
BS	8.9512	9.0000	2.6358	10.2356	9.0000	3.7486
Observations	41	41	41	607	607	607

Building upon the findings of Table 3.3, the bank payout ratio is then further sorted with the CEO attributes. Panel A of Table 3.4 shows the univariate analysis results for the overconfidence impact on bank payout policy. If we condition on the payout policy of firms managed by non-overconfident CEOs, firms managed by overconfident managers do have lower propensities to pay back shareholders. In particular, the average (median) dividend payout ratio of firms with overconfident CEOs is 0.0180 (0.0183), while the average (median) ratio of firms with non-overconfident CEOs is 0.0266 (0.0229), which reveals an average (median)

difference of about -0.0086 (-0.0046), strongly significant at 1% (both p-values < 0.01). Panel B of Table 3.4 shows the comparison results of firms run by dominating and non-dominating CEOs. On average, there is no significant difference in the dividend and total payout ratios between those two types of firms. However, there is a significant difference at the median level. The median difference of the dividend payout ratio is -0.0006 (p-value < 0.10) and the median difference of the total payout ratio is -0.0005 and insignificant from zero. Panel C of Table 3.4 displays the result for firms managed by both overconfident and dominating CEOs when compared to non-overconfident–dominating CEOs. Similar to the findings in panel A of Table 3.4, the average and median differences of the dividend payout ratio between these two types of CEOs are -0.0058 and -0.0024, respectively, significant at the 10% and 1% levels, respectively. There is no significant average difference in total payout ratio, while the median difference is, significantly, -0.0015 (p-value < 0.05). For firm-level characteristics, results confirm that firms with overconfident, dominating, or overconfident–dominating CEOs have significantly larger size, higher growth opportunities, and higher earnings than the firms of their peered CEOs throughout three panels in Table 3.4.

Table 3.4 Comparison Analysis of OV, DOM, and OV_DOM Effects on Payout Policy

Table 3.4 shows the univariate analysis of the mean and median differences of payout policies, including firm characteristics between firms with OV, DOM, and OV_DOM CEOs and those with Non-OV, Non-DOM, and Non-OV-DOM CEOs, respectively. Panel A reports the comparison analysis between firms managed by overconfident and non-overconfident CEOs. The CEO dominance effect on payout policy is presented in panel B. Panel C shows the analysis when CEOs are both overconfident and dominating. The p-values are reported in parentheses below the coefficients. Here *, **, and *** indicates the significance levels at 10%, 5% and 1%, respectively. A definition of each variable is presented in Table 3.1.

Panel A. Overconfidence effect and payout policy

Variable	OV		Non-OV		Mean Difference		Median Difference	
	Mean	Median	Mean	Median	Difference	p-Value	Difference	p-Value
DIV PAYOUT	0.0180	0.0183	0.0266	0.0229	-0.0086	[0.004]***	-0.0046	[0.000]***
TOT PAYOUT	0.0290	0.0204	0.0364	0.0248	-0.0074	[0.021]**	-0.0044	[0.000]***
SIZE	3.2903	3.1599	3.0549	2.9003	0.2354	[0.000]***	0.2596	[0.000]***
MB	2.0981	2.0353	1.7373	1.6624	0.3608	[0.000]***	0.3729	[0.000]***
FCF	0.0265	0.0257	0.0242	0.0237	0.0023	[0.000]***	0.0020	[0.000]***
CA	0.1333	0.1256	0.1459	0.1340	-0.0126	[0.000]***	-0.0084	[0.000]***
OP	0.0427	0.0220	0.0432	0.0150	-0.0005	[0.423]	0.0070	[0.000]***
BS	11.6458	11.0000	11.4464	11.0000	0.1994	[0.116]	0.0000	[0.159]
Observation	1818	1818	2628	2628				

Panel B. Dominance effect and payout policy

Variable	DOM		Non-DOM		Mean Difference		Median Difference	
	Mean	Median	Mean	Median	Difference	p-Value	Difference	p-Value
DIV PAYOUT	0.0239	0.0206	0.0225	0.0212	0.0014	[0.327]	-0.0006	[0.055]*
TOT PAYOUT	0.0355	0.0227	0.0318	0.0232	0.0037	[0.157]	-0.0005	[0.418]
SIZE	3.4007	3.2345	2.9727	2.8717	0.4280	[0.000]***	0.3628	[0.000]***
MB	1.9762	1.8989	1.8195	1.7343	0.1567	[0.000]***	0.1646	[0.000]***
FCF	0.0258	0.0249	0.0247	0.0242	0.0011	[0.001]***	0.0007	[0.016]**
CA	0.1374	0.1284	0.1431	0.1320	-0.0057	[0.000]***	-0.0036	[0.000]***
OP	0.0556	0.0221	0.0339	0.0161	0.0217	[0.000]***	0.0060	[0.000]***
BS	12.1413	11.0000	11.0891	10.0000	1.0522	[0.000]***	1.0000	[0.000]***
Observation	1854	1854	2592	2592				

Panel C. Both overconfidence and dominance effect and payout policy

Variable	OV_DOM		Non-OV_DOM		Mean Difference		Median Difference	
	Mean	Median	Mean	Median	Difference	p-Value	Difference	p-Value
DIV PAYOUT	0.0185	0.0189	0.0243	0.0213	-0.0058	[0.072]*	-0.0024	[0.000]***
TOT PAYOUT	0.0312	0.0217	0.0339	0.0232	-0.0027	[0.276]	-0.0015	[0.046]**
SIZE	3.5522	3.4394	3.0499	2.9171	0.5023	[0.000]***	0.5223	[0.000]***
MB	2.1824	2.1311	1.8097	1.7282	0.3727	[0.000]***	0.4029	[0.000]***
FCF	0.0273	0.0263	0.0246	0.0241	0.0027	[0.000]***	0.0022	[0.000]***
CA	0.133	0.1252	0.1427	0.132	-0.0097	[0.000]***	-0.0068	[0.000]***
OP	0.0452	0.0221	0.0424	0.0173	0.0028	[0.172]	0.0048	[0.000]***
BS	12.1261	12.0000	11.3769	11.0000	0.7492	[0.000]***	1.0000	[0.000]***
Observation	896	896	3550	3550				

3.5.2 Multivariate analysis

3.5.2.1 Likelihood of paying dividends and repurchase shares

The results in Table 3.5 report the likelihood of paying dividends when CEOs are overconfident, dominating, or overconfident–dominating. The first three columns of Table 3.5 show the estimated results based on ordinary logistic regressions, while

standard errors are robust to the White heteroskedasticity test. The overconfidence effect on the likelihood of paying dividends is first examined. Similar to univariate analysis, the coefficient of OV is -0.8632 and statistically significant at 1%, which indicates that overconfident CEOs are less likely to pay dividends to shareholders. The statistically significant negative coefficient of the DOM variable (coefficient value -0.6527, p-value < 0.01) demonstrates that dominating CEOs are reluctant to pay dividends to shareholders. Moreover, in line with predictions, CEOs who are both overconfident and dominating may have the lowest propensity to allocate dividends to their shareholders, since the coefficient of OV_DOM is the smallest for three kinds of CEOs, at -1.0794 and significant at 1%. For control variables, as in prior studies (e.g., Fama and French, 2001; Grullon and Michaely, 2002; Cuny et al., 2009), firm size, growth opportunity, and earnings performance are strong determinants of payout policy. Larger firms and those with high earnings are more likely to pay dividends. For example, in the first column of Table 3.5, the coefficients of SIZE and FCF are 2.0067 (p-value < 0.01) and 77.6029 (p-value < 0.01), respectively. Dividend payers have fewer growth opportunities, since the parameter of MB is -0.8072 (p-value < 0.05). Moreover, the positive coefficient of the CA ratio (coefficient 5.9919, p-value < 0.05) confirms the results of Dickens et al. (2002), that a higher degree of regulation extensity can motivate managers to increase shareholder wealth through cash dividends. Like the findings of Fenn and Liang (2001), the managerial ownership percentage has a negative relation with the possibility of paying dividends (coefficient -2.5852, p-value < 0.05). In addition, board size seems to have no significant effect on dividend payments, given that its coefficient is statistically insignificant.

The fourth to sixth columns in Table 3.5 show the regression results from the fixed effect model. After considering the year- and firm-based two-way fixed effect model, the OV and DOM factors are still significant at the 10% level, with the coefficients -0.6272 (p-value < 0.10) and -0.8364 (p-value < 0.10), respectively. The OV_DOM factor also has a significantly negative impact on dividend payment decisions (coefficient -1.4755, p-value < 0.01). Control variables such as firm size, earning performance, and growth opportunity are still significant throughout regression models. However, the CA ratio is no longer significantly and positively related to dividend payments. This may be due to the fact that around 92% of banks and bank holding companies in the sample meet the capital requirements, and thus the effect may be not strong after controlling for firm- and year-based effects[3] (Dickens et al., 2002). Furthermore, either the managerial stock incentive or corporate governance effect fails to have a significant impact on dividend payment decisions, since the coefficients of OP and BS are not statistically significant. The last three columns in Table 3.5 are for the estimation results from the random effect logit model. Similarly, three main explanatory variables, OV, DOM, and OV_DOM, are still significant, while firm size, profitability, and growth opportunity still show a strong influencing power in determining dividend payout policy.

[3] The risky assets-adjusted CA ratio in the banking industry should be larger than 10%, based on the "well capitalized" requirement by the Board of Governors of the Federal Reserve System.

Table 3.5 Likelihood of Paying Dividends by OV, DOM, and OV_DOM CEOs

Table 3.5 displays the likelihood estimation of dividend payouts by overconfident, dominating, and overconfident–dominating CEOs over 1996–2006. The dependent variable is a dummy variable equal to one if the firm has positive ex-date dividends per share value in the fiscal year (Fama and French, 2001). Models (1) to (3) are for ordinary logistic regressions when the standard errors are adjusted using the Huber–White sandwich estimator of variance. Models (4) to (6) are for the fixed effect logistic regressions, while models (7) to (9) are for the random effect logistic regressions. The p-values are reported in parentheses below the coefficients. Here *, **, and *** indicate the 10%, 5%, and 1% levels of significance, respectively. Standard errors are adjusted using the Huber–White sandwich estimator of variance. The definition of each variable is presented in Table 3.1.

Variable	Ordinary logistic regression			Fixed effect logistic regression			Random effect logistic regression		
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)
OV	-0.8632			-0.6272			-0.8525		
	[0.007]***			[0.086]*			[0.016]**		
DOM		-0.6527			-0.8364			-0.9812	
		[0.003]***			[0.084]*			[0.020]**	
OV_DOM			-1.0794			-1.4755			-1.5173
			[0.001]***			[0.005]***			[0.005]***
SIZE	2.0067	2.0658	2.1437	11.0941	11.2715	11.7408	11.6788	11.1419	11.5017
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
MB	-0.8072	-0.8919	-0.8416	-0.7809	-0.8039	-0.8099	-1.2970	-1.3471	-1.3596
	[0.013]**	[0.028]**	[0.021]**	[0.030]**	[0.022]**	[0.017]**	[0.021]**	[0.017]**	[0.025]**
FCF	77.6029	66.8932	71.1926	37.8471	34.4427	38.7263	44.5314	50.3126	54.6697
	[0.002]***	[0.005]***	[0.008]***	[0.020]**	[0.018]**	[0.016]**	[0.000]***	[0.004]***	[0.002]***
CA	5.9919	6.9685	6.8722	1.2934	1.1269	1.2884	1.5677	1.4211	1.5623
	[0.016]**	[0.030]**	[0.027]**	[0.234]	[0.256]	[0.222]	[0.249]	[0.219]	[0.288]
OP	-2.5852	-1.8013	-2.2529	1.8575	1.3041	1.1126	1.0712	1.1393	1.4267
	[0.022]**	[0.039]**	[0.020]**	[0.317]	[0.285]	[0.204]	[0.194]	[0.177]	[0.152]
BS	0.0186	0.0265	0.0202	-0.2786	-0.2749	-0.2674	-0.2437	-0.2288	-0.2252
	[0.189]	[0.236]	[0.176]	[0.292]	[0.265]	[0.234]	[0.181]	[0.207]	[0.213]
Fixed Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	4446	4446	4446	683	683	683	4446	4446	4446
Number of Firms	692	692	692	96	96	96	692	692	692
Wald Chi	351.38***	304.62***	309.91***	177.39***	182.53***	189.17***	159.72***	172.23***	150.38***

Table 3.6 shows the regression results of bank share repurchases conditioned on the OV, DOM, and OV_DOM effects, respectively. The first three columns display the results of the ordinary logistic regression when the sample year is fixed. In line with the hypothesis that overconfident CEOs overestimate their firms' growth opportunities and are more willing to repurchase shares as an alternative payout approach to shareholders, the coefficients of OV and OV_DOM are 0.2509 and 0.3922, respectively, statistically significant at 1%. The dominating CEOs (DOM) have marginally significant power in influencing share repurchase decisions (coefficient 0.1526, p-value < 0.10). For the estimation results from the two-way fixed effect logit model, although either the OV (coefficient 0.1821) or the DOM factor

(coefficient 0.0549) is positively related to the share repurchase decisions, they are statistically insignificant. Only the OV_DOM factor still has a positive relation (coefficient 0.3435) with the share repurchase decisions, significant at 10%. The last three columns of Table 3.6 report the results from estimating random effect models. The OV and OV_DOM variables are statistically significant at the 5% level, while the coefficient of DOM has an insignificant impact on buying back shares from the open market. Again, firm size, profitability, growth opportunity, and regulation still share significant explanatory power in interpreting share repurchase policies throughout all regression models.

Table 3.6 Likelihood of Repurchasing Shares by OV, DOM, and OV_DOM CEOs

Table 3.6 shows the likelihood estimation of the repurchase program for overconfident, dominating, and overconfident–dominating CEOs over the sample period 1996–2006. The dependent variable is the dummy variable equal to one if the firm repurchases shares in a specific fiscal year. Models (1) to (3) are for the ordinary logistic regressions, while the standard errors are adjusted using the Huber–White sandwich estimator of variance. Models (4) to (6) are for the fixed effect logistic regressions, while models (7) to (9) are for the random effect logistic regressions. The p-values are reported in parentheses below the coefficients. Here *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. The definition of each variable is presented in Table 3.1.

Variable	Ordinary logistic regression			Fixed effect logistic regression			Random effect logistic regression		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV	0.2509			0.1821			0.2721		
	[0.009]***			[0.224]			[0.023]**		
DOM		0.1526			0.0549			0.1551	
		[0.094]*			[0.575]			[0.231]	
OV_DOM			0.3922			0.3435			0.4412
			[0.003]***			[0.060]*			[0.011]**
SIZE	0.5489	0.5264	0.5012	1.2231	1.2949	1.2095	0.7427	0.7251	0.6877
	[0.000]***	[0.000]***	[0.000]***	[0.051]*	[0.038]**	[0.053]*	[0.000]***	[0.000]***	[0.000]***
MB	-0.2343	-0.2061	-0.2331	-0.3816	-0.3587	-0.3678	-0.3545	-0.3165	-0.3458
	[0.016]**	[0.012]**	[0.020]**	[0.037]**	[0.030]**	[0.026]**	[0.042]**	[0.034]**	[0.030]**
FCF	10.4148	11.0798	10.7661	56.7861	57.8756	55.5761	22.0019	22.9209	22.0476
	[0.026]**	[0.018]**	[0.014]**	[0.001]***	[0.006]***	[0.000]***	[0.003]***	[0.001]***	[0.001]***
CA	3.8412	3.5866	3.6558	4.8145	4.7453	5.0072	3.9426	4.1171	4.4785
	[0.001]***	[0.004]***	[0.007]***	[0.044]**	[0.035]**	[0.028]**	[0.035]**	[0.022]**	[0.015]**
OP	-1.6156	-1.5079	-1.7891	1.1918	1.3504	0.9928	-1.5138	-1.6667	-1.6953
	[0.119]	[0.141]	[0.150]	[0.509]	[0.551]	[0.608]	[0.131]	[0.152]	[0.129]
BS	-0.0201	-0.0230	-0.0222	-0.0259	-0.0311	-0.0269	-0.0365	-0.0368	-0.0355
	[0.199]	[0.167]	[0.138]	[0.205]	[0.245]	[0.214]	[0.172]	[0.163]	[0.158]
Fixed Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	4446	4446	4446	683	683	683	4446	4446	4446
Number of Firms	692	692	692	96	96	96	692	692	692
Wald Chi	168.22***	180.51***	191.50***	90.25***	84.46***	97.82***	135.56***	127.39***	143.75***

Overall, the results in Tables 3.5 and 3.6 show that bank payout policy, either in the form of cash dividends or share repurchases, is particularly influenced by managerial factors such as CEO overconfidence, CEO dominance, and joint CEO overconfidence–dominance effects. Consistent with the prior literature (Dickens et al., 2002; Deshmukh et al., 2009; Cordeiro, 2009), when the fixed effect and random effect logistic regression models are applied, firms managed by overconfident, dominating, or overconfident–dominating CEOs pay fewer dividends than their CEO peers. The propensity to pay dividends reaches the lowest level when CEOs are both overconfident and dominating. Meanwhile, overconfident CEOs are more likely to buy back shares from the open market, since they overestimate their firms' growth opportunities. However, the managerial overconfidence effect on share repurchases turns out to be insignificant after controlling for year- and firm-based variations. Furthermore, the joint overconfident–dominance effect has a positive relation with the repurchase policy throughout the fixed and random effect models. Additionally, no evidence shows that dominating CEOs are more likely to distribute wealth to shareholders through repurchasing shares. Similar to the findings of Fama and French (2001), the regression results confirm that factors such as firm size, growth opportunity, and profitability are also the main determinants of bank payout policies.

3.5.2.2 Tobit regression of dividends and the total payout ratio on CEO attributes

Table 3.7 reports the estimation results of managerial cognitive bias effects on bank dividend and total payout ratios under the random effect Tobit regression model. The regression results on the dividend payout ratio are shown in the first three columns of Table 3.7. For the main independent variables, as expected, the coefficient of the

overconfidence factor is significantly negative (coefficient -0.0138, p-value < 0.05), which shows an inverse relation with the dividend payout ratio. The joint overconfidence–dominance effect also has a significantly negative relation with the dividend payout ratio (coefficient -0.0163, p-value < 0.05). However, the CEO dominance effect has no significant impact on the dividend payout ratio. Control variables such as firm size, growth opportunity, and profitability still show a significant impact on dividend policy. Estimation results from regressions on the total payout ratio are shown in the last three columns of Table 3.7. Similarly, the overconfidence and joint overconfidence–dominance effects have a significantly negative relation with the total payout ratio; the coefficients are -0.0114 (p-value < 0.05) and -0.0127 (p-value < 0.05), respectively. The dominance effect is still insignificant in terms of its impact on bank total payout. Control variables, such as firm size, growth opportunity, and profitability continue to have a strong and significant relation with the total payout ratio. Additionally, the CA ratio, as a regulation proxy, has a significantly positive influencing power on total payouts, which indicates that appropriate regulation system motives share repurchases as an alternative approach to allocating wealth to shareholders.

Table 3.7 Dividend and Total Payout Ratios by OV, DOM, and OV_DOM CEOs

Table 3.7 examines the relations between dividends and total payout ratios with overconfidence, dominance, and overconfidence–dominance factors for a sample of 4446 observations from 1996 to 2006. Models (1) to (3) indicate the random effect regression results for the dividend payout ratios, while models (4) to (6) report the random effect regression results for the total payout ratios when the main dependent variables are OV, DOM, and OV_DOM, respectively. The p-values are reported in parentheses below the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. The definition of each variable is presented in Table 3.1.

Variable	Dividend Payout			Total Payout		
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
OV	-0.0138			-0.0114		
	[0.038]**			[0.030]**		
DOM		-0.0045			-0.0027	
		[0.237]			[0.368]	
OV_DOM			-0.0163			-0.0127
			[0.015]**			[0.027]**
SIZE	0.0131	0.0135	0.0161	0.0199	0.0189	0.0201
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
MB	-0.0168	-0.0189	-0.0186	-0.0233	-0.0249	-0.0221
	[0.045]**	[0.036]**	[0.028]**	[0.019]**	[0.029]**	[0.039]**
FCF	0.6881	0.6403	0.6788	0.8991	0.8611	0.8295
	[0.001]***	[0.003]***	[0.002]***	[0.000]***	[0.000]***	[0.000]***
CA	0.0594	0.0743	0.0636	0.1151	0.1257	0.1332
	[0.168]	[0.125]	[0.145]	[0.033]**	[0.020]**	[0.013]**
OP	-0.0125	-0.0164	-0.0155	-0.0162	-0.0143	-0.0172
	[0.147]	[0.186]	[0.153]	[0.151]	[0.139]	[0.120]
BS	0.0173	0.0169	0.0158	-0.0136	-0.0145	-0.0140
	[0.236]	[0.174]	[0.190]	[0.496]	[0.569]	[0.608]
FIXED YEAR	YES	YES	YES	YES	YES	YES
Number of Observations	4446	4446	4446	4446	4446	4446
Number of Firms	692	692	692	692	692	692
Wald Chi	92.34***	80.68***	85.76***	107.58***	100.25***	115.93***

So far, both univariate and multivariate analyses provide evidence confirming that the overconfidence and overconfidence–dominance effect, along with firm size, growth opportunity, and profitability, are the main determinants of corporate payout policy, either in the form of dividends or share repurchases. To further explore the effects of psychological cognitive bias, it is desirable to investigate these effects under different firm-specific situations. For example, firms managed by overconfident CEOs may elimate some negative aspects of the overconfidence effect when the firms have good growth opportunities, and, as a result, the overconfidence effect may have lower

explanatory power for the payout policies for such firms. To investigate this influence, interaction factors are introduced to the random effect Tobit model conditioned on specific bank-level characteristics such as size, growth opportunity, and profitability.

The left half of Table 3.8 shows the regression results of the overconfidence effect on payouts with interaction items, while the right half shows the regression analysis of the CEO overconfidence–dominance factor. The first column of Table 3.8 shows estimates of the random effect Tobit regression, which includes the interaction term of overconfidence and size. The coefficient of this interaction term is 0.0149 (p-value < 0.01), while the overconfidence and size coefficients are -0.0623 (p-value < 0.05) and 0.0065 (p-value < 0.1). This means that related smaller firms managed by overconfident CEOs pay even fewer dividends than larger firms managed by overconfident CEOs. Cai et al. (2009) indicate that smaller firms may have more information asymmetry problems than larger firms. Therefore, the results in the first column of Table 3.8 show that overconfident CEOs pay even lower dividends when information is asymmetrical. In the second column of Table 3.8, the interaction term is overconfidence with growth opportunity. Combining the significant positive coefficient of the interaction term (coefficient 0.0125, p-value < 0.05) with the significant negative coefficient for overconfidence (coefficient -0.0379, p-value < 0.05) and the significant negative MB coefficient (-0.0192, p-value < 0.05), evidence shows that higher growth opportunity may partly cut off the overconfidence effect on dividend payouts. The third column of Table 3.8 presents the interactive effect of overconfidence with profitability. However, the coefficient is positive (0.4742) but insignificantly different from zero.

The next three columns in Table 3.8 are for estimates involving the total payout ratio. Similar to the finding in the dividend payout ratio, the coefficients of the overconfidence and size interaction term and overconfidence and growth opportunity interaction term are 0.0138 and 0.0151, both significant at 5%, respectively. The overconfidence and profitability interaction term still remains insignificant. The first three columns on the right half of Table 3.8 report the interactive effects on the dividend payout ratio of CEO overconfidence–dominance interacted with firm size, growth opportunity, and profitability, respectively, while the last three columns are for the bank total payout ratio. Again, similar evidence has been found where both the interactive effects of CEO overconfidence–dominance with size and growth opportunity have statistically significant interpreting power for the dividends and total payout ratio, while the interaction term of overconfidence–dominance with profitability is statistically insignificant throughout the regression models.

Table 3.8 Dividend and Total Payout Ratios by OV and OV_DOM CEOs: Interactive Effects with Information Asymmetry, Growth Opportunity, and Profitability

Table 3.8 reports the interactive effects on dividend and total payout ratios by overconfident and overconfident–dominating CEOs interacting with information asymmetry, growth opportunity, and firm profitability. The left half of the table reports the results of random effect regressions on dividend and total payout ratios when CEOs are overconfident. Models (1) to (3) refer to the interactive regression on the dividend payout ratio, while models (4) to (5) display the results for the total payout ratio. The right half of the table presents the results from the random effect regressions on dividend and total payout ratios when CEOs are both overconfident and dominating. Models (7) to (9) are for the interactive effects on the dividend payout ratio, while models (10) to (12) are for interactive effects on the total payout ratio. The p-values are reported in parentheses below the coefficients. Here *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively. The definition of each variable is presented in Table 3.1.

Variable	Dividend Payout			Total Payout			Variable	Dividend Payout			Total Payout		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)		Model(7)	Model(8)	Model(9)	Model(10)	Model(11)	Model(12)
OV	-0.0623	-0.0379	-0.0266	-0.0559	-0.0408	-0.0258	OV_DOM	-0.0853	-0.0558	-0.0310	-0.0773	-0.0577	-0.0261
	[0.011]**	[0.016]**	[0.024]**	[0.017]**	[0.020]**	[0.034]**		[0.020]**	[0.013]**	[0.030]**	[0.022]**	[0.019]**	[0.056]*
OV*SIZE	0.0149			0.0138			OV_DOM*SIZE	0.0198			0.0184		
	[0.007]***			[0.027]**				[0.002]***			[0.013]**		
OV*MB		0.0125			0.0151		OV_DOM*MB		0.0187			0.0210	
		[0.029]**			[0.023]**				[0.018]**			[0.010]**	
OV*FCF			0.4742			0.5559	OV_DOM*FCF			0.5397			0.4642
			[0.221]			[0.203]				[0.207]			[0.336]
SIZE	0.0065	0.0131	0.0144	0.0139	0.0200	0.0182	SIZE	0.0110	0.0162	0.0161	0.0166	0.0214	0.0223
	[0.089]*	[0.000]***	[0.000]***	[0.004]***	[0.000]***	[0.000]***		[0.005]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
MB	-0.0159	-0.0192	-0.0179	-0.0229	-0.0276	-0.0235	MB	-0.0184	-0.0231	-0.0186	-0.0278	-0.0289	-0.0239
	[0.032]**	[0.014]**	[0.019]**	[0.016]**	[0.011]**	[0.017]**		[0.033]**	[0.022]**	[0.026]**	[0.027]**	[0.019]**	[0.030]**
FCF	0.6935	0.6812	0.5067	0.9047	0.8859	0.7764	FCF	0.6769	0.6882	0.5278	0.8870	0.887	0.7472
	[0.001]***	[0.001]***	[0.066]*	[0.000]***	[0.000]***	[0.035]**		[0.002]***	[0.002]***	[0.035]**	[0.000]***	[0.000]***	[0.009]***
CA	0.0609	0.0577	0.0613	0.1071	0.1125	0.1147	CA	0.0561	0.0543	0.0492	0.1177	0.1183	0.1234
	[0.146]	[0.138]	[0.129]	[0.029]**	[0.038]**	[0.034]**		[0.155]	[0.139]	[0.162]	[0.030]**	[0.029]**	[0.025]**
OP	-0.0168	-0.0175	-0.0193	-0.0136	-0.0128	-0.0164	OP	-0.0130	-0.0143	-0.0152	-0.0155	-0.0146	-0.0153
	[0.139]	[0.144]	[0.116]	[0.183]	[0.150]	[0.115]		[0.145]	[0.150]	[0.147]	[0.138]	[0.145]	[0.134]
BS	0.0144	0.0120	0.0139	-0.0145	-0.0156	-0.0160	BS	0.0151	0.0139	0.0151	-0.0129	-0.0105	-0.0089
	[0.206]	[0.188]	[0.152]	[0.401]	[0.480]	[0.310]		[0.297]	[0.230]	[0.222]	[0.303]	[0.508]	[0.617]
FIXED YEAR	YES	YES	YES	YES	YES	YES	FIXED YEAR	YES	YES	YES	YES	YES	YES
Number of Observations	4446	4446	4446	4446	4446	4446	Number of Observations	4446	4446	4446	4446	4446	4446
Number of Firms	692	692	692	692	692	692	Number of Firms	692	692	692	692	692	692
Wald Chi	103.60***	97.35***	91.67***	109.81***	114.72***	101.22***	Wald Chi	94.29***	92.08***	85.88***	110.99***	113.45***	99.34***

Overall, consistent with the prior literature (Malmendier and Tate, 2007; Deshmukh et al., 2009), results show that overconfident CEOs, especially overconfident–dominating CEOs, have a negative effect on corporate payout policy. In particular, overconfident CEOs together with overconfident–dominating CEOs in firms with more information asymmetry and with lower growth opportunities behave more reluctantly to distribute dividends to shareholders than overconfident CEOs and overconfident–dominating CEOs in larger firms with higher growth opportunity.

3.6 Robustness and additional tests

3.6.1 The 2003 Jobs and Growth Tax Relief Reconciliation Act

Dividends, as a part of corporate income, are usually taxed on two aspects, that is, the corporate aspect and the shareholder aspect. Firm income is taxed through paying dividends, while shareholders who receive dividends are taxed based on their personal income levels. Scholars (Bovenberg, 1999; Graetz, 1999; Morck and Bernard, 2005; Pratt, 2007) argue that such a double dividend tax system leads to inefficiency and the boom of share repurchases, since these are taxed as capital gains, which is levied at a much lower tax rate than that of dividends. Given that the tax effect is a determining factor in corporate payout policies (Dingell et al., 2009), it is essential to further test whether managerial psychological bias remains a factor in explaining payout policies when the tax effect is also at work.

The Jobs and Growth Tax Relief Reconciliation Act of 2003 (hereafter the 2003 Act) announced by President Bush on May 28, 2003, alleviates the double tax problem of

dividends, since it decreases the top marginal tax rate (from 35% to the current 15%) of corporate income and also reduces the personal income tax rate of married people. In a similar vein, the US government expects that dividends should be increased after the 2003 Act and thus improve the national corporate governance system (Bank, 2007). Blouin et al. (2004) investigate whether regular and special dividends have increased since the 2003 Act. With a sample of 1463 firms from CRSP, the authors find that dividends have been booming while repurchases have been stagnant since the 2003 tax reform. Chetty and Saez (2005) explore the taxation effect on dividend distribution in non-financial firms following the 2003 Act. Their empirical study shows that both the amount and frequency of regular dividends have increased rapidly since the tax reform of 2003. In fact, the authors find a 20% increase in corporate dividends issued by industrial firms since the 2003 Act. However, whether taxation should be the main determinant of dividend increases is debated by corporate managers. Prior studies by Brav et al. (2005) and Julio and Ikenberry (2004) report that approximately 70% of senior managers, including CFOs, maintain that tax cuts will not affect the dividend payout policy, while only 20% managers mention that dividends have increased due to the tax reduction.

Following Brav et al. (2005), the effects of CEO overconfidence, dominance, and overconfidence–dominance factor have been further tested within the sub-samples three years prior to and after the 2003 Act. Economically, these three CEO cognitive bias factors are expected to retain their significant relations with dividends and share repurchases. The estimated results are reported in Table 3.9. For the sub-sample over the period 2000–2002 (prior to the 2003 Act), results show that CEO overconfidence and overconfidence–dominance are negatively related with the dividend payout ratio,

where the coefficients are -0.0023 (p-value < 0.05) and -0.0029 (p-value < 0.05), respectively. Regardless of the insignificant profitability effect on dividend payouts, firm size and growth opportunity are still statistically significant. CEOs with a higher ownership percentage have a lower propensity to pay dividends. However, all three managerial-based effects have no statistically significant relations with the total payout ratio. Regarding the sub-sample over the period 2004–2006 (after the 2003 Act), only the CEO overconfidence proxy has a marginally significant negative relation with the dividend payout ratio (coefficient -0.0016, p-value < 0.10), while it also imposes a significantly negative effect on the total payout ratio (coefficient -0.0060, p-value < 0.05). The CEO dominance and overconfidence–dominance factors are statistically insignificant in the model over the period 2004–2006.

Overall, the managerial cognitive bias still influences the corporate payouts after considering the tax effect varies, especially in the period after the tax reduction. For example, in the sub-sample that covers the period after the 2003 tax reform, overconfident–dominating CEOs have an insignificant effect on bank dividend payouts, while they impose a significant negative effect on bank dividend payouts prior to the tax reform. Further, as expected, the CEO overconfidence factor shares a negative relation with dividend payouts within both sub-samples either before or after the introduction of the 2003 Tax Act.

Table 3.9 Sensitivity Analysis: The 2003 Jobs and Growth Tax Relief Reconciliation Act

Table 3.9 provides the sensitivity analysis of the OV, DOM, and OV_DOM variables when the tax factor is controlled for. Specifically, models (1) to (6) are for the random effect regressions on dividends and total payout ratios from the sub-sample for 2000–2002. Models (7) to (12) show the random effect regression results with the sub-sample for 2004–2006. The p-values are reported in parentheses below the coefficients. Here *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively. The definition of each variable is presented in Table 3.1.

Variable	Dividend Payout (2000–2002)			Total Payout (2000–2002)			Dividend Payout (2004–2006)			Total Payout (2004–2006)		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)	Model(10)	Model(11)	Model(12)
OV	-0.0023			-0.0047			-0.0016			-0.0060		
	[0.019]**			[0.136]			[0.093]*			[0.024]**		
DOM		-0.0015			-0.0043			-0.0012			0.0011	
		[0.125]			[0.295]			[0.300]			[0.757]	
OV_DOM			-0.0029			-0.0033			-0.0011			0.0005
			[0.011]**			[0.528]			[0.125]			[0.800]
SIZE	0.0086	0.0088	0.0088	0.0153	0.0160	0.0155	0.0057	0.0060	0.0058	0.0119	0.0119	0.0122
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
MB	-0.0092	-0.0095	-0.0093	-0.0182	-0.0187	-0.0186	-0.0041	-0.0041	-0.0041	-0.0103	-0.0109	-0.0107
	[0.014]**	[0.016]**	[0.018]**	[0.012]**	[0.015]**	[0.019]**	[0.022]**	[0.024]**	[0.027]**	[0.013]**	[0.011]**	[0.015]**
FCF	0.0087	-0.0012	0.0093	0.4552	0.4263	0.4431	0.1312	0.1205	0.1237	0.6621	0.6435	0.6410
	[0.655]	[0.881]	[0.682]	[0.025]**	[0.036]**	[0.029]**	[0.086]*	[0.113]	[0.102]	[0.002]***	[0.001]***	[0.001]***
CA	0.0056	0.0062	0.0054	0.1559	0.1607	0.1602	-0.0174	-0.0163	-0.0165	0.0259	0.0349	0.0354
	[0.369]	[0.494]	[0.545]	[0.005]***	[0.009]***	[0.007]***	[0.310]	[0.342]	[0.337]	[0.241]	[0.333]	[0.301]
OP	-0.0193	-0.0182	-0.0191	-0.0090	-0.0079	-0.0084	-0.0099	-0.0104	-0.0102	-0.0192	-0.0188	-0.0179
	[0.087]*	[0.092]*	[0.093]*	[0.127]	[0.166]	[0.134]	[0.181]	[0.164]	[0.170]	[0.129]	[0.132]	[0.139]
BS	0.0092	0.0089	0.0077	-0.0059	-0.0062	-0.0055	-0.0009	-0.0005	-0.0005	-0.0006	-0.0010	-0.0011
	[0.225]	[0.199]	[0.208]	[0.795]	[0.715]	[0.737]	[0.892]	[0.902]	[0.911]	[0.896]	[0.804]	[0.808]
FIXED YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Number of Observations	1314	1314	1314	1314	1314	1314	1222	1222	1222	1222	1222	1222
Number of Firms	495	495	495	495	495	495	464	464	464	464	464	464
Wald Chi	149.99***	146.40***	151.37***	70.77***	70.25***	68.58***	91.83***	89.05***	87.61***	73.55***	68.95***	68.89***

3.6.2 Market responses

The signaling hypothesis suggests that dividends are a kind of signal with which investors can indentify firm performance. Therefore, a dividend increase announcement can be regarded as a positive signal of firm quality and thus receives a positive response from the stock market (Grullon et al., 2002; Dingell et al., 2009). Allen and Michaely (2003) note that dividend increase announcements are significantly more frequent than dividend decrease announcements. This is because the latter is a negative signal to the market that firms may perform poorly, and thus it is difficult for a firm to decrease dividends once these are initiated to the shareholders. Prior literature on market responses to dividend increase announcements by overconfident CEOs offers only inconclusive evidence. Deshmukh et al. (2009) focus on the dividend increase sample where each sample company has dividends increased by at least 10% according to the CRSP database over the period 1980–1994. After estimating the three-day cumulative abnormal returns (CARs) using a market model of the CRSP value-weighted portfolio, the authors find that the positive CAR is lower for dividend increase announcements by overconfident CEOs, which indicates an inverse relation between the CAR and managerial overconfidence. However, another study by Bouwman (2009) finds the opposite result. The author examines the dividend increase sample (with a change of at least 3%) based on the market-adjusted model over the three-day event window and finds that dividend increase announcement returns are higher for overconfident (optimistic) CEOs than for rational CEOs, since overconfident CEOs overestimate future earnings and the dividend increase announcements by overconfident CEOs may contain more positive information for the market than for rational CEOs.

Quarterly dividend declaring information based on the CRSP monthly stock file is gathered for testing market responses to bank dividend changes. In line with Bouwman's (2009) approach, a firm is included in the final sample as long as it has increased by issuing at least 3% dividends in a year. The level of dividend increase is defined as the amount of dividends in the current quarter divided by the dividend amount in the previous quarter. This allows us to include 108 dividend increase announcements from 1996 to 2006. The three-day CAR is then estimated based on both the market model and the market-adjusted model through the 255-day estimation period and 46 business days prior to the declaration date in terms of the CRSP value-weighted index. Table 3.10 represents the estimation results after performing the OLS regression on the three-day CAR. The first three columns of Table 3.10 show the estimation results based on the market model, while the last three columns report the results from estimating the market-adjusted model. Regression results find no evidence that the overconfidence, dominance, and overconfidence–dominance factors have significant effects on abnormal returns around the dividend increase announcement dates. Firm size, commonly used as a proxy for information asymmetry, is negatively related to abnormal returns in all models. This suggests that small firms with higher asymmetric information may receive higher abnormal returns from the market around the announcement dates. Meanwhile, the CA ratio is positively related to abnormal returns. According to Palia (1993), given that a higher CA ratio implies an inefficient allocation of capital, a positive relation indicates that the market may behave more positively to dividend-increasing firms that are initially regarded as inefficient in capital allocations.

Table 3.10 Market Responses to Dividend Increase Announcements by OV, DOM, and OV_DOM CEOs

This table shows the OLS estimates of market reactions to dividend increase announcements by overconfident, dominating, and overconfident–dominating CEOs for the sample of 108 observations. The three-day CARs are estimated through both the market and market-adjusted models over the 255-day estimation period and 46 business days prior to the declaration date using the CRSP value-weighted index. Models (1) to (3) are for the market model, while models (4) to (6) are for the market-adjusted model. The p-values are reported in parentheses below the coefficients. Here *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are adjusted using the Huber–White sandwich estimator of variance. The detail definition of each variable involved in the regression model is presented in Table 3.1.

Variable	Market Model			Market-Adjusted Model		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)
OV	-0.9546			-0.8032		
	[0.297]			[0.406]		
DOM		0.1521			-0.0364	
		[0.787]			[0.697]	
OV_DOM			-0.7759			-0.3518
			[0.434]			[0.747]
SIZE	-1.9287	-2.1329	-1.9715	-2.1274	-2.2718	-2.2134
	[0.082]*	[0.056]*	[0.081]*	[0.052]*	[0.041]**	[0.046]*
MB	1.4928	1.3734	1.4275	2.0717	1.9911	2.0049
	[0.324]	[0.352]	[0.339]	[0.162]	[0.167]	[0.172]
FCF	-3.5963	-1.7938	-4.6173	-3.0962	-3.0447	-3.5334
	[0.974]	[0.987]	[0.956]	[0.976]	[0.976]	[0.972]
CA	4.6434	5.3931	6.0123	4.1688	4.3791	4.4324
	[0.002]***	[0.002]***	[0.003]***	[0.016]**	[0.011]**	[0.010]**
OP	-6.5102	-5.8932	-6.1205	-7.1723	-6.6622	-6.8141
	[0.200]	[0.224]	[0.213]	[0.108]	[0.123]	[0.119]
BS	0.1496	0.1595	0.1649	0.0548	0.0651	0.0665
	[0.359]	[0.344]	[0.328]	[0.729]	[0.683]	[0.672]
CONSTANT	-1.6603	-1.4404	-1.7867	-0.7471	-0.6219	-0.7466
	[0.651]	[0.684]	[0.635]	[0.582]	[0.677]	[0.538]
FIXED YEAR	YES	YES	YES	YES	YES	YES
Number of Observations	108	108	108	108	108	108
Number of Firms	77	77	77	77	77	77
Adjusted R^2	13.01%	12.27%	12.60%	10.89%	10.36%	10.43%
F-Statistics	1.94**	1.88**	1.91**	1.77**	1.73*	1.74*

3.7 Conclusion

Prior studies on overconfidence and dividend policy in industrial firms suggest that overconfident CEOs have a lower propensity to distribute dividends to shareholders, since they believe that external funds are costly and thus that they should enhance internal funds to meet the liquidity of the firm. Meanwhile, overconfident CEOs underestimate market valuations and tend to believe that their firms' securities are undervalued. As a result, they may have a higher propensity to buy back shares.

With a unique, manually-collected sample containing 692 US banks and bank holding companies from 1996 to 2006, this chapter investigates managerial overconfidence, dominance, and joint overconfidence–dominance effects on bank payout policy. Several interesting findings are obtained. First, in line with Dingell et al. (2009), there is a stead trend of increases in dividends in the US banking industry over the period 1996–2006, in spite of the growth of share repurchases. Second, overconfident, dominating, and overconfident–dominating CEOs are less likely to pay dividends, whereas only overconfident and overconfident–dominating CEOs have a negative effect on dividend payout ratios. When conditioned on other determinants of dividends, such as firm size, growth opportunity, and profitability, the results show that the decreasing magnitude of dividends due to the CEO overconfidence and CEO overconfidence–dominance attributes is smaller for firms with a lower degree of

information asymmetry and better growth opportunities. Third, for share repurchases, regression results show that overconfident and overconfident–dominating CEOs have a higher propensity to buy back shares while the dominance factor alone has a statistically insignificant relation with share repurchases. Similarly, although the CEO overconfidence and CEO overconfidence–dominance variables have a negative impact on the total payout ratio, the reduction is higher for smaller firms (higher asymmetric information) with lower growth opportunity. Finally, the largest CEO overconfidence–dominance effect on bank payouts as shown in either logistic or Tobit regression diminishes under the tax effect, since the significant relation is found only between the dividend payout ratio and the joint effect in the period before the 2003 Tax Act. Meanwhile, the CEO overconfidence effect on bank dividend payouts remains robust when the tax effect is taken into consideration in the sub-samples before and after the 2003 Tax Act. Unlike some prior studies (Deshmukh et al., 2009; Bouwman et al., 2009) that find a statistically significant relation between the managerial overconfidence attributes and abnormal returns to dividend increase announcements, none of CEO overconfidence, CEO dominance, or CEO overconfidence–dominance attributes have a statistically significant relation with market responses when dividends are increasing.

Chapter 4

Managerial Overconfidence, Dominance, and Bank Risk Taking

4.1 Introduction

The recent global financial crisis has posted a great to the academic world in understanding its causes and propagation. One major cause of the crisis has been identified as relating to the moral hazard problem in the banking sector (Acrey et al., 2010; Dow, 2010; Kashyap, 2010). While well-diversified bank shareholders prefer risky projects, since they have limited liabilities to depositors under the government's guarantee over certain part of the deposits (Fortin et al., 2010), bank managers, who fix their non-diversifiable human capital in specific banks, are less willing to take on risky projects and thus contradict the shareholder's risk interest (Jensen and Meckling, 1976; Demsetz and Lehn, 1985; Demsetz et al., 1997; Laeven and Levine, 2009). However, evidence shows that this kind of agency problem can be alleviated through adjusting the executive compensation structure, such as by increasing the managerial ownership percentage (Lee, 2002).

In addition, however, to exogenous risk incentives, managerial risk taking propensity can also be affected by psychology attributes, such as the individual's cognitive bias

and power illusion (Anderson and Galinsky, 2006). Roll (1986) was among the first to introduce behavioural influences such as the managerial hubris hypothesis into empirical financial studies. Of the behavioural biases found to affect managerial financial decisions, the overconfidence effect has been robustly shown to be a judgement bias that can influence for example, corporate takeovers and payout policies (Odean, 1998; Heaton, 2002; Malmendier and Tate, 2005, 2008; Deshmukh et al., 2009). The behavioural finance literature indicates that overconfident chief executive officers (CEOs) prefer risky projects since they tend to overreact to positive information, overestimate the accuracy of public information, and in turn overestimate their personal abilities when comparing themselves to their CEO peers (Daniel et al., 1998; Hirshleifer, 2001).

Moreover, a powerful CEO can also have a positive effect on taking excessive risks and thus destroying firm's performance. Strebel and Lu (2010) study the former CEO and chairman of Merrill Lynch Stanley O'Neal and find his dominant power in the board to have a negative effect on firm performance, especially relating to the recent financial crisis. The authors state that 'O'Neal was known for his despotic management style, and he pushed the bank to take more risk and to expend aggressively in the new business of CDO underwriting. Other studies, such as Finkelstein (1992), Langer et al. (2005), and Liu and Jiraporn (2010), also find evidence that CEOs who also dominate the board tend to take excessive risks and compromise firm value.

An increase in the managerial preference for risk taking could be a double-edged sword for shareholder wealth creation. On the one hand, risk-averse CEOs may forgo some profitable but risky investment opportunities since no extra benefits may be granted for taking the risk. This kind of CEO underinvestment can destroy shareholder wealth, and therefore proper managerial risk incentives are necessary to dampen this phenomenon (Goel and Thakor, 2008). On the other hand, if risk incentives adhere to CEO psychological bias, CEOs may undertake risky decisions that are beyond the optimal level for shareholder wealth creation, especially when overconfident CEOs face operational difficulties such as financial distress (Wiseman et al., 1998; Fairchild, 2007).

The role of risk-taking incentives in corporate financial decisions has gained noticeable attention in the literature (Windram, 2005), research in whether CEO overconfidence and dominating power have positive impacts on risk-taking behaviour remains scanty, and the results are mixed (Pathan 2009; Li and Tang, 2010; Nosic and Weber, 2010). Therefore, the aim of this chapter is to close the research gap on whether managerial overconfidence or dominance promotes risk-taking behaviour, especially the joint effect when CEOs are both overconfident and dominating on the board. No prior studies have systematically tested such a joint effect.

The banking sector is an ideal industry to undertake such an investigation. First, in spite of growing regulatory efforts, banks can enjoy more risk-increasing

opportunities under the deposit insurance climate (Boyd et al., 1998). Second, the too big to fail effect decreases banks' precautions against investing in risky projects. O'Hara and Shaw (1990) and Wall (2010) show that regulators not allowing big financial institutions to go bankrupt can cause the instability of the whole economy. Third, Fahlenbrach and Stulz (2010) find evidence that banks managed by CEOs with better incentive alignment with their shareholders performed worse during the recent financial crisis. Given that managerial overconfidence can worsen the moral hazard problem (Keiber, 2004), this finding can be further explored by investigating whether the better alignment of risk interest between shareholders and CEOs who have a cognitive bias can lead to risk abuse in the banking sector.

Using an empirical sample that contains the unbalanced panel data of US banks and bank holding companies (BHCs) over 1996–2006, the effects of CEO psychological bias on risk-taking behaviour in the banking sector are examined in this study based on several proxies for banking risks, such as bank total risk, systematic risk, idiosyncratic risk, earnings volatility, credit risk, and default risk. Regression results through either the fixed effect model or the random effect model show significant evidence that CEO overconfidence, CEO dominance, and especially CEO overconfidence–dominance impose positive effects on banks' risk-taking activities. Specifically, a one-unit increase in the standard deviation of CEO overconfidence increases the total risk, idiosyncratic risk, credit risk, and default risk by 1.17%, 0.99%, 17.64%, and 4.80%, respectively. A unit of standard deviation variation of the

CEO dominance factor affects systematic risk, earnings volatility, and credit risk by 5.13%, 7.73%, and 7.42%, respectively. Furthermore, compared to the effects of CEO overconfidence or CEO dominance alone, the CEO overconfidence–dominance factor holds significant relations with all risk measurements. That is, one unit of change in the CEO overconfidence–dominance factor can cause changes of 2.16%, 5.41%, 1.88%, 5.49%, 14.55%, and 6.09% in total risk, systematic risk, idiosyncratic risk, earnings volatility, credit risk, and default risk, respectively.

Several additional tests are performed to analyze the robustness of the findings. Keeley (1990) indicates that banks with better investment opportunities (also known as higher charter value) may not be willing to sacrifice high growth opportunities in pursuing extra risks. To detect whether managerial cognitive bias compromises a bank's charter value, the empirical sample is divided into banks with high and low charter values. The results are robust, as overconfident–dominating CEOs lead to higher systematic risk for high charter value banks, and higher total and idiosyncratic risks are found for low charter value banks. Meanwhile, overconfident–dominating CEOs also increase the default risk for high charter value banks, and higher credit risks can be found for both high and low charter value banks. Additionally, CEO overconfidence is significantly related to idiosyncratic risk for low charter value banks and to credit risk for both high and low charter value banks. Evidence fails to show that CEO dominance can explain all risk measurements, except for the earnings volatility of high charter value banks and the credit risks of both kinds of banks.

It can be argued that the CEO's cognitive bias can have a time-lagged impact on risk-taking decision. To investigate this effect, the dynamic panel data analysis is adopted as another robustness analysis. To avoid the effect of CEO turnover bias on firm-risk taking decisions, a sub-sample is developed that contains CEOs who have had continuous tenure within the specific firm. The one-year lagged, generalized least squares (GLS) random effect model is estimated, and the outcome indicates that the joint CEO overconfidence–dominance effect has a significant relation with all the risk measurements. Overconfident CEOs are positively related to bank systematic risk and credit risk, while dominating CEOs shows a positive relation to systematic risk, earnings volatility, and credit risk, respectively. Controlling for the possible problem of endogeneity, the system generalized method of moments (GMM) is applied and the results further confirm the significant positive relations between CEO overconfidence–dominance and total risk, systematic risk, earnings volatility, and default risk, respectively. Banks managed by overconfident CEOs have marginally higher systematic risks, while dominating CEOs lead to higher systematic risk and bank earnings volatility.

This chapter extends the existing literature in several aspects. First, following Anderson and Fraser (2000), this chapter directly focuses on the personal characteristics of top managers who decide the firm risk profile and allocation of risky assets rather than just touching upon indirect managerial risk incentives, such as the compensation structure. Second, when majority studies link the moral hazard problem

with a bank's excessive risk taking, research into the effect of CEO overconfidence on risk-taking incentives is limited, especially the joint effect when CEOs are both overconfident and dominate the board. Keiber (2004) suggests a negative impact of managerial overconfidence on the moral hazard problem. This chapter further shows that the moral hazard problem can become worse when CEOs are jointly overconfident and dominating. Third, this chapter provides an alternative explanation for the phenomenon unearthed in Fahlenbrach and Stulz (2010), that banks with better shareholder–manager interest alignment underperform the market during the crisis. This chapter shows that improper risk incentive alignment between shareholders and overconfident–dominating CEOs can encourage CEOs to take excessive risks beyond optimal levels and thus destroy shareholder wealth. As a result, shareholders should be more cautious when designing risk incentive compensation packages for CEOs who are overconfident and dominating. Fourth, while the relation between overconfidence and risk taking in the prior literature is inclusive, this research confirms that, to a large extent, the CEO psychological bias is positively related to the bank risk taking propensity.

The remaining of the chapter proceeds as follows. The related literature is reviewed in Section 4.2. Section 4.3 describes the empirical propositions. Section 4.4 presents the dataset design and empirical methodology. Section 4.5 reports the empirical findings. The robustness tests are given in Section 4.6. Section 4.7 concludes the chapter by summarizing its main findings.

4.2 Review of the prior literature

4.2.1 Deposit insurance, moral hazards, the agency problem, and bank risk taking

Sealey (1985) and Houston and James (1995) believe that the moral hazard problem is acute in the banking industry since, acting as the intermediation in the financial market, banks have advantages in obtaining information from supervising other firms. Whereas some studies (Karels and McClatchey, 1999; Gropp and Vesala, 2004) fail to confirm that banking risks are positively related to the deposit insurance policy, a number of empirical studies find that the moral hazard problem does exist at the expense of taxpayers in the US banking sector since the introduction of the Federal Deposit Insurance Corporation (FDIC) in 1933 (Keeley, 1990; Alston et al., 1994; Hovakimian and Kane, 2000). Outside the US market, Ioannidou and Penas (2010) explore the deposit insurance effect on bank risk-taking behaviour in Bolivia. The authors find that banks are less likely to be involved in risky projects during the prior deposit insurance period, while a positive relation is reported once the deposit insurance policy is instituted. A moderate relation between deposit insurance and moral hazard is reported by Laeven and Levine (2009). These authors note that although deposit insurance increases shareholders' incentives to take excessive risks, this kind of relation is found only for banks with large and powerful equity holders.

The positive relation between the moral hazard problem and deposit insurance can be explained in two ways. First, if the market is without deposit insurances, depositors can demand a risk premium when banks undertake additional risks (Modigliani and Miller, 1958). Second, with the development of deposit insurance, depositors have lower incentives to monitor banks, since their deposits are now backed up by the government (Stolz, 2002). Bank shareholders' liabilities are also limited once some part of the deposit is covered by the government. Demetz et al. (1997) demonstrate an interactive process between taxpayers, depositors, shareholders, and regulators with the insurance deposit policy. The authors suggest that depositors show less willingness to monitor banks, while regulators may leave the current situation to the next regulators due to their short time horizon. Kunt and Detragiache (2002) study 61 countries from 1980 to 1997 and find that deposit insurance can harm the stability of the banking system, since bank shareholders can transfer pressure to governmental policymakers through deposit insurance schemes.

With risk-seeking, or at least risk-neutral, shareholders, the agency theory of Jensen and Meckling (1976) demonstrates that managers may rely on asymmetric information to pursuit their personal benefits at the expense of shareholder wealth. Further, for the risk-taking aspect, prior study shows that managers are more likely to be risk averse because they invest heavily in undiversifiable human capital within the firm (Hirshleifer and Thakor, 1992; Macey and O'Hara, 2003). Wiseman and Mejia (1998) note the limitation of the risk-averse assumption of managers in finance

studies. The authors develop a behavioural agency model based on the loss aversion utility function and find that managers can be either risk averse or risk seeking under different problem framings. That is, risk-averse managers may also take on more risks under negative problem framing due to fewer perceived risks and the expected wealth loss. This finding is consistent with Tversky and Kahneman (1981), who show that managers are risk seeking when firm performance is below the target level.

In short, deposit insurance and the universal banking system have created, to a great extent, the moral hazard problem (Boyd et al., 1998). The opaque banking industry provides inevitable opportunities for shareholders to seek excessive risks at the expense of depositors and taxpayers (Morgan, 2002). Additionally, as suggested by the behavioural agency model, the assumption of continuously risk-averse managers is too restrictive for exploring managerial risk taking.

4.2.2 CEO compensation packages and risk taking

Existing theory indicates that executive managers are usually compensated through making financial decisions that are evaluated by shareholders. Risk-seeking shareholders can counteract interest conflicts with risk-averse managers through adjusting the managerial compensation structure (Murphy, 1999; Miller et al., 2002). Following this theoretical direction, the empirical literature on managerial incentives and bank risk-taking behaviour can be classified into two broad strands, that is, those

of CEO ownership percentage and CEO compensation structures, including cash, bonus, and equity-based compensation (Houston and James, 1995; Mehran et al., 1999; Williams and Rao, 2006; Fortin et al., 2010).

Empirical evidence is mixed on the relation between managerial shareholding and risk-taking propensity. Through comparing analyses of shareholder-controlled banks (higher managerial ownership percentage) and manager-controlled banks (lower managerial ownership percentage), Saunders et al. (1990) report a significant positive impact of the CEO ownership percentage on bank risk taking over the deregulation period 1979–1982. Lee (2002) investigates 65 BHCs from 1987 to 1996, and robust empirical results show that shareholder-controlled BHCs take on more risky projects than manager-controlled BHCs, especially for larger banks, with lower daily stock return volatility and lower balance sheet-based risk. However, Sullivan and Spong (2007) deploy the volatility of financial operating performance, that is, return on equity, as the risk proxy and find a higher managerial ownership percentage to be associated with even lower managerial propensity to take on excessive risks. Anderson and Fraser (2000) report a positive relation between manager shareholding and bank risk taking from 1987 to 1989, while an inverse relation can be found from 1992 to 1994. Another study by Fortin et al. (2010) shows no statistically significant relation between CEO ownership and risk taking when the ownership percentage is at the low or middle level. For high ownership levels, the authors report a significant negative relation between CEO shareholding and bank risk taking.

Turning to the CEO compensation structure, the empirical research shows ambiguous findings as well on whether an equity-based compensation structure promotes excessive risk taking (Core et al., 2003; Ju et al., 2003). Using an executive compensation sample of 70 CEOs in 68 commercial banks and BHCs during the period 1992–2000, Chen et al. (2006) provide robust evidence that more equity-based compensation has been granted to bank CEOs than other industrial CEOs. Extensive equity-based compensation imposes a positive effect on risk taking. However, with a different sample period (2004–2008), Acrey et al. (2010) find little evidence that widespread stock option compensation encourages bank risk taking. Another study by Fahlenbrach and Stulz (2010) investigates CEO incentives and bank performance over the recent financial crisis. With a sample of 95 US commercial and investment banks, the authors find no evidence that the compensation structure affects risk taking, since the performance of banks with higher managerial stock option compensation or larger numbers of bonuses is indifferent during the periods before and after the crisis.

In sum, previous studies show an ambiguous phenomenon when considering whether higher ownership percentages increase risks or whether higher equity-based compensation promotes risk taking (Amihud and Lev, 1981; Coffee, 1988; Sloan, 1993; Mehran, 1995). These mixed empirical results are consistent with the conclusion of Wiseman and Mejia (1998) and Laeven and Levine (2009), since the authors find that firm managers can behave in either a risk-averse or risk-seeking manner due to the varied firm-specific governance constitution.

4.3 Empirical prediction development

Management and psychology studies confirm that an individual's risk taking decision can be influenced by risk propensity and risk perception (Sitkin and Pablo, 1992; Kahneman and Lovallo, 1993; Nutt, 1993). Following the definition of Baird and Thomas (1985) and Sitkin and Pablo (1992), risk perception is one's awareness of risk, while risk propensity refers to an individual's risk appetite for a specific period. Individuals with higher risk propensities may have lower risk perceptions and are more likely to undertake risky decisions. One comprehensive study by Sitkin and Weingart (1995) finds that risk propensity is positively related with previous outcome. Therefore, overconfident people may magnify their past success experiences and underestimate the extent of uncertainty and thus decrease risk perception (Barnes, 1984; McCarthy et al., 1993; Kahneman and Riepe, 1998). The behavioural finance literature also suggests that overconfident investors tend to exaggerate their personal skills and overstate the precision of their private information; as a result, they underestimate stock return volatility and are more likely to select risky portfolios when compared with rational investors (Odean, 1998; Daniel et al., 2001; Gervais and Odean, 2001; Wang, 2001; Nosic and Weber, 2010).

For the study of non-financial firms, there are divergent opinions on whether overconfidence promotes risk taking. Coval and Thakor (2005) establish a theoretical model that contains optimistic, rational, and pessimistic financial intermediations with

heterogeneous prior beliefs. Their evidence finds no direct linkage between overconfidence and risk taking. Menkhoff et al. (2006) study such a relation for 117 German fund managers in 64 companies. Their results suggest no significant relation between overconfident fund managers and excessive risk taking. Lin (2005) only finds that overconfident investors may have higher trade volumes and are more likely to trade in riskier stocks when there is a bull market. Using a comprehensive sample that includes 2790 CEOs in the manufacturing industry, Li and Tang (2010) find the unconditional result that overconfident CEOs promote the excessive risk taking of Chinese manufacturing firms. Another study by Claussen et al. (2010) links the overconfidence bias with monetary policy decisions. These authors suggest that the overconfidence bias not only increases policy risk but also leads to divergent opinions within the decision committee. Turns to the research on financial institutions, studies by Niu (2010) and Skala (2011) explore the relation between CEO overconfidence and bank risk taking. With the press data from 352 articles over 1992–2005, Niu (2010) finds that managerial overconfidence is positively related to the daily volatility of bank stock returns. Skala (2011) investigates the overconfidence effect on 311 banks located in Western Europe. Deploying loan growth and the net interest margin as two proxies for the overconfidence bias, the author also finds that overconfidence bias leads to higher credit risk.

Executive power also plays a crucial role in corporate decisions, since CEO power is a vehicle for transferring CEO personal views, including cognitive bias such as

overconfidence (Hambrick and Finkelstein, 1987; Finkelstein, 1992; Keltner et al., 2003). Similar to CEO overconfidence, evidence on CEO power and risk taking is also mixed. Zelenski and Larsen (2002) suggest that the positive emotions of powerful CEOs can decrease risk estimation and promote excessive risk taking. However, using CEO duality as a measure of decision power for 212 US BHCs from 1997 to 2004, Pathan (2009) finds a negative relation between CEO power and bank risk taking. Bebchuk et al. (2009) provide evidence that dominating CEOs is negatively related with financial decision qualities and thus increase performance volatility. With a large sample of 515 US firms over the period 1993–2006, Liu and Jiraporn (2010) find evidence that firms with powerful CEOs have more credit risks, such as lower credit ratings, and thus incur higher financing costs.

Anderson and Galinsky (2006) conclude that power may decrease an individual's risk perception and thus increase the risk propensity in the first order, followed by optimistic behaviour. This finding is supported by Li and Tang (2010), since their study provides evidence that the positive relation between CEO overconfidence and risk taking is even stronger when CEOs dominate boards. Another study by Claussen et al. (2010) also finds that when the chairman of a central bank is overconfident, monetary policy risk increases, and this kind of risk can be set off if the monetary policy committee shares the decision powers. Combining the theoretical and empirical suggestions from both the psychological and finance literature yields the following three testable empirical predictions.

H_1: There is a positive relation between managerial overconfidence and bank risk-taking decisions. As the utility of an overconfident CEO can be increased through taking excessive risks, overconfident CEOs can overestimate their risk management skills and decrease their risk perception through over-relying on positive information. These influences have a positive effect on risk-taking decisions (Nygren et. al., 1996; Nosic and Weber, 2007; Niu, 2010; Li and Tang, 2010; Skala, 2011).

H_2: There is a positive relation between CEO dominance and bank risk-taking decisions. The approach theory in the psychological study points out that power can increase an individual's risk propensity. In particular, powerful individuals are more likely to focus on positive signals and pursue social decisions more assertively (Langer et al., 2005; Smith and Bargh, 2008).

H_3: There is a positive relation between bank risk-taking decisions and CEOs who are both overconfident and dominating, and this relation is stronger and more significant relative to the case where the CEO is either overconfident or dominating. Anderson and Galinsky (2006) note that power is in first place, followed by overconfidence in risk taking. Therefore, an overconfident–dominating CEO may have a strong impact on determining bank risk. Moreover, overconfident CEOs with dominating power may be the object of more deference from other managers, and thus their biased views more easily influence firm strategy decisions (Adams et al., 2005).

4.4 Data and methodology

4.4.1 Data

The initial empirical sample in this study is gathered from the Center for Research in Security Prices (CRSP)/Compustat Merged database. Although the Standard Industrial Code (SIC) is provided by the CRSP/Compustat Merged database, to identify proper firms in the sample, following Guenther and Rosman (1994), the SIC codes from the CRSP and Compustat are cross-checked, and firms with unmatched SIC codes are excluded. Therefore, firms with the three-digit SIC codes 602 (commercial banks) and 671 (BHCs) are considered in the sample. Since stock returns are required to calculate market-based risk, similar to the study of Cheng et al. (2009), firms should have intact stock price information, that is, 252 trading days in the initial sample. In particular, for the market-based risk analysis, following Pathan (2009), firms without stock return information from the CRSP for two consecutive years are screened out. Following Goetz (2010), who uses the inverse Z-score as a proxy for bank earnings volatility in calculating the standard deviation of returns on equity (ROE), we include firms in the sample as long as they have a continuous five years of returns on equity based on Compustat. For the ratio of non-performing loans to total loans (NPL) used as a proxy for credit risk, the data are manually collected from the 10-K reports as provided by the US Securities and Exchange Commission (SEC) EDGAR database. Firms with missing information on non-performing loans are

excluded from the sample. Finally, for the negative value of distance-to-default (-DD) factor, bank debt information is gathered from Compustat, and firms without proper debt data are excluded. The CEO overconfidence and dominance information is also manually collected from the SEC EDGAR database. In detail, the essential information for calculating the overconfidence proxy (Holder 67) is gathered from the aggregated option exercises table in the DEF-14A proxy statement, while the CEO dominance information is also obtained from the DEF-14A proxy statement. Firms with missing information for these two entries are excluded from the empirical sample.

After the screening, the numbers of observations (firms) over the period 1996–2006 for market-based risk, inverse Z-score, NPL, and -DD are 3579 (575 firms), 2948 (510 firms), 3522 (566 firms), and 3134 (549 firms), respectively.

4.4.2 Methodology

Several bank risk measures, such as stock market-related risk, earnings volatility risk, credit risk, and default risk, are considered in this study. Although prior studies (Saunders et al., 1990; Anderson and Fraser, 2000; Fortin et al., 2010; Garcia et al., 2010; Goetz, 2010; Kato and Hagendorff, 2010) investigate one or some of these risk measures, this study is a comprehensive and systematic examination of all the main aspects of banking risk. Moreover, the majority of the extant empirical research on the

relation between managerial cognitive bias and risk taking adopts the bank risk measure that is based on equity volatility (Lin, 2005; Niu, 2010). These equity-based risk proxies may not be able to capture all risks faced by the banking sector, since bank structures are complex and the risks occurred in such a black box can entail a large variety (Morgan, 2002).

4.4.2.1 Market-based risk

Following Anderson and Fraser (2000) and Lin (2005), the standard deviation of daily stock returns ($r_{i,t}$) is computed as the total risk (TR) for a specific bank. A single-factor model is then estimated to identify the systematic risk (SR) and idiosyncratic risk (IR) for each bank. Equation (4.1) shows the econometric formulation of the regression model for market-based risk:

$$r_{i,t} = \alpha_i + \beta_i m_t + \varepsilon_{i,t} \qquad (4.1)$$

where $r_{i,t}$ indicates the daily stock returns for bank i in fiscal year t. Market index returns are represented by m_t, which are the CRSP value-weighted returns, including dividends. The coefficient of β_i measures the systematic risk over the fiscal year. The idiosyncratic risk, also known as the firm-specific risk, is the standard deviation of the residuals of this market model for each bank in fiscal year t.

4.4.2.2 Earnings volatility

Following Goetz (2010), the inverse Z-score is calculated as a measure of the bank's earnings volatility. Equation (4.2) gives the formula for computing the Z-score:

$$\text{Z-score} = [(\text{Standard deviation of ROE})/(1 + \text{ROE})] \qquad (4.2)$$

where ROE is the return on equity ratio for each bank in fiscal year t. The standard deviation of ROE is calculated over the five-year window (t - 2, t + 2). That is, ROE ratios two years before and two years after the specific year t are calculated separately. Finally, in line with Goetz (2010), since the Z-score value derived from equation (4.2) is relatively small, each Z-score will be multiplied by 1000. A higher value of the inverse Z-score indicates a higher bank earnings volatility.

4.4.2.3 Credit risk

Following Barth et al. (2004) and Garcia et al. (2010), the ratio of non-performing loans to total loans is calculated as the credit risk measure. A higher fraction of non-performing to total loans implies the bank is more likely to have a higher downside risk.

4.4.2.4 Default risk

Since bank assets can be viewed as a call option (Pathan, 2009), many studies of bank risk taking use the DD method as a risk measure of the likelihood of banking default, which is derived from the option pricing model introduced by Black and Scholes (1973) and Merton (1974). When a bank's asset value fails to cover its debt value, it is more likely for that bank to default, which can be identified by a lower positive DD value. Following the methodology of Vassalou and Xing (2004) and Kato and Hagendorff (2010), a negative DD is calculated according to equation (4.3). Since a higher, positive DD indicates a smaller likelihood of defaulting, a higher, negative DD has a positive effect on banking default. The derivation of the DD value is

$$-DD = -\left[\frac{\ln\left(\frac{V_{A,t}}{D_t}\right)+\left(r-\frac{\delta_A^2}{2}\right)T}{\delta_A\sqrt{T}}\right] \qquad (4.3)$$

The main purpose of deriving the DD value is to estimate the value of assets, $V_{A,t}$, and the volatility of the asset value, δ_A. The variable V_A is estimated from the geometric Brownian motion applied by Merton's option pricing model:

$$V_E = V_A N(d_1) - De^{-rT}N(d_2) \qquad (4.4)$$

where

$$d_1 = \frac{\ln\left(\frac{V_A}{D}\right)+\left(r+\frac{\delta_A^2}{2}\right)T}{\delta_A\sqrt{T}} \qquad (4.5)$$

$$d_2 = d_1 - \delta_A\sqrt{T} \qquad (4.6)$$

In equation (4.4), V_E refers to the fiscal year end total market value of equity; D is the fiscal year end book value of debt; *T* is maturity time, usually set at 252 days; and *r* is the risk-free rate, proxied by the two-year US Treasury Bill rate (Kato and Hagendorff, 2010). In equations (4.5) and (4.6), δ_A is the asset volatility, which can be estimated by the equity volatility under optimal hedging conditions. This relation is shown in equation (4.7)

$$\delta_E = \left(\frac{V_A}{V_E}\right) N(d_1)\delta_A \qquad (4.7)$$

where δ_E indicates the daily estimated individual stock returns for each bank based on the CRSP daily stock file. As discussed in Kato and Hagendorff (2010), once equations (4.4) and (4.7) are solved jointly, the relation between δ_A and δ_E can be found as shown in equation (4.8)

$$\delta_A = \frac{\delta_E V_E}{V_E + D} \qquad (4.8)$$

4.4.3 Regression models

Equations (4.9) to (4.11) are regression models for investigating the relations between the bank risk taking and managerial overconfidence, dominance, and the joint effect of the two managerial attributes:

$$Risk_{i,t} = \alpha_0 + \beta_1 OV_{i,t} + \theta_1 Size_{i,t} + \theta_2 ROE_{i,t} + \theta_3 CV_{i,t} + \theta_4 OP_{i,t} + \theta_5 lnBS_{i,t} + \theta_6 CA_{i,t} + \theta_7 Merger_t + \sum_{t=1}^{10} \gamma_t Year_t + \varepsilon_{i,t} \qquad (4.9)$$

$$Risk_{i,t} = \alpha_0 + \beta_1 DOM_{i,t} + \theta_1 Size_{i,t} + \theta_2 ROE_{i,t} + \theta_3 CV_{i,t} + \theta_4 OP_{i,t} + \theta_5 lnBS_{i,t} + \theta_6 CA_{i,t} + \theta_7 Merger_t + \sum_{t=1}^{10} \gamma_t Year_t + \varepsilon_{i,t} \quad (4.10)$$

$$Risk_{i,t} = \alpha_0 + \beta_1 OV\_DOM_{i,t} + \theta_1 Size_{i,t} + \theta_2 ROE_{i,t} + \theta_3 CV_{i,t} + \theta_4 OP_{i,t} + \theta_5 lnBS_{i,t} + \theta_6 CA_{i,t} + \theta_7 Merger_t + \sum_{t=1}^{10} \gamma_t Year_t + \varepsilon_{i,t} \quad (4.11)$$

where $Risk_{i,t}$, is one of the six risk measures discussed in Sections 4.4.2.1 to 4.4.2.4 for bank i in fiscal year t; $OV_{i,t}$ is a dummy variable equal to one if the CEO of bank i in year t is overconfident, and zero otherwise; $DOM_{i,t}$ is a dummy variable that equals one if the CEO is also the chair of bank i in year t; and $OV\_DOM_{i,t}$ is a dummy variable equal to one if the *i*th bank's CEO is both overconfident and dominating in year t. Several firm-based fundamentals are controlled in the regression models: $Size$ is the log value of total assets; *ROE* is the net income divided by the book value of equity; *CV* is the charter value equal to the market value of equity divided by its book value; OP is the ratio of CEO holding shares divided by the firm's total shares outstanding; $lnBS$ is the natural logarithm of the number of directors on the board; CA is the capital-to-assets (CA) ratio; $Merger$ is a dummy variable equal to one if firms are involved in the specific merger deal in year t, and zero otherwise; and *Year* is the dummy variable from 1996 to 2005. Given the hypotheses developed, the coefficients of OV, DOM, and OV_DOM are expected to be significantly positive. Detailed information about the variable definitions is presented in Table 4.1.

Table 4.1 Definitions of Dependent and Independent Variables

This table shows the detail definition of each dependent and independent variable that is involved in the regression estimation model. Panel A shows the information of dependent and main independent variables while Panel B provides the detail information of control variables.

Variable	Definition
Panel A. Dependent and main independent variables	
Total risk	The standard deviation of daily stock returns from the CRSP database.
Systematic risk	The regression coefficient of the CRSP value-weighted portfolio of equation (1).
Idiosyncratic risk	The standard deviation of the regression residuals of each firm in equation (1).
Earnings volatility	The inverse Z-score = [(standard deviation of ROE)/(1 + ROE)].
Credit risk	The ratio of non-performing loans to total loans.
Default risk	$-DD = -[(\ln(V_{A,t})/D_t)+(r-(\delta_A^2/2)T)/(\delta_A\sqrt{T})]$
CEO Overconfidence (OV)	Dummy variable equals one if a CEO maintains stock options that are already above 67% in the money at least twice during his or her tenure within the firm, and zero otherwise. Once the CEO is defined as overconfident, he or she will hold the title throughout the tenure.
CEO Dominance (DOM)	Dummy variable equals one if a manager is both the CEO and chair, and zero otherwise.
CEO overconfidence–dominance (OV_DOM)	Dummy variable equals one if a CEO is identified as both overconfident and dominating, and zero otherwise.
Panel B. Control variables	
Bank size (SIZE)	SIZE is the logarithm of total assets. It is the proxy for the firm's information asymmetry. Larger size means a lower level of asymmetric information.
Return on equity (ROE)	ROE is the net income divided by the book value of equity.
Charter value (CV)	CV is the market value of equity divided by the book value of equity.
CEO ownership percentage (OP)	The percentage of the number of shares held by the CEO divided by the number of the company's common shares outstanding × 1,000,000.
Board size (lnBS)	lnBS is the natural logarithm of the number of directors on the board.
Capitalization (CA)	Capital to asset ratio is the sum of tier 1 and tier 2 capital divided by total average assets.
Bank merger (MERGER)	The dummy variable equals one if a bank is involved in a merger deal within the sample period, and zero otherwise.

4.4.4 Regression method

The regression method follows the progressive procedure. Initially, all the control variables are regressed on several dependent variables separately. After that, the main explanatory variables are added to the empirical model. All models are controlled with the Huber-White estimator of variance. For the panel data regression, the ordinary least squares (OLS) estimation results may be biased if the individual-level effect is not considered. For example, CEO overconfidence and dominance information may be different for the same firm over the entire sample period because of CEO turnover. Thus, the fixed effect approach may be an appropriate model, since the unobserved firm-specific level is included (Chi, 2005; Cuny et al., 2009).

However, there is debate on when it is appropriate to choose a fixed effect or random effect model in panel data regressions. Wooldridge (2002) indicates that if the corporate governance variable (e.g., board size) of the specific firm does not vary over time, the fixed effect model may not be an efficient or consistent estimation approach. Another problem of the fixed effect model is the loss of degrees of freedom when the number of the panel observations is greater than that of the time periods (Baltagi, 2005). Perhaps due to this reason, Pathan (2009) uses the random effect model for exploring bank risk taking.

In this study, both fixed and random effect models are performed initially in the estimation process. Then the Hausman test (Hausman, 1978) is performed to formally ascertain whether the fixed effect or random effect model is more appropriate to use for estimating the relations between OV, DOM, OV_DOM, and the relevant risk measures. Furthermore, since earnings volatility is directly computed from the ROE ratio, following Laeven and Levine (2009) and Goetz (2010) to exclude this variable from the regression on the inverse Z-score in equations (4.9) to (4.11). This variable is included for all the other regression models on bank risk taking.

4.5 Empirical results

4.5.1 Univariate analysis

Figures 4.1 to 4.4 display the risk-taking trend for US banks and BHCs over the period 1996–2006. Based on Figure 4.1, the total risk and idiosyncratic risk did not show a significant difference in the sample period, while systematic risk has increased rapidly since 1999 (median level 0.1486). It peaked in 2005 with a median level of 0.7601 and then slightly declined in 2006 to the median level of 0.7348. This trend shows that systematic risk before the 2007 crisis was very high and many firms were under great pressure (Hell wig, 2009). Moreover, high systematic risk means high interconnectedness in the US financial sector, and all financial firms may be more sensitive to systematic changes, such as changes in public policy, and the prevalent

moral hazard can also enhance systematic risk (Kaufman, 1996). Figure 4.2 shows the variation of the inverse Z-score over the sample period. There is a relatively stable period for the inverse Z-score from 1996 (median value 15.2860) to 2003 (median value 14.9161), while a sharp increase emerged starting in 2004 and reached its peak in 2006 (median value 30.7011). The highest inverse Z-score implies that, before the breakout of the financial crisis, earnings volatility in the banking industry was at its highest. Credit risk and default risk are shown in Figures 4.3 and 4.4, respectively. It can be seen that both credit risk and default risk do not show a distinct increasing trend before the financial crisis.

The descriptive statistics for the sample are shown in Table 4.2. The mean (median) values for total risk, systematic risk, and idiosyncratic risk are, respectively, 0.0212 (0.0195), 0.4719 (0.3266), and 0.0200 (0.0183). This result is similar to that in Pathan (2009), which reports 0.0226 (0.0202), 0.5200 (0.4700), and 1.9800 (1.8500) for total risk, systematic risk, and idiosyncratic risk, respectively. The mean (median) value of the inverse Z-score is 26.2328 (17.0691), while it is 28.6163 (16.1173) in Goetz (2010). The average (median) NPL ratio is 0.7207(0.6300), slightly higher than that reported by Kato and Hagendorff (2010), namely, 0.6710 (0.5590). The mean (median) value of –DD in this study is -1.8899 (-1.4283), greater than -3.9130 (-3.6180) in Kato and Hagendorff (2010). The mean (median) values of the overconfidence variable under four risk categories are 0.4318 (0.0000), 0.4369 (0.0000), 0.4307 (0.0000), and 0.4266 (0.0000), while the average values for dominating CEOs are

0.4192, 0.4244, 0.4174, and 0.4123, respectively. The mean values of CEOs who are both overconfident and dominating are lower than those when the CEO is either overconfident or dominating alone, that is, 0.2238, 0.2273, 0.2252, and 0.2077. Regarding other control variables, their results are in line with the recent literature (Pathan, 2009; Fortin et al., 2010; Kato and Hagendorff, 2010).

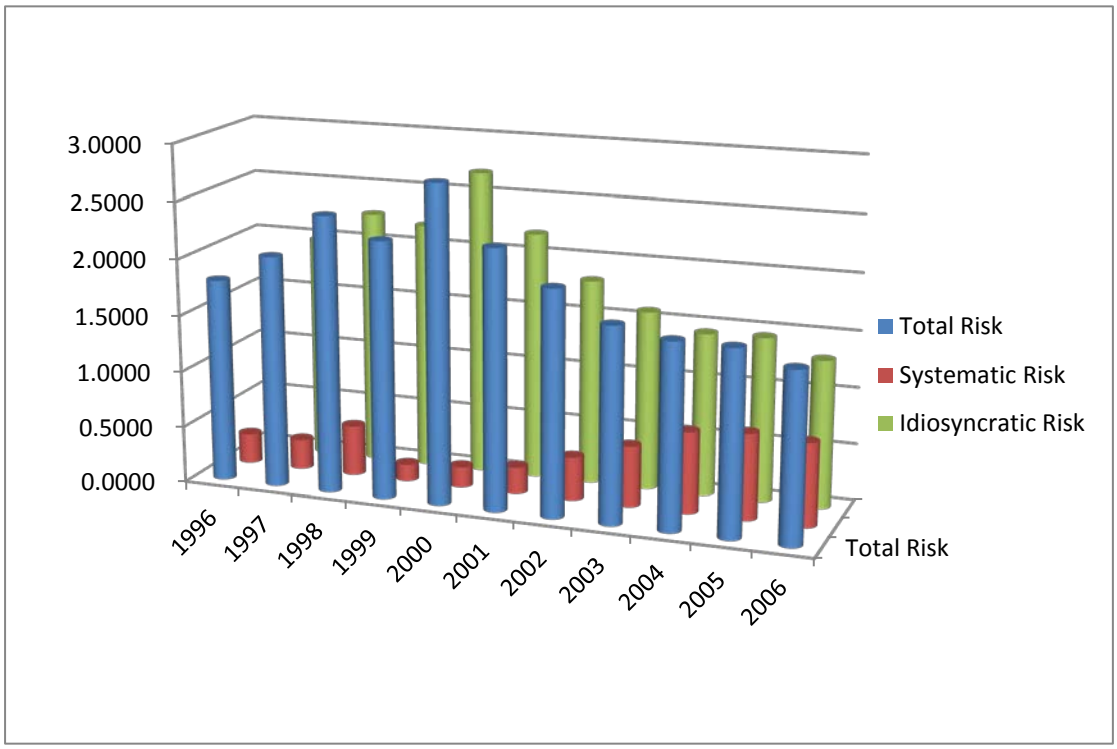

Figure 4.1 Median Level of Market-Based Risk over the 1996–2006

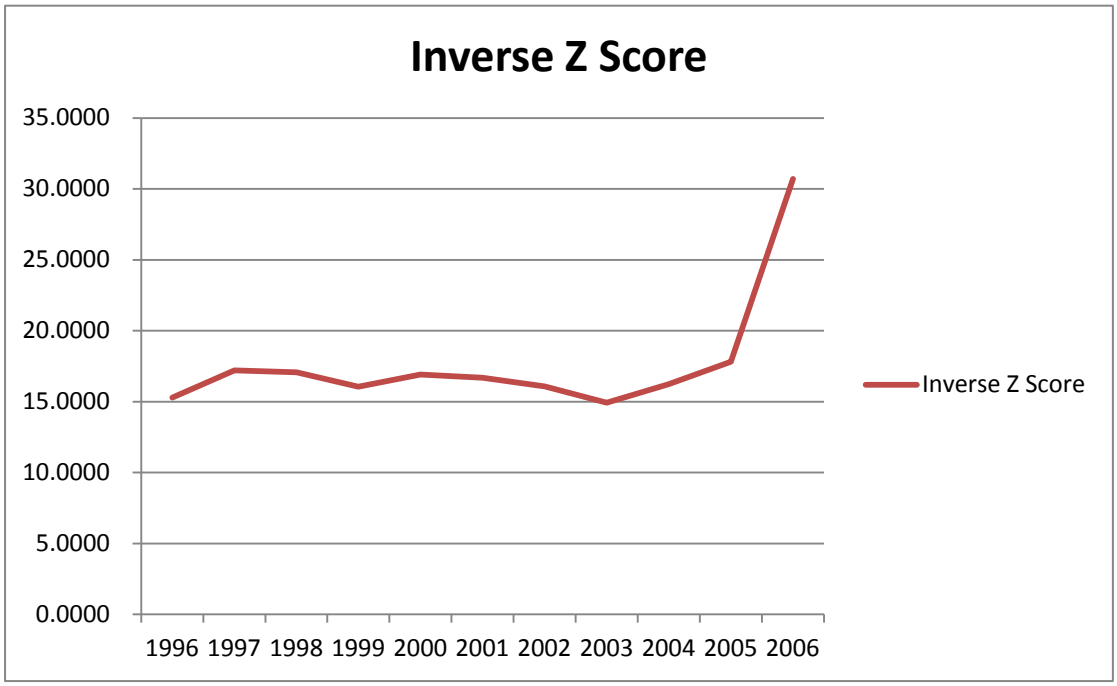

Figure 4.2 Median Level of Earnings Volatility (Inverse Z-score) over 1996–2006

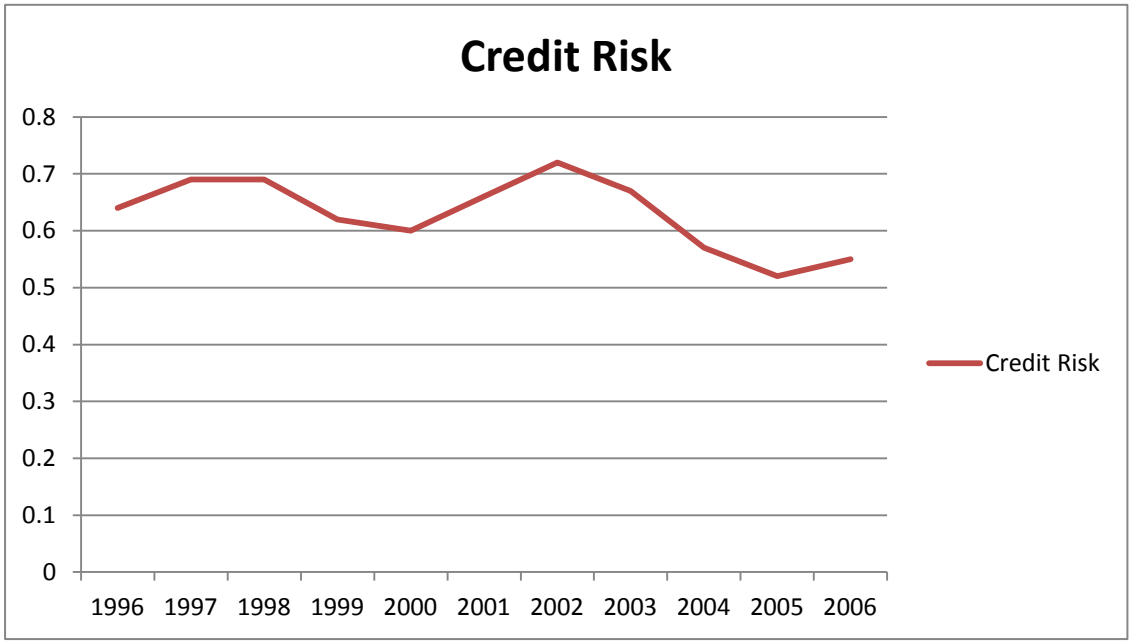

Figure 4.3 Median Level of Credit Risk (NPL%) over 1996–2006

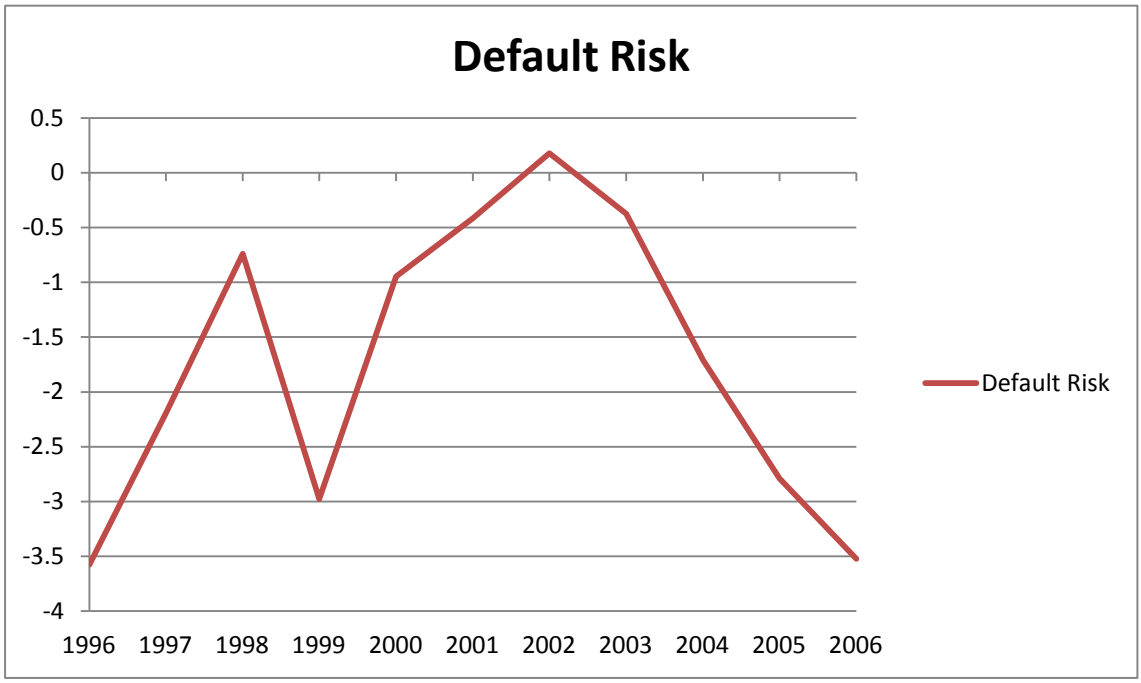

Figure 4.4 Median Level of the Default Risk (-DD) over 1996–2006

Table 4.2 Descriptive Statistics for the Empirical Sample, 1996–2006

This table represents the descriptive statistics for the sampled financial firms from the CRSP/Compustat Merged database. The unbalanced panel data of market-based risk, earnings volatility, credit risk, and default risk is shown in panels A through D, respectively. The market-based risk contains total risk, systematic risk, and idiosyncratic risk. A detailed definition for each variable is available in Table 4.1.

Panel A. Market-based risk

Variable	N	Mean	Median	Min	Max	25th Percentile	75th Percentile	Std. Dev
Total risk	3579	0.0212	0.0195	0.0032	0.1692	0.0155	0.0250	0.0092
Systematic risk	3579	0.4719	0.3266	-0.8758	2.5677	0.0910	0.7690	0.4983
Idiosyncratic risk	3579	0.0200	0.0183	0.0031	0.1692	0.0140	0.0241	0.0095
OV	3579	0.4318	0.0000	0.0000	1.0000	0.0000	1.0000	0.4954
DOM	3579	0.4192	0.0000	0.0000	1.0000	0.0000	1.0000	0.4935
OV_DOM	3579	0.2238	0.0000	0.0000	1.0000	0.0000	0.0000	0.4169
SIZE	3579	3.2179	3.0557	1.6109	6.1643	2.7120	3.6090	0.7171
ROE	3579	0.1194	0.1250	-1.3029	0.3752	0.0952	0.1508	0.0698
CV	3579	1.9851	1.8601	0.3504	7.8019	1.4440	2.3610	0.7951
OP	3579	0.0433	0.0167	0.0000	0.7887	0.0064	0.0430	0.0797
BS	3579	11.9413	11.0000	5.0000	30.0000	9.0000	14.0000	4.1589
CA	3579	0.1392	0.1295	0.0688	0.7610	0.1161	0.1488	0.0415

MERGER	3579	0.0978	0.0000	0.0000	1.0000	0.0000	0.0000	0.2971

Panel B. Inverse Z-score

Variable	N	Mean	Median	Min	Max	25th Percentile	75th Percentile	Std. Dev
Inverse Z-score	2948	26.2328	17.0691	2.9446	309.7003	10.4817	28.2509	31.9777
OV	2948	0.4369	0.0000	0.0000	1.0000	0.0000	1.0000	0.4961
DOM	2948	0.4244	0.0000	0.0000	1.0000	0.0000	1.0000	0.4943
OV_DOM	2948	0.2273	0.0000	0.0000	1.0000	0.0000	0.0000	0.4191
SIZE	2948	3.2594	3.0995	1.6390	6.1643	2.7556	3.6509	0.7081
ROE	2948	0.1244	0.1274	-0.3289	0.3752	0.0980	0.1525	0.0513
CV	2948	2.0189	1.8963	0.3504	7.8019	1.4822	2.4019	0.7930
OP	2948	0.0436	0.0159	0.0000	0.7887	0.0061	0.0421	0.0802
BS	2948	12.0458	11.0000	5.0000	30.0000	9.0000	14.0000	4.1380
CA	2948	0.1376	0.1290	0.0741	0.4380	0.1167	0.1474	0.0355
MERGER	2948	0.0970	0.0000	0.0000	1.0000	0.0000	0.0000	0.2960

Panel C. Credit risk

Variable	N	Mean	Median	Min	Max	25th Percentile	75th Percentile	Std. Dev
NPL(%)	3522	0.7207	0.6300	0.0000	4.4300	0.3900	0.9300	0.5116
OV	3522	0.4307	0.0000	0.0000	1.0000	0.0000	1.0000	0.4952
DOM	3522	0.4174	0.0000	0.0000	1.0000	0.0000	1.0000	0.4932
OV_DOM	3522	0.2252	0.0000	0.0000	1.0000	0.0000	0.0000	0.4177
SIZE	3522	3.2149	3.0528	1.6109	6.1643	2.7118	3.6036	0.7141
ROE	3522	0.1194	0.1249	-1.3029	0.3752	0.0953	0.1508	0.0700
CV	3522	1.9856	1.8600	0.3504	7.8019	1.4440	2.3603	0.7965
OP	3522	0.0433	0.0167	0.0000	0.7887	0.0064	0.0428	0.0800
BS	3522	11.9441	11.0000	5.0000	30.0000	9.0000	14.0000	4.1527
CA	3522	0.1392	0.1296	0.0688	0.7610	0.1161	0.1489	0.0416
MERGER	3522	0.0977	0.0000	0.0000	1.0000	0.0000	0.0000	0.2969

Panel D. Default risk

Variable	N	Mean	Median	Min	Max	25th Percentile	75th Percentile	Std. Dev
-DD	3134	-1.8899	-1.4283	-31.7303	5.7056	-3.2061	-0.0733	2.7905
OV	3134	0.4266	0.0000	0.0000	1.0000	0.0000	1.0000	0.4947
DOM	3134	0.4123	0.0000	0.0000	1.0000	0.0000	1.0000	0.4923
OV_DOM	3134	0.2077	0.0000	0.0000	1.0000	0.0000	0.0000	0.4057
SIZE	3134	3.2554	3.0960	1.8902	6.1643	2.7538	3.6389	0.7003
ROE	3134	0.1217	0.1255	-1.1513	0.3562	0.0966	0.1513	0.0593
CV	3134	2.0010	1.8788	0.3504	7.8019	1.4623	2.3667	0.8046
OP	3134	0.0413	0.0152	0.0000	0.7887	0.0061	0.0407	0.0763
BS	3134	12.0657	11.0000	5.0000	30.0000	9.0000	14.0000	4.1720
CA	3134	0.1372	0.1290	0.0688	0.4325	0.1160	0.1478	0.0344
MERGER	3134	0.0989	0.0000	0.0000	1.0000	0.0000	0.0000	0.2986

A further comparison analysis between CEOs with different attributes is shown in Table 4.3. Panel A of Table 4.3 represents the mean and median analysis for all risk measures when CEOs are classified into overconfident and non-overconfident groups. On average, overconfident CEOs have significantly higher risk propensities than rational CEOs, especially in terms of market-based risk, credit risk, and default risk. Although the mean difference between overconfident and rational CEOs in terms of the inverse Z-score is statistically insignificant, the significant positive median difference (0.7541, p-value = 0.063) still shows that firms managed by overconfident CEOs have higher inverse Z-scores (17.4402) than those managed by rational CEOs (16.6861). Panel B of Table 4.3 shows the univariate analysis of risk taking behaviour between dominating and non-dominating CEOs. For the level of mean differences, while firms operated by dominating CEOs have higher total risk (difference = 0.0007, p-value = 0.017) and systematic risk (difference = 0.1589, p-value = 0.000), the average difference is insignificant for idiosyncratic risk. Moreover, dominating CEOs have significantly higher mean values of earnings volatility and ratios of non-performing loans to total loans than non-dominating CEOs. However, the mean (median) difference of –DD for dominating and non-dominating CEOs is -0.5383 (-0.5237), both with p-value = 0.000, which shows that firms managed by dominating CEOs do not have higher default risk than those managed by non-dominating CEOs. Therefore, it is not necessarily the case that dominating CEOs take higher risks than non-dominating CEOs. Finally, panel C of Table 4.3 shows the analysis of CEOs who are both overconfident and dominating. Consistent with expectations, firms managed

by both overconfident and dominating CEOs have, on average, higher risks than those managed by other types of CEOs in terms of all risk measures. In sum, based on the descriptive statistics and the univariate analysis of different risk measures and CEO attributes, although banking firms managed by dominating CEOs experience lower default risk, there is evidence that overconfident, dominating and especially overconfident–dominating CEOs have lower risk perspectives and higher risk propensities than their CEO peers.

Table 4.3 Comparison Analysis of Risk Taking and CEO Overconfidence, Dominance, and Overconfidence–Dominance Attributes

This table presents the univariate analysis of CEO overconfidence, dominance, and overconfidence–dominance effects on bank risk taking. Panel A refers to the comparison analysis of risk taking by overconfident and non-overconfident CEOs, while a similar analysis of risk-taking by dominating and non-dominating CEOs is reported in panel B. Panel C shows the different risk-taking propensities for overconfident–dominating CEOs and non-overconfident–dominating CEOs. The definition of a non-overconfident–dominating CEO is a bank manager who may be overconfident, dominating, or neither overconfident nor dominating. Mean and median differences are reported in the last two columns. The p-values are shown in brackets, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. The detailed information of each variable is reported in Table 4.1.

Panel A. Overconfident CEOs (OV_CEOs) and risk taking

Variable	N	OV_CEOs		Non-OV_CEOs		Mean	Median
		Mean	Median	Mean	Median	difference	difference
Total risk	3562	0.0218	0.0195	0.0208	0.0194	0.0010 [0.001]***	0.0001 [0.136]
Systematic risk	3562	0.5587	0.4394	0.4034	0.2554	0.1552 [0.000]***	0.184 [0.000]***
Idiosyncratic risk	3562	0.0204	0.0180	0.0198	0.0185	0.0006 [0.043]**	-0.0005 [0.617]
Inverse Z-score	2948	27.0133	17.4402	25.6272	16.6861	1.3861 [0.122]	0.7541 [0.063]*
NPL(%)	3522	0.8360	0.7100	0.6334	0.5400	0.2026 [0.000]***	0.1700 [0.000]***
-DD	3134	-1.5886	-1.2997	-2.1141	-1.5518	0.5255 [0.000]***	0.2521 [0.001]***

Panel B. Dominating CEOs (DOM_CEOs) and risk taking

Variable	N	DOM_CEOs		Non-DOM_CEOs		Mean	Median
		Mean	Median	Mean	Median	difference	difference
Total risk	3576	0.0216	0.0192	0.0209	0.0196	0.0007 [0.017]**	-0.0004 [0.112]
Systematic risk	3576	0.5643	0.4948	0.4054	0.2416	0.1589	0.2532

						[0.000]***	[0.000]***
Idiosyncratic risk	3576	0.0200	0.0174	0.0200	0.0188	0.0000	-0.0014
						[0.457]	[0.000]***
Inverse Z-score	2948	28.6490	16.9475	24.4515	17.1285	4.1975	-0.1810
						[0.002]***	[0.167]
NPL(%)	3522	0.7916	0.6900	0.6699	0.6000	0.1217	0.0900
						[0.000]***	[0.000]***
-DD	3134	-2.2063	-1.7525	-1.668	-1.2288	-0.5383	-0.5237
						[0.000]***	[0.000]***

Panel C. Overconfident–dominating CEOs (OV-DOM_CEOs) and risk taking

Variable	N	OV-DOM_CEOs		Non-OV-DOM_CEOs		Mean	Median
		Mean	Median	Mean	Median	difference	difference
Total risk	3579	0.0227	0.0195	0.0208	0.0194	0.0019	0.0001
						[0.000]***	[0.098]*
Systematic risk	3579	0.6349	0.5959	0.4249	0.2667	0.2100	0.3239
						[0.000]***	[0.000]***
Idiosyncratic risk	3579	0.0209	0.0176	0.0198	0.0184	0.0011	-0.0008
						[0.001]***	[0.143]
Inverse Z-score	2948	29.5166	17.6174	25.2669	16.9257	4.2497	0.6917
						[0.001]***	[0.031]**
NPL(%)	3522	0.8993	0.7800	0.6688	0.5900	0.2305	0.1900
						[0.000]***	[0.000]***
-DD	3134	-1.7393	-1.5413	-1.9294	-1.3999	0.1901	-0.1414
						[0.061]*	[0.531]

4.5.2 Multivariate analysis

The regression results of equation (4.9) are reported in Table 4.4, which are presented in relation to H_1. Models (1) to (9) of panel A of Table 4.4 show the estimation outcomes for total risk, systematic risk, and idiosyncratic risk while models (1) to (9) of panel B are related to earnings volatility, credit risk, and default risk, respectively. Basically, the regression procedure contains three steps. First, control variables, including year dummies, are regressed on the dependent variable using the OLS

estimator， which is robust to White heteroskedasticity. These are models (1), (4), and (7) in panels A and B, respectively, in Table 4.4. After this, the main explanatory variable, overconfidence, is added to the prior models, namely, models (2), (5), and (8) in panels A and B of Table 4.4, respectively. Finally, the models (3), (6), and (9) in panels A and B are fixed effect or random effect models, selected according to results of the Hausman test with the null hypothesis that the random effect model is superior to the fixed effect model.

The multivariate regression results are generally consistent with the univariate analysis. For market-based risk in panel A, the firm size (SIZE) is significantly negatively related with total risk and idiosyncratic risk. This negative relation indicates that smaller banks have higher total risk and firm-specific risks than larger banks, since small banks may be less able to diversify their assets as compared to larger firms (Chen et al., 1998). Consistent with the suggestion by Haldane (2010), due to the too big to fail effect, larger banks are more exposed to higher systematic risk, since they have more within-industry connections and are thus more sensitive to systematic changes. Banks or BHCs with higher profits (ROE) take fewer market-based risks. Similar to Pathan (2009), firms with higher charter values (CV) have higher propensities for taking excessive risk, especially systematic risk. The significant positive effect of CEO ownership (OP) on total risk and idiosyncratic risk shows that higher CEO share holdings encourage excessive risk taking. Bank boards (lnBS) with fewer directors have a positive impact on market-based risk, since a small

board may be easily controlled by the CEO in conveying his or her own risk propensity (Pathan, 2009). Palia (1993) indicates that a higher CA ratio shows a better capitalization position. Therefore, better-capitalized banks or BHCs are less likely to take on excessively risky projects (Fortin et al., 2010). However, Pathan (2009) suggests that well-capitalized banks take higher risks. This study's results support the view of Fortin et al. (2010), since the relations between CA and total risk and idiosyncratic risk are statistically significantly negative, whereas CA has a positive effect on systematic risk, which is suggested by Pathan (2009). In fact, Furfine (2001) demonstrates that banks with higher risks may hold excessive capitals above the requirement of Basel I, since they may need greater amounts of capital to absorb the cost of unexpected market discipline. Finally, bank M&A deals have a significantly positive effect on total risk and idiosyncratic risk, while the effect on systematic risk is statistically insignificant.

After estimating control variables in market-based risk models, the CEO overconfidence variable is added as the regressor. The coefficient of the overconfidence variable in three models of different market-based risk measures are 0.0013, 0.0598, and 0.0012 in panel A, respectively. All of these are significant at the 1% level. Since the overconfidence variable varies within firms, for example, a bank may change its CEO several times within the sample period, it is essential to control firm-level variation effects.

Afterwards, all panels only report the results of either fixed effect or random effect models based on the Hausman test identification. The fixed effect estimator is found to be consistent in the regression models of all three measures of market-based risk as the Hausman χ^2 tests equal 114.95, 182.72, and 116.59, respectively, which significantly rejects the null hypothesis that the random effect model is efficient and consistent for estimating market-based risk models. For total risk, CEO overconfidence variable is still significantly positive, although the significance level is only at 10% (coefficient = 0.0005, p-value = 0.080). The relation between CEO overconfidence and systematic risk is statistically insignificant. Nevertheless, the positive coefficient of CEO overconfidence in relation to idiosyncratic risk is marginally significant (coefficient = 0.0004, p-value = 0.097).

For the significant relation between CEO overconfidence and market-based risk taking, the important role of CEO overconfidence can be explained numerically. For example, since the standard deviation of overconfidence in the market-based risk models is 0.4954 (see Table 4.2), an increase in the overconfidence variable by one unit standard deviation can lead to the increases in the total risk and idiosyncratic risk of 1.17% ($0.0005 \times 0.4954 \div 0.0212$) and 0.99% ($0.0004 \times 0.4954 \div 0.0200$), respectively. Additionally, under the fixed effect model, control variables such as charter value, board size, and CA ratio turn to be insignificant in relation to total risk and idiosyncratic risk, while ownership percentage, board size, CA ratio, and merger deals lose significant explanatory power regarding systematic risk.

With the same estimation procedure as shown in panel A of Table 4.4, panel B reports the estimation results for earnings volatility (inverse Z-score), credit risk (NPL%), and default risk (-DD). The fixed effect estimation shows an insignificant relation between CEO overconfidence and earnings volatility. Consistent with Anderson and Fraser (2000), banks with higher growth opportunities (higher CV value) tend to have lower earnings volatility, since they have better investment opportunities. Well-capitalized banks have significantly lower earnings volatility. This finding is supportive of findings by Lindquist (2004), that banks with 'buffer capitals' have lower prior earnings volatility. Regarding bank credit risk, unlike prior regression models, the random effect model is applied, since the null hypothesis that the random effect model is more consistent cannot be rejected, according to the Hausman test results (Hausman χ^2 = 0.703). The model estimation results report that CEO overconfidence positively affects credit risk level; that is, one unit increase in the standard deviation of overconfidence induces the credit risk level to increase by 17.64% (0.4952×0.2567÷0.7207). Furthermore, a positive coefficient on firm size confirms the too big to fail effect on credit risk. This may be due to the plausibility that larger banks have more extensive business networks and thus have more non-performing loans than smaller banks under the deposit insurance policy.

As in Acrey et al. (2010), bank charter value is negatively related to the NPL ratio. Firms managed by CEOs with greater ownership have more non-performing loans, while larger boards could alleviate the credit risk. For bank default risk, the

significant positive coefficient of overconfidence through the fixed effect estimation means that a one-unit increase in the standard deviation of CEO overconfidence would induce an increase of 4.80% (0.4947 × 0.1832÷|-1.8899|) in the –DD value, or a 4.80% increase in the likelihood of the bank defaulting.

For control variables, consistent with Kato and Hagendorff (2010), larger banks can lower –DD values through better asset diversification than smaller banks. Other variables, such as ROE, CV, OP, and BS, also significantly affect the –DD value. An interesting finding about the CA ratio is that when the fixed effect model is used for estimating default risk, the CA ratio has a negative effect on default risk, supporting the view that well-capitalized banks have a lower propensity for undertaking high risk–return projects using the OLS estimator (John, 1987; Kato and Hagendorff, 2010). However, after controlling for firm-level effects, the CA is significantly and positively related to the –DD value. It is possible that banks with higher CA ratios also have higher default risk. Since the CA ratio is calculated based on the average risk-weighted capital, a higher CA ratio indicates a larger proportion of risky assets is held by banks, revealing inefficient bank capital allocation (Fraser and Kolari, 1987).

Table 4.4 Regression Results of CEO Overconfidence on Bank Risk Taking

This table reports the multivariate regression results. Panel A shows the regression estimation results of market-based risks, while panel B shows the results of earnings volatility, credit risk, and default risk, respectively. Models (1), (4), and (7) of panel A are the regressions of control variables on total risk, systematic risk, and idiosyncratic risk, respectively. Models (2), (5), and (8) of panel A refer to the OLS regression of CEO overconfidence effect on total risk, systematic risk, and idiosyncratic risk. Models (3), (6), and (9) of panel A show the fixed effect estimation of CEO overconfidence on three market-based risk measurements. Panel B demonstrates the same regression scenario of CEO overconfidence on earnings volatility, credit risk, and default risk. Models (1), (4), and (7) are OLS regressions of control variables on risk measurements. Models (2), (5), and (8) show the OLS regression of CEO overconfidence on bank earnings volatility, credit risk, and default risk. Models (3) and (9) report the fixed effect regression results of overconfidence on earnings volatility and default risk. Model (6) is the random effect estimation of overconfidence on bank credit risk. The adoption of the fixed effect or random effect model is based on the Hausman test. All the OLS regressions are robust with the White heteroskedasticity estimator of variance. The p-values are shown in brackets, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. All the variable definitions are shown in Table 4.1.

Panel A. Overconfidence and market-based risk

Variables	Total Risk			Systematic Risk			Idiosyncratic Risk		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV		0.0013	0.0005		0.0598	0.0064		0.0012	0.0004
		[0.000]***	[0.080]*		[0.000]***	[0.696]		[0.000]***	[0.097]*
SIZE	-0.0029	-0.0030	-0.0064	0.3815	0.383	0.2659	-0.0044	-0.0044	-0.0072
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
ROE	-0.0310	-0.0313	-0.0133	-0.0849	-0.0965	-0.1897	-0.0306	-0.0309	-0.0129
	[0.000]***	[0.000]***	[0.000]***	[0.445]	[0.372]	[0.078]*	[0.000]***	[0.000]***	[0.000]***
CV	0.0014	0.0012	0.0008	0.0887	0.0788	0.0375	0.00111	0.0010	0.0004
	[0.000]***	[0.009]***	[0.719]	[0.000]***	[0.000]***	[0.004]***	[0.001]***	[0.005]***	[0.854]
OP	0.0252	0.0246	0.0103	0.0380	0.0095	-0.1375	0.0255	0.025	0.0108
	[0.000]***	[0.000]***	[0.002]***	[0.609]	[0.898]	[0.470]	[0.000]***	[0.000]***	[0.001]***
lnBS	-0.0011	-0.0009	-0.0007	-0.0466	-0.0411	0.0189	-0.0010	-0.0009	-0.0008
	[0.015]**	[0.013]**	[0.322]	[0.014]*	[0.031]**	[0.648]	[0.007]***	[0.019]**	[0.255]
CA	-0.0198	-0.0186	0.0043	0.3334	0.3869	-0.2772	-0.0216	-0.0205	0.0040
	[0.000]***	[0.007]***	[0.374]	[0.009]***	[0.003]***	[0.310]	[0.000]***	[0.000]***	[0.385]
MERGER	0.0018	0.0018	0.0008	-0.0084	-0.0093	-0.0043	0.0019	0.0019	0.0009
	[0.021]**	[0.021]**	[0.035]**	[0.699]	[0.670]	[0.835]	[0.012]**	[0.012]**	[0.009]***
Constant	0.0301	0.0295	0.0387	-0.6184	-0.6502	-0.1263	0.0339	0.0333	0.0398
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.570]	[0.000]***	[0.000]***	[0.000]***
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Fixed effect	no	no	yes	no	no	yes	no	no	yes
Random effect	no	no	no	no	no	no	no	no	no
R^2	0.3906	0.3947		0.4873	0.4913		0.4663	0.4691	
R^2-within			0.4076			0.3770			0.4638
R^2-between			0.2250			0.4320			0.3450
R^2-overall			0.2997			0.4408			0.3977

F-Statistics	91.47***	86.28***	113.48***	208.38***	204.18***	99.83***	122.04***	114.42***	142.65***
Wald Chi	-	-	-	-	-	-	-	-	-
Hausman	-	-	114.95***	-	-	182.72***	-	-	116.59***
N	3579	3562	3562	3579	3562	3562	3579	3562	3562

Panel B. Overconfidence and earnings volatility, credit risk, and default risk

Variables	Inverse Z-Score			NPL(%)			-DD		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV		1.1674	0.4401		0.2083	0.2567		0.3468	0.1832
		[0.340]	[0.760]		[0.000]***	[0.000]***		[0.000]***	[0.051]**
SIZE	2.6480	2.6693	8.6983	0.1673	0.1683	0.1501	-1.5431	-1.532	-2.4639
	[0.006]***	[0.006]***	[0.108]	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
ROE				0.0876	0.0499	-0.0717	-3.2086	-3.383	-2.4413
				[0.662]	[0.781]	[0.549]	[0.000]***	[0.000]***	[0.000]***
CV	-2.6025	-2.7865	-2.5801	-0.0219	-0.0540	-0.0639	0.8234	0.772	0.5318
	[0.001]***	[0.001]***	[0.021]**	[0.193]	[0.001]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
OP	53.2708	52.7946	14.1417	0.2834	0.1917	0.4078	0.9691	0.8661	2.3075
	[0.001]***	[0.001]***	[0.404]	[0.012]**	[0.095]*	[0.014]**	[0.095]*	[0.133]	[0.044]**
lnBS	-8.1855	-8.1014	2.0763	-0.1807	-0.1613	-0.0841	0.1933	0.2116	0.6842
	[0.000]***	[0.000]***	[0.568]	[0.000]***	[0.000]***	[0.027]**	[0.158]	[0.121]	[0.003]***
CA	-38.9579	-37.7177	-45.9037	0.0470	0.2255	0.1702	-3.5069	-3.1024	5.825
	[0.022]**	[0.028]**	[0.073]*	[0.881]	[0.470]	[0.494]	[0.019]**	[0.038]**	[0.000]***
MERGER	3.7494	3.7824	0.6065	-0.0506	-0.0507	-0.0095	0.2507	0.2522	0.0365
	[0.092]*	[0.090]*	[0.725]	[0.046]**	[0.041]**	[0.684]	[0.033]**	[0.031]**	[0.749]
Constant	74.8986	74.2759	33.9858	0.5459	0.4425	0.3199	-0.1543	-0.3281	0.9216
	[0.000]***	[0.000]***	[0.086]*	[0.000]***	[0.000]***	[0.006]***	[0.686]	[0.390]	[0.466]
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Fixed effect	no	no	yes	no	no	no	no	no	yes
Random effect	no	no	no	no	no	yes	no	no	no
R^2	0.1075	0.1078		0.0536	0.0905		0.3965	0.3999	
R^2-within			0.1635			0.0876			0.4978
R^2-between			0.0021			0.0778			0.2629
R^2-overall			0.0614			0.0847			0.3464
F-Statistics	8.02***	7.89***	27.83***	9.46***	15.92***	-	106.56***	102.29***	141.35***
Wald Chi	-	-	-	-	-	328.75***	-	-	-
Hausman	-	-	25.70*	-	-	0.703	-	-	51.33***
N	2948	2948	2948	3522	3522	3522	3134	3134	3134

Table 4.5 reports the estimation results of CEO dominance on risk taking. Unlike the relation between overconfidence and total risk, or between overconfidence and firm-specific risk, CEO dominance has insignificant effects on these types of risk. However, under the random effect model, the coefficient of CEO dominance is significantly positive (coefficient = 0.0491, p-value = 0.000) in relation to systematic risk. This result shows that a one-unit increase in the standard deviation of CEO dominance could significantly increase systematic risk by 5.13% ($0.0491 \times 0.4935 \div 0.4719$). Again, while overconfident CEOs have a limited effect on earnings volatility, a one-unit standard deviation increase in CEO dominance would induce a significant increase in the inverse Z-score by 7.73% ($4.1047 \times 0.4943 \div 26.2328$). The random effect model is also recommended, according to the Hausman test for estimating the CEO dominance effect on credit risk. Compared to the 17.64% change in credit risk for a one-unit change in the standard deviation of CEO overconfidence, CEO dominance significantly contributes to credit risk changes, by 7.42% ($0.1085 \times 0.4932 \div 0.7207$). Evidence fails to support the fact that dominating CEOs cause higher bank –DD values. All the signs of the control variables in Table 4.5 are similar to those in Table 4.4.

Table 4.5 Regression Results of CEO Dominance on Bank Risk Taking

This table reports the regression estimation of the CEO dominance effect on promoting bank risk taking. Models (1), (3), (5), (7), (9), and (11) show the OLS estimation of the CEO dominance factor on bank risk measurements, including total risk, systematic risk, idiosyncratic risk, earnings volatility, credit risk, and default risk. Models (2), (6), (8), and (12) report the fixed effect estimating results of the CEO dominance effect on total risk, idiosyncratic risk, earnings volatility, and default risk, while models (4) and (10) are the random effect estimating results of the CEO dominance effect on systematic risk and credit risk. The choice of fixed effect and random effect estimation approaches is based on the Hausman test, which is also reported in the table. All the OLS regressions are robust with the White heteroskedasticity estimator of variance. The p-values are shown in brackets, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Detailed information on each variable is available in Table 4.1.

Variables	Total Risk		Systematic Risk		Idiosyncratic Risk		Inverse Z-Score		NPL(%)		-DD	
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)	Model(10)	Model(11)	Model(12)
DOM	0.0005	0.0004	0.0337	0.0491	0.0003	0.0002	4.2486	4.1047	0.0782	0.1085	-0.2022	0.0672
	[0.040]**	[0.236]	[0.011]**	[0.000]***	[0.149]	[0.446]	[0.001]***	[0.023]**	[0.000]***	[0.000]***	[0.011]**	[0.565]
SIZE	-0.0030	-0.0063	0.3755	0.4027	-0.0045	-0.0071	1.9402	8.1460	0.1529	0.1486	-1.5059	-2.3895
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.056]*	[0.130]	[0.000]***	[0.000]***	[0.000]***	[0.000]***
ROE	-0.0309	-0.0133	-0.0745	-0.1312	-0.0305	-0.0129			0.1223	-0.0414	-3.2642	-2.4036
	[0.000]***	[0.000]***	[0.496]	[0.182]	[0.000]***	[0.000]***			[0.534]	[0.736]	[0.000]***	[0.001]***
CV	0.0014	0.0001	0.0874	0.0567	0.0011	0.0001	-2.6899	-2.5442	-0.0249	-0.0338	0.8305	0.5572
	[0.000]***	[0.582]	[0.000]***	[0.000]***	[0.002]***	[0.682]	[0.001]***	[0.021]**	[0.134]	[0.016]**	[0.000]***	[0.000]***
OP	0.0245	0.0098	-0.0100	-0.0422	0.0250	0.0104	47.6391	7.4612	0.1719	0.3506	1.2456	2.3093
	[0.000]***	[0.004]***	[0.895]	[0.708]	[0.000]***	[0.002]***	[0.003]***	[0.664]	[0.128]	[0.043]**	[0.035]**	[0.048]**
lnBS	-0.0011	-0.0007	-0.0479	-0.0379	-0.0011	-0.0008	-8.4365	2.0599	-0.1815	-0.0833	0.1988	0.6921
	[0.005]***	[0.335]	[0.011]**	[0.150]	[0.007]***	[0.242]	[0.000]***	[0.571]	[0.000]***	[0.032]**	[0.146]	[0.003]***
CA	-0.0198	0.0045	0.3316	0.2116	-0.0216	0.0042	-39.2381	-43.4176	0.0410	0.1204	-3.4980	5.9894
	[0.000]***	[0.343]	[0.010]**	[0.233]	[0.000]***	[0.369]	[0.021]**	[0.090]*	[0.895]	[0.636]	[0.019]**	[0.000]***
MERGER	0.0018	0.0007	-0.0079	-0.0103	0.0019	0.0008	3.9675	0.5615	-0.0493	-0.0073	0.2475	0.0404
	[0.020]**	[0.039]**	[0.718]	[0.598]	[0.012]**	[0.018]**	[0.074]*	[0.744]	[0.051]**	[0.762]	[0.034]**	[0.723]

Constant	0.0303 [0.000]***	0.0385 [0.000]***	-0.6033 [0.000]***	-0.6274 [0.000]***	0.0340 [0.000]***	0.0396 [0.000]***	76.6639 [0.000]***	34.3725 [0.081]*	0.5735 [0.000]***	0.3592 [0.001]***	-0.2392 [0.532]	0.6318 [0.615]
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Fixed effect	no	yes	no	no	no	yes	no	yes	no	no	no	yes
Random effect	no	no	no	yes	no	no	no	no	no	yes	no	no
R^2	0.3914		0.4884		0.4667		0.1114		0.0586		0.3976	
R^2-within		0.4090		0.3743		0.4637		0.1652		0.0325		0.4971
R^2-between		0.2222		0.5085		0.3419		0.0032		0.0598		0.2602
R^2-overall		0.2996		0.4553		0.3973		0.0629		0.0512		0.3469
F-Statistics	86.42***	114.69***	200.05***	-	115.37***	143.29***	8.25***	28.18***	9.67***	-	101.07***	140.97***
Wald Chi	-	-	-	260.99***	-	-	-	-	-	135.53***	-	-
Hausman	-	113.95***	-	0.2636	-	116.55***	-	26.89*		20.6	-	50.67***
N	3576	3576	3576	3576	3576	3576	2948	2948	3522	3522	3134	3134

The third empirical hypothesis is that risk taking is highest when CEOs are both overconfident and dominating. As shown in Table 4.6, the OV_DOM variable that captures the joint overconfidence–dominating effect is significant in all regression models. A one-unit standard deviation increase also leads to 2.16% (0.0011 × 0.4169 ÷ 0.0212), 5.41% (0.0612 × 0.4169 ÷ 0.4719), and 1.88% (0.0009×0.4169÷0.0200) increases in the total risk, systematic risk, and idiosyncratic risk, respectively. The differences are approximately 0.99% and 0.89% higher than that of the overconfidence effect alone on total risk and firm-specific risk, respectively, and 0.28% higher than the dominance effect alone on systematic risk. Compared to a 7.73% positive effect on the inverse Z-score of the single CEO dominance effect, the joint overconfidence–dominance effect provides a positive contribution of 5.49% (3.4403 × 0.4191 ÷ 26.2328). The significant coefficient (0.2511, p-value = 0.000) of the OV_DOM variable shows an increase of 14.55% (0.2511×0.4177÷0.7207) in the NPL ratio when the OV_DOM standard deviation varies by one unit. The effect is smaller than the 17.64% increase in the NPL ratio due to the overconfidence effect, but higher than the 7.42% increase induced by the dominance effect. Finally, OV_DOM has the highest positive effect on the –DD value, since it contributes an increase of 6.09% (0.2836 × 0.4057÷|-1.8899|), while the change is only 4.80% due to one-unit increase in the OV effect.

Table 4.6 Regression Results of CEO Overconfidence–Dominance on Bank Risk Taking

This table reports the regression estimation of CEO overconfidence–dominance effects on bank risk taking incentives. Models (1), (3), (5), (7), (9), and (11) show the OLS estimation of the CEO dominance factor on bank risk measurements, including total risk, systematic risk, idiosyncratic risk, earnings volatility, credit risk, and default risk. Models (2), (4), (6), (8), and (12) report the fixed effect regression results of CEO overconfidence–dominance effects on total risk, systematic risk, idiosyncratic risk, earnings volatility, and default risk, while model (10) shows the regression result of the relation between CEO overconfidence–dominance and bank credit risk taking under the random effect estimation approach. The using of a fixed effect or random effect model is based on suggestions from the Hausman test, which is also presented in the table. All the OLS regressions are robust with the White heteroskedasticity estimator of variance. The p-values are shown in brackets, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. A detailed definition of each variable is presented in Table 4.1.

Variables	Total Risk		Systematic Risk		Idiosyncratic Risk		Inverse Z-Score		NPL(%)		-DD	
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)	Model(10)	Model(11)	Model(12)
OV_DOM	0.0019	0.0011	0.0695	0.0612	0.0016	0.0009	5.5415	3.4403	0.2050	0.2511	0.2160	0.2836
	[0.000]***	[0.002]***	[0.000]***	[0.003]***	[0.000]***	[0.013]**	[0.001]***	[0.057]*	[0.000]***	[0.000]***	[0.011]**	[0.017]**
SIZE	-0.0031	-0.0066	0.3758	0.2533	-0.0045	-0.0073	2.2842	7.7442	0.1511	0.1365	-1.5578	-2.4661
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.022]**	[0.152]	[0.000]***	[0.000]***	[0.000]***	[0.000]***
ROE	-0.0305	-0.0132	-0.0640	-0.1935	-0.0301	-0.0129			0.1498	-0.0261	-3.2044	-2.4193
	[0.000]***	[0.000]***	[0.548]	[0.072]*	[0.000]***	[0.000]***			[0.421]	[0.829]	[0.000]***	[0.001]***
CV	0.0012	0.0001	0.0808	0.0349	0.0010	0.0004	-3.1699	-2.7529	-0.0459	-0.0501	0.7994	0.5355
	[0.001]***	[0.781]	[0.000]***	[0.007]***	[0.006]***	[0.851]	[0.000]***	[0.013]**	[0.005]***	[0.000]***	[0.000]***	[0.000]***
OP	0.0239	0.0091	-0.0056	-0.1771	0.0245	0.0103	50.1483	12.4418	0.1539	0.3584	0.8726	2.2158
	[0.000]***	[0.003]***	[0.940]	[0.353]	[0.000]***	[0.001]***	[0.001]**	[0.463]	[0.180]	[0.032]**	[0.129]	[0.055]*
lnBS	-0.0011	-0.0007	-0.0454	0.0182	-0.0010	-0.0008	-8.2832	1.9625	-0.1770	-0.0849	0.1918	0.6827
	[0.007]***	[0.334]	[0.016]**	[0.661]	[0.009]***	[0.243]	[0.000]***	[0.589]	[0.000]***	[0.027]**	[0.160]	[0.003]***
CA	-0.0195	0.0045	0.3447	-0.2583	-0.0213	0.0042	-37.7027	-45.2483	0.0790	0.1350	-3.4347	6.0040
	[0.000]***	[0.349]	[0.007]***	[0.343]	[0.000]***	[0.367]	[0.025]**	[0.077]*	[0.798]	[0.590]	[0.022]**	[0.000]***
MERGER	0.0017	0.0007	-0.0088	-0.0037	0.0018	0.0008	3.8749	0.5866	-0.0521	-0.0090	0.2519	0.0389
	[0.021]**	[0.039]**	[0.686]	[0.855]	[0.012]**	[0.017]**	[0.080]*	[0.733]	[0.036]**	[0.703]	[0.032]**	[0.733]

Constant	0.0306 [0.000]***	0.0394 [0.000]***	-0.6013 [0.000]***	-0.0895 [0.686]	0.0343 [0.000]***	0.0403 [0.000]***	76.3269 [0.000]***	37.3557 [0.059]*	0.5932 [0.000]***	0.4206 [0.000]***	-0.0942 [0.806]	0.9377 [0.457]
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Fixed effect	no	yes	no	yes	no	yes	no	yes	no	no	no	yes
Random effect	no	no	no	no	no	no	no	no	no	yes	no	no
R^2	0.3974		0.4904		0.4710		0.1124		0.0791		0.3973	
R^2-within		0.4106		0.3785		0.4648		0.1647		0.0605		0.4981
R^2-between		0.2254		0.4298		0.3451		0.0040		0.0839		0.2622
R^2-overall		0.3010		0.4404		0.3988		0.0676		0.0724		0.346
F-Statistics	86.95***	115.56***	208.49***	101.04***	115.48***	114.05***	8.56***	28.08***	13.25***	-	102.66***	141.56***
Wald Chi	-	-	-	-	-	-	-	-	-	240.66***	-	-
Hausman	-	114.32***	-	151.96***	-	117.00***	-	24.99*	-	16.22	-	50.85***
N	3579	3579	3579	3579	3579	3579	2948	2948	3522	3522	3134	3134

Overall, the multivariate regression results generally support the empirical predictions. For the overconfidence or dominance effect, CEO overconfidence has a marginally significant and positive effect on total risk and idiosyncratic risk, whereas CEO dominance is only positively related with systematic risk. Dominating CEOs have a significantly positive effect on earnings volatility, as measured by the inverse Z-score. Either overconfident or dominating CEOs are positively related with credit risk. CEO overconfidence has a marginally positive impact on default risk, while no evidence is found for a managerial dominance effect in this respect. The joint CEO overconfidence–dominance attribute is significantly related with risk taking in all models of bank risk measures. Compared to CEO overconfidence and CEO dominance factors, the joint CEO overconfidence–dominance factor shows the largest economic effect on total risk, systematic risk, idiosyncratic risk, and default risk.

4.6 Robustness and additional tests

4.6.1 CEO overconfidence, CEO power, and high- and low-charter banks

Many empirical studies have found evidence on the important role of bank charter value in excessive risk taking. Keeley (1990) and Demsetz et al. (1997) show that firms with higher charter value have lower risk-taking propensities, since they can be backed up by positive net present value projects and the opportunity cost of taking excessive risks is relative high. Since a higher charter value indicates a better

investment opportunity and thus a lower likelihood of business exit (Fortin et al., 2010), CEO overconfidence, dominance, and overconfidence–dominance effects may be diminished in firms with high charter value. To formally test for this effect, the original empirical sample is divided into two sub-samples using the full-sample median charter value as the classification benchmark. The OV, DOM, and OV_DOM factors are expected to still have a positive relation with risk measures, regardless that excessive risk taking is diminishing in banks with high charter value.

Table 4.7.1 displays the comparison analysis of OV, DOM, and OV_DOM effects on market-based risks between higher and lower charter value banks. Panel A of Table 4.7.1 shows the estimation results for high charter value banks. None of the OV, DOM, or OV_DOM factors show a significant relation with total risk or firm-specific risk. The only significant effect found is that overconfident–dominating CEOs in high charter value banks are associated with higher systematic risks (coefficient = 0.0795, p-value = 0.004). For the sample that contains low charter value banks, the coefficients of OV_DOM in relation to total risk and idiosyncratic risk are 0.0026 and 0.0020, respectively, both significant at 1%. Moreover, evidence also shows that overconfident CEOs can induce higher firm-specific risk.

Table 4.7.1 CEO Overconfidence, Dominance, and Overconfidence–Dominance Effects on Market-Based Risk for Banks with High and Low Charter Values

This table reports the estimation results of CEO overconfidence, dominance, and overconfidence–dominance effects on total risk, systematic risk, and idiosyncratic risk. Panels A and B show the regression results for high charter value and low charter value banks. Banks whose charter values are higher than the median sample level are regarded as high charter value banks, while the opposite is the case for the group of low charter value banks. All regression results are based on either the fixed effect or the random effect model suggested by the Hausman test statistics. The p-values are shown in brackets, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. A detailed definition of each variable is presented in Table 4.1.

Panel A. Banks with high charter value

Variables	Total Risk			Systematic Risk			Idiosyncratic Risk		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV	0.0001			0.0267			0.0001		
	[0.746]			[0.249]			[0.819]		
DOM		-0.0002			0.0408			-0.0003	
		[0.741]			[0.175]			[0.455]	
OV_DOM			0.0004			0.0795			0.0002
			[0.355]			[0.004]***			[0.897]
SIZE	-0.0033	-0.0033	-0.0034	0.3450	0.3606	0.3323	-0.0046	-0.0046	-0.0044
	[0.012]**	[0.011]**	[0.010]**	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
ROE	-0.0099	-0.0010	-0.0097	-0.0259	-0.0394	-0.0414	-0.0102	-0.0101	-0.01
	[0.000]***	[0.000]***	[0.000]***	[0.887]	[0.829]	[0.820]	[0.000]***	[0.000]***	[0.000]***
CV	0.0008	0.0006	0.0009	0.0837	0.0871	0.0823	0.0007	0.0008	0.0008
	[0.109]	[0.112]	[0.105]	[0.007]***	[0.009]***	[0.000]***	[0.111]	[0.107]	[0.117]
OP	0.0318	0.0307	0.0314	0.0886	0.0481	0.0237	0.033	0.0326	0.0322
	[0.000]***	[0.001]***	[0.000]***	[0.813]	[0.899]	[0.950]	[0.000]***	[0.000]***	[0.000]***
lnBS	-0.0009	-0.0010	-0.0009	0.0585	0.0504	0.0527	-0.0012	-0.0013	-0.0013
	[0.310]	[0.259]	[0.280]	[0.361]	[0.429]	[0.407]	[0.180]	[0.121]	[0.132]
CA	0.0194	0.0189	0.0196	-1.1951	-1.1423	-1.142	0.0205	0.0196	0.0202
	[0.005]***	[0.006]***	[0.004]***	[0.015]**	[0.021]**	[0.020]**	[0.002]***	[0.003]***	[0.002]***
MERGER	0.0003	0.0002	0.0003	0.0200	0.0197	0.0213	0.0003	0.0002	0.0002
	[0.479]	[0.480]	[0.492]	[0.452]	[0.455]	[0.419]	[0.362]	[0.546]	[0.571]
Constant	0.0252	0.0255	0.0255	-0.3586	-0.4216	-0.3123	0.0282	0.0289	0.0284
	[0.000]***	[0.000]***	[0.000]***	[0.319]	[0.240]	[0.384]	[0.000]***	[0.000]***	[0.000]***
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes
Random effect	no	no	no	no	no	no	no	no	no
R^2-within	0.4478	0.4501	0.4502	0.4817	0.4793	0.4820	0.5089	0.5070	0.5066
R^2-between	0.2846	0.2831	0.2848	0.4182	0.4361	0.4153	0.4091	0.4095	0.4091
R^2-overall	0.3474	0.3474	0.3482	0.4479	0.4481	0.4460	0.4538	0.4549	0.4549
F-Statistics	59.83***	60.85***	60.91***	68.57***	68.42***	69.21***	76.45***	76.44***	76.37***

Wald Chi	-	-	-	-	-	-	-	-	-
Hausman	54.88***	56.61***	56.24***	60.78***	62.58***	60.23***	45.22***	47.39***	47.69***
N	1779	1789	1790	1779	1789	1790	1779	1789	1790

Panel B. Banks with low charter value

Variables	Total Risk			Systematic Risk			Idiosyncratic Risk		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV	0.0009			0.0342			0.0010		
	[0.122]			[0.113]			[0.068]*		
DOM		0.0009			0.0335			0.0008	
		[0.160]			[0.269]			[0.204]	
OV_DOM			0.0026			0.0385			0.0020
			[0.000]***			[0.205]			[0.006]***
SIZE	-0.0087	-0.0086	-0.0033	0.3017	0.2785	0.2901	-0.0091	-0.0089	-0.0094
	[0.000]***	[0.000]***	[0.000]***	[0.001]***	[0.002]***	[0.001]***	[0.000]***	[0.000]***	[0.000]***
ROE	-0.0151	-0.0152	-0.0207	-0.2364	-0.2378	-0.2364	-0.0146	-0.0147	-0.0144
	[0.000]***	[0.000]***	[0.000]***	[0.081]*	[0.081]*	[0.082]*	[0.000]***	[0.000]***	[0.000]***
CV	-0.0009	-0.0008	-0.0009	-0.0244	-0.0383	-0.0368	-0.0009	-0.0007	-0.0008
	[0.264]	[0.374]	[0.257]	[0.554]	[0.347]	[0.368]	[0.306]	[0.431]	[0.316]
OP	0.0016	0.0005	0.0191	-0.0345	-0.1314	-0.0681	0.0023	0.0015	0.0020
	[0.751]	[0.919]	[0.000]***	[0.879]	[0.574]	[0.765]	[0.635]	[0.762]	[0.672]
lnBS	0.0007	0.0006	0.0001	0.0124	0.0158	0.0153	0.0006	0.0005	0.0005
	[0.543]	[0.577]	[0.930]	[0.825]	[0.780]	[0.787]	[0.609]	[0.638]	[0.652]
CA	-0.0071	-0.0065	-0.0186	0.2976	0.2853	0.2833	-0.0073	-0.0068	-0.0075
	[0.327]	[0.363]	[0.000]***	[0.369]	[0.389]	[0.392]	[0.295]	[0.329]	[0.279]
MERGER	0.0025	0.0024	0.0026	-0.0326	-0.0314	-0.0319	0.0026	0.0026	0.0026
	[0.001]***	[0.001]***	[0.000]***	[0.315]	[0.331]	[0.322]	[0.000]***	[0.000]***	[0.000]***
Constant	0.0436	0.0432	0.0295	-0.3847	-0.3303	-0.3595	0.0438	0.0433	0.0450
	[0.000]***	[0.000]***	[0.000]***	[0.211]	[0.276]	[0.238]	[0.000]***	[0.000]***	[0.000]***
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Fixed effect	yes	yes	no	yes	yes	yes	yes	yes	yes
Random effect	no	no	yes	no	no	no	no	no	no
R^2-within	0.4124	0.4151	0.4019	0.2739	0.2732	0.2727	0.4515	0.4532	0.4560
R^2-between	0.1769	0.1707	0.3173	0.4107	0.4196	0.4203	0.2677	0.2615	0.2689
R^2-overall	0.2602	0.2587	0.3889	0.3570	0.3665	0.3680	0.3274	0.3264	0.3332
F-Statistics	50.85***	51.54***	-	27.33***	27.32***	27.28***	59.62***	60.23***	61.00***
Wald Chi	-	-	1113.48***	-	-	-	-	-	-
Hausman	42.55***	25.99*	3.87	67.09***	46.92***	52.07***	54.56***	59.48***	43.48***
N	1783	1787	1789	1783	1787	1789	1783	1787	1789

Table 4.7.2 shows the estimation results regarding the effects of CEO cognitive bias and CEO power on the inverse Z-score, NPL, and –DD for high and low charter value banks. Only DOM has a significant relation with earnings volatility, indicating that powerful CEOs in banks with better investment opportunities may lead to more volatile earnings. The only significant coefficient for OV_DOM in relation to –DD for high charter value banks demonstrates that although high-growth firms are less reluctant to take excessive risks, they tend to induce greater default risk when powerful CEOs have cognitive bias simultaneously. Overall, after checking the sub-sample with high and low charter value banks, the OV, DOM, and OV_DOM CEO characteristic proxies are still significant in some particular risk aspects. On average, except for bank credit risk, CEO overconfidence and dominance have a limited impact on the risk taking of high charter value banks. Further, the most important finding is that CEOs who are both overconfident and dominating may have a significant effect on promoting risk taking. High charter value banks managed by overconfident–dominating CEOs tend to face higher systematic risks, higher NPL ratios, and higher –DD values. For low charter value banks, CEO overconfidence–dominance has a significant impact on total risks, firm-specific risks, and higher NPL ratios. This finding also shows that the cognitive bias of powerful CEOs affects different bank risk aspects conditional on bank charter value. Bank shareholders with better investment opportunities should especially take care of powerful and overconfident CEOs who may feel superior to their peers under better growth opportunities, and thus potentially increase risk-taking propensity.

Table 4.7.2 CEO Overconfidence, Dominance, and Overconfidence–Dominance Effects on Earnings Volatility, Credit Risk, and Default Risk for Banks with High and Low Charter Values

This table reports the estimation results of CEO overconfidence, dominance, and overconfidence–dominance effects on bank earnings volatility, credit risk, and default risk. Panels A and B present the regression results for high and low charter value banks, respectively. Variables of three CEO attributes are regressed separately under each risk proxy. All regression results are based on either the fixed effect or random effect model suggested by the Hausman test statistics. The p-values are shown in brackets, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. A detailed definition of each variable is presented in Table 4.1.

Panel A. Banks with high charter value

Variables	Inverse Z-Score			NPL(%)			-DD		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV	0.8521			0.2825			0.1628		
	[0.668]			[0.000]***			[0.141]		
DOM		4.4209			0.1499			0.0616	
		[0.083]*			[0.000]***			[0.662]	
OV_DOM			1.6725			0.2378			0.3062
			[0.482]			[0.000]***			[0.021]**
SIZE	49.4817	49.5085	49.3141	-0.0792	0.0413	-0.0332	-1.2016	-1.1415	-1.2561
	[0.000]***	[0.000]***	[0.000]***	[0.444]	[0.699]	[0.754]	[0.007]***	[0.013]**	[0.005]***
ROE				-0.0189	-0.0068	-0.0122	-2.1438	-2.1391	-2.1549
				[0.924]	[0.974]	[0.952]	[0.011]**	[0.011]**	[0.009]***
CV	-1.8707	-1.8336	-1.8738	-0.0541	-0.0253	-0.0377	0.4599	0.4784	0.4539
	[0.211]	[0.204]	[0.205]	[0.005]***	[0.078]*	[0.052]*	[0.000]***	[0.000]***	[0.000]***
OP	120.5144	115.7106	119.5183	-0.0122	-0.0147	-0.0569	4.8013	4.7882	4.5695
	[0.000]***	[0.000]***	[0.000]***	[0.976]	[0.973]	[0.892]	[0.013]**	[0.013]**	[0.017]**
lnBS	-6.7838	-6.8412	-6.8136	-0.0571	-0.0488	-0.0464	0.0937	0.0977	0.1052
	[0.203]	[0.198]	[0.201]	[0.413]	[0.501]	[0.516]	[0.755]	[0.745]	[0.725]
CA	-82.6076	-75.0380	-81.7861	-0.1668	-0.0554	-0.1329	7.0499	7.2142	7.3038
	[0.051]*	[0.077]*	[0.053]*	[0.755]	[0.921]	[0.808]	[0.003]***	[0.002]***	[0.002]***
MERGER	0.5599	0.4431	0.5539	0.0141	0.0084	0.0111	0.1851	0.1843	0.1843
	[0.801]	[0.841]	[0.803]	[0.632]	[0.781]	[0.711]	[0.134]	[0.136]	[0.135]
Constant	-100.3455	-102.8385	-99.7364	1.1212	0.6549	0.9699	-1.7107	-1.9521	-1.5411
	[0.000]***	[0.000]***	[0.000]***	[0.004]***	[0.107]	[0.016]*	[0.308]	[0.243]	[0.358]
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes
Random effect	no	no	no	no	no	no	no	no	no
R^2-within	0.2036	0.2056	0.2038	0.1053	0.0411	0.0614	0.5807	0.5800	0.5818
R^2-between	0.0015	0.0016	0.0016	0.0085	0.0394	0.0297	0.3738	0.3643	0.3721
R^2-overall	0.0125	0.0124	0.0127	0.0168	0.0422	0.0319	0.4687	0.4626	0.4656
F-Statistics	17.53***	17.75***	17.55***	8.60***	2.58***	4.78***	88.16***	87.90***	88.58***

Wald Chi	-	-	-	-	-	-	-	-	-
Hausman	95.06***	105.94***	97.79***	43.95***	42.57***	41.08***	30.58**	32.96**	33.84**
N	1474	1474	1474	1760	1760	1760	1567	1567	1567

Panel B. Banks with low charter value

Variables	Inverse Z-Score			NPL(%)			-DD		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV	-0.3111			0.2319			0.1673		
	[0.898]			[0.000]***			[0.363]		
DOM		-2.6839			0.0576			0.1749	
		[0.343]			[0.062]*			[0.399]	
OV_DOM			-2.5557			0.2446			0.1365
			[0.424]			[0.000]***			[0.589]
SIZE	38.9271	38.9661	39.2737	0.1792	0.1785	0.1723	-3.6212	-3.5638	-3.5609
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
ROE				-0.2383	-0.2489	-0.2117	-3.4031	-3.4163	-3.3982
				[0.136]	[0.128]	[0.190]	[0.010]***	[0.011]**	[0.010]***
CV	-8.6728	-8.8454	-8.5146	-0.1835	-0.1301	-0.1523	0.7093	0.7566	0.7421
	[0.019]**	[0.015]**	[0.020]**	[0.000]***	[0.005]***	[0.001]***	[0.013]**	[0.007]***	[0.009]***
OP	-25.7642	-21.3145	-25.0498	0.4327	0.4475	0.4101	0.0793	-0.1736	0.1296
	[0.234]	[0.335]	[0.247]	[0.026]**	[0.027]**	[0.036]**	[0.964]	[0.923]	[0.941]
lnBS	-3.5451	-3.5534	-3.5381	-0.0826	-0.0977	-0.0971	1.0731	1.0654	1.0606
	[0.489]	[0.488]	[0.490]	[0.104]	[0.058]*	[0.057]*	[0.005]***	[0.005]***	[0.006]***
CA	14.4376	14.6634	14.9077	-0.0521	-0.0802	-0.0507	4.5501	4.7956	4.6986
	[0.678]	[0.673]	[0.688]	[0.862]	[0.792]	[0.866]	[0.073]*	[0.059]*	[0.064]*
MERGER	-0.0504	-0.1013	-0.0259	-0.0369	-0.0241	-0.0303	0.0051	0.0165	0.0129
	[0.986]	[0.972]	[0.993]	[0.342]	[0.545]	[0.440]	[0.982]	[0.941]	[0.953]
Constant	-55.7806	-54.9678	-56.9492	0.4891	0.5364	0.5627	3.1505	2.9089	2.9687
	[0.012]**	[0.000]***	[0.000]***	[0.002]***	[0.001]***	[0.000]***	[0.147]	[0.175]	[0.169]
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Fixed effect	yes	yes	yes	no	no	no	yes	yes	yes
Random effect	no	no	no	yes	yes	yes	no	no	no
R^2-within	0.1177	0.1185	0.1183	0.0835	0.0402	0.0652	0.4747	0.4746	0.4744
R^2-between	0.0000	0.0000	0.0000	0.0808	0.0654	0.0807	0.2614	0.2583	0.2607
R^2-overall	0.0026	0.0024	0.0023	0.0730	0.0467	0.0606	0.2891	0.2883	0.2897
F-Statistics	8.78***	8.85***	8.83***	-	-	-	56.17***	56.16***	56.11***
Wald Chi	-	-	-	154.32***	83.41***	126.11***	-	-	-
Hausman	70.97***	150.32***	96.89***	20.26	24.7	22.06	60.84***	58.10***	58.56***
N	1474	1474	1474	1761	1761	1761	1567	1567	1567

4.6.2 Dynamic process estimation

4.6.2.1 One-year lagged CEO effect on risk taking

Although the univariate and multivariate analysis results in Section 4.5 generally report the positive effects of the CEO overconfidence, dominance, and joint overconfidence–dominance factors on bank risk taking, the omission of the dynamics from the models can lead to a potential weakness in the empirical analysis. It is likely that risk taking in a specific fiscal year t is not influenced by CEO overconfidence, dominance, or joint effects in the same fiscal year t contemporarily. According to Haq et al. (2010) and Fortin et al. (2010), such empirical regression models should be specified with a one-year lag for all independent variables. In this study, however, estimation of the models with a one-year lag may still bias the results because of possible CEO turnover during the whole empirical sample. For example, a new CEO of a particular firm can change the previous CEO's risk-taking attitude, and hence risk taking in the current fiscal year may not be correlated with the attributes of the ex-CEO. To alleviate such a bias, a sub-sample is established of CEOs who have had continuous tenure within the firm over the sample period. Therefore, in the estimation, the sub-sample contains some variables that do not vary significantly at the firm level, for example, CEO duality and board size. This is particularly so for the measurement of overconfidence, because the CEO will keep the title throughout his or her career life once identified as being overconfident. Smilar to Pathan (2009), the GLS random effect regression model is applied in performing specific robustness tests.

Table 4.8.1 reports the estimation results for all risk-taking proxies in relation to the one-year lagged independent variables. The relation between the excessive risk taking and CEO attributes (OV, DOM, OV_DOM) is presented in panel A. There is no statistically significant evidence to support the fact that the one-year lagged overconfidence or dominance factor has a positive effect on bank total risk, whereas joint CEO overconfidence–dominance has a significant and positive relation with total risk taking (coefficient = 0.0015, p-value = 0.080).

Control variables such as SIZE, ROE, CV, and OP are statistically significant in models (1) to (3), respectively. For bank systematic risk, the coefficients of OV, DOM, and OV_DOM are all statistically positive, indicating that bank systematic risk can be attributed to CEO cognitive bias and power illusion. No evidence is found that suggests any significant relations between idiosyncratic risk and the three main explanatory variables. Of the control variables, only SIZE has a significantly negative effect on next year's firm-level risk taking.

For the empirical findings in panel B of Table 4.8.1, no significant evidence can be found for the relation between the inverse Z-score and the overconfidence effect. However, the coefficients of DOM and OV_DOM with respect to the inverse Z-score are 8.9344 (p-value = 0.064) and 8.1784 (p-value = 0.078), respectively. This coefficient is larger than those reported in Tables 4.5 and 4.6 from the fixed effect estimation of the DOM and OV_DOM effects on earnings volatility. It seems that the

CEO dominance and overconfidence–dominance may significantly affect earnings volatility the next fiscal year. For the credit risk proxied by the NPL ratio, all positive coefficients of the OV, DOM, and OV_DOM variables are statistically significant. The last three columns in panel B of Table 4.8.1 are for the –DD values. Robust evidence is detected only for the relation between one-year lagged CEO overconfidence–dominance and bank default risk.

In sum, dynamic analysis using one-year lagged OV, DOM, and OV_DOM variables provides robust empirical findings that are at least partly supportive of testable predictions. In detail, the one-year lagged CEO overconfidence effect is positively related with systematic risk and credit risk. The one-year CEO dominance effect has a positive impact on systematic risk, earnings volatility, and credit risk. The most important finding is related to the joint effect, OV_DOM, since it is statistically significant throughout all risk measures except for idiosyncratic risk. Those findings from the multivariate analysis further confirm that risk taking is most significant when CEOs are both overconfident and dominating.

Table 4.8.1 One-Year Lagged CEO Overconfidence, Dominance, and Overconfidence–Dominance Effects on Bank Risk Taking

This table presents the one-year lagged relation between CEO overconfidence, dominance, overconfidence–dominance, and bank risk taking. The sub-sample contains the CEOs who have had continuous tenure within the firm over the whole sample period 1996–2006. Panel A is for market-based risk aspects, including bank total risk, systematic risk, and idiosyncratic risk. Panel B is for bank earnings volatility, credit risk, and default risk, respectively. All estimating regression models are controlled by the GLS random effect. All independent variables are lagged by one year (t - 1) on estimating risk taking in the next fiscal year (t). The p-values are shown in brackets, while *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Detailed information for all the variables is shown in Table 4.1.

Panel A. CEO overconfidence, dominance, and overconfidence–dominance effects on market-based risk taking

Variables	Total Risk			Systematic Risk			Idiosyncratic Risk		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV	0.0011			0.0832			0.0009		
	[0.134]			[0.019]**			[0.235]		
DOM		0.0013			0.0905			0.0010	
		[0.152]			[0.007]***			[0.278]	
OV_DOM			0.0015			0.0983			0.0013
			[0.080]*			[0.018]**			[0.128]
SIZE	-0.0023	-0.0026	-0.0025	0.2353	0.2094	0.2187	-0.0033	-0.0035	-0.0035
	[0.011]**	[0.005]***	[0.006]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
ROE	-0.0085	-0.0078	-0.0080	-0.7364	-0.7863	-0.7356	-0.0038	-0.0033	-0.0034
	[0.253]	[0.290]	[0.281]	[0.073]*	[0.055]*	[0.073]*	[0.590]	[0.641]	[0.629]
CV	0.0002	0.0003	0.0002	0.0736	0.0862	0.0768	-0.0004	-0.0003	-0.0004
	[0.776]	[0.618]	[0.732]	[0.005]***	[0.001]***	[0.003]***	[0.468]	[0.572]	[0.487]
OP	0.0241	0.0198	0.0229	0.4828	0.0458	0.3375	0.0209	0.0179	0.02
	[0.074]*	[0.096]*	[0.091]*	[0.313]	[0.926]	[0.479]	[0.116]	[0.194]	[0.137]
lnBS	-0.0011	-0.0010	-0.0011	0.0878	0.0931	0.0879	-0.0012	-0.0011	-0.0012
	[0.447]	[0.378]	[0.439]	[0.102]	[0.076]*	[0.097]*	[0.408]	[0.430]	[0.399]
CA	-0.0125	-0.0143	-0.0121	-0.3321	-0.5645	-0.3958	-0.0091	-0.0103	-0.0086
	[0.289]	[0.228]	[0.308]	[0.538]	[0.292]	[0.460]	[0.429]	[0.370]	[0.458]
MERGER	-0.0008	-0.0008	-0.0007	-0.0171	-0.0224	-0.0165	-0.0008	-0.0008	-0.0007
	[0.210]	[0.199]	[0.248]	[0.671]	[0.580]	[0.682]	[0.208]	[0.209]	[0.239]
Constant	0.0262	0.0273	0.0272	-0.2263	-0.1038	-0.1371	0.0285	0.0293	0.0293
	[0.000]***	[0.000]***	[0.000]***	[0.223]	[0.568]	[0.453]	[0.000]***	[0.000]***	[0.000]***
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
R^2-within	0.5145	0.5132	0.5165	0.3795	0.3752	0.3729	0.5693	0.5673	0.5712
R^2-between	0.3403	0.3553	0.3397	0.6851	0.7014	0.6920	0.4469	0.4542	0.4458
R^2-overall	0.4773	0.4791	0.4727	0.5305	0.533	0.5309	0.5565	0.5570	0.5526
Wald Chi	320.43***	319.72***	322.34***	361.24***	371.89***	365.41***	410.76***	410.04***	413.07***
N	352	352	352	352	352	352	352	352	352

Panel B. CEO overconfidence, dominance, and overconfidence–dominance effects on earnings volatility, credit risk, and default risk

Variables	Inverse Z-Score			NPL(%)			-DD		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV	2.193			0.1006			0.2551		
	[0.589]			[0.072]*			[0.451]		
DOM		8.9344			0.1489			-0.0005	
		[0.064]*			[0.049]**			[0.989]	
OV_DOM			8.1784			0.1529			0.7187
			[0.078]*			[0.019]**			[0.075]*
SIZE	0.0077	0.5731	0.6021	0.0521	0.0263	0.0298	-1.0881	-1.1242	-1.1791
	[0.319]	[0.089]*	[0.085]*	[0.485]	[0.729]	[0.690]	[0.008]***	[0.006]***	[0.004]***
ROE				0.5416	0.6209	0.5887	-3.9712	-3.8409	-3.8068
				[0.308]	[0.242]	[0.266]	[0.224]	[0.240]	[0.241]
CV	-3.2366	-2.8467	-3.3421	-0.0753	-0.0661	-0.0728	0.6408	0.6743	0.6186
	[0.215]	[0.265]	[0.192]	[0.050]**	[0.082]*	[0.056]*	[0.004]***	[0.002]***	[0.005]***
OP	-20.6264	-63.8311	-35.3749	1.4638	0.9825	1.3422	8.4599	8.4101	7.6847
	[0.762]	[0.370]	[0.601]	[0.161]	[0.367]	[0.198]	[0.167]	[0.181]	[0.204]
lnBS	-7.2739	-6.7832	-7.6109	-0.1841	-0.1952	-0.1987	0.7336	0.7413	0.7339
	[0.322]	[0.350]	[0.295]	[0.102]	[0.092]*	[0.089]*	[0.234]	[0.227]	[0.229]
CA	-27.5538	-34.3607	-28.3186	1.3814	1.3372	1.4117	-17.7023	-17.9527	-17.4879
	[0.681]	[0.605]	[0.670]	[0.149]	[0.162]	[0.139]	[0.002]***	[0.002]***	[0.003]***
MERGER	4.5599	4.1139	4.3056	-0.0011	-0.0035	0.0025	-0.2008	-0.1946	-0.1981
	[0.233]	[0.281]	[0.258]	[0.982]	[0.939]	[0.956]	[0.453]	[0.470]	[0.458]
Constant	88.4681	90.9575	90.2222	0.0851	0.1532	0.1859	-0.9298	-0.6949	-0.6052
	[0.000]***	[0.000]***	[0.000]***	[0.815]	[0.673]	[0.606]	[0.657]	[0.737]	[0.769]
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
R^2-within	0.2132	0.2285	0.2291	0.1251	0.1424	0.1349	0.5068	0.5054	0.5106
R^2-between	0.0046	0.0336	0.0272	0.0260	0.0147	0.0368	0.3976	0.3929	0.4164
R^2-overall	0.1189	0.1417	0.1398	0.0450	0.0303	0.0511	0.4099	0.4115	0.4127
Wald Chi	49.50***	54.88***	53.79***	31.22**	32.11**	33.65***	222.73***	220.88***	227.09***
N	263	263	263	299	299	299	260	260	260

4.6.2.2 System GMM

Although the GLS random effect estimation confirms three main hypotheses, the findings may still be potentially biased due to the endogeneity problem. Usually, the two-step least squares (2SLS) approach is applied to control for the possible endogeneity bias (Goetz, 2010). However, to achieve a more robust result, a more general approach, that is, the GMM, is adopted here.

Hansen (1982) first developed the GMM approach for econometric regressions. Unlike the strong dependence on particular moment conditions of population moment information, Hansen's GMM is more reliable, based on any moment conditions and providing robust parameter regression results. As a general form of the 2SLS estimation approach, GMM estimation is more efficient when there is no specific stochastic process and the instrument variable selected is not fully exogenous but predetermined (Ziliak, 1997). Further, two essential studies on instrumental variable estimations on dynamic panel data by Arellano and Bover (1995) and Blundell and Bond (1998) recognize the transformation process in the panel data model and introduce the systematic approach that solves the weak property of the first-differenced GMM estimator.

Applying system GMM as a robustness test has several advantages. First, it is able to alleviate the substantial lost data variation problem, which is caused by the

information absent from the predetermined instrumental variables while the new orthogonal deviation transformation process can provide more consistent and efficient estimations than the 2SLS approach does when estimation errors do not follow an independent identical distribution (i.i.d). Second, in comparison with OLS and 2SLS regression methods, an important advantage of system GMM is that if lagged and differenced variables are not correlated with the error term, they are regarded as instrumental variables (Efendic et al., 2008). Third, system GMM is also more efficient and consistent than difference GMM, since it does not exclude unchanged observations and decreases the sample bias (Baltagi, 2005). Fourth, Roodman (2006) confirms the advantage of system GMM in estimating unbalanced panel data. Therefore, to explore the dynamic effects of CEO overconfidence, dominance, and overconfidence–dominance on risk taking, the system GMM model is selected.

Following Roodman (2006), the system GMM regression is performed on the sub-sample using the command *xtabond2* based on the software program STATA. Table 4.8.2 presents the system GMM estimation results of CEO overconfidence, dominance, and overconfidence–dominance effects on bank risk taking. Panel A of Table 4.8.2 shows the regression results for market-based risks. The OV and DOM factors have a significant impact only on promoting bank systematic risk. The coefficient of OV_DOM is significantly positive for bank total risk and systematic risk. The diagnostic test confirms the accuracy of the system GMM results through models (1) to (9) in panel A. First, the first Arellano–Bond autocorrelation is

statistically significant, while the second Arellano–Bond autocorrelation is insignificant with an error term, which indicates the efficiency of the systematic GMM approach. Second, Hansen's J overidentification test for the null hypothesis that the GMM estimation result is consistent and efficient cannot be rejected, which further confirms the validity of the instrumental variables. Panel B of Table 4.8.2 presents the system GMM regression of earnings volatility, credit risk, and default risk on CEO attributes. The OV factor is insignificant in promoting bank earnings volatility or the default risk. Here DOM is significantly and positively related with bank earnings volatility. The diagnostic test of model (2) in panel B of Table 4.8.2 suggests the model is well fitted. Coefficients of the OV_DOM proxy in the bank earnings volatility and default risk models are statistically positive, with both significant at the 10% level. None of the diagnostic tests reject models that are well behaved. However, unlike the prior finding (i.e., Table 4.8.1), no significant relations can be detected for the OV, DOM, and OV_DOM effects on bank credit risk from the system GMM regression models.

Table 4.8.2 Systematic GMM Estimation Results of CEO Overconfidence, Dominance, Overconfidence–Dominance and Bank Risk

This table shows the regression results of three kinds of CEO attributes on bank risk taking. The sub-sample contains CEOs who have had continuous tenure within the firm over the whole sample period 1996–2006. Panel A presents the estimating results of bank total risk, systematic risk, and idiosyncratic risk. Panel B reports regression results of bank earnings volatility, credit risk, and default risk. The Arellano–Bond AR(1) and AR(2) statistics are for the first and second differences to the regression residuals. The Hansen-J statistics are reported for testing the overidentifying problem. The p-values are shown in brackets, while *, **, and *** indicates significance at the 10%, 5%, and 1% levels, respectively. Detailed information for all the variables is shown in Table 4.1.

Panel A. Systematic GMM: CEO overconfidence, dominance, overconfidence–dominance effect on market-based risk taking

Variables	Total Risk			Systematic Risk			Idiosyncratic Risk		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV	0.0010			0.0931			0.0014		
	[0.151]			[0.069]*			[0.125]		
DOM		0.0017			0.0879			0.0011	
		[0.137]			[0.063]*			[0.277]	
OV_DOM			0.0014			0.1143			0.0009
			[0.075]*			[0.087]*			[0.299]
SIZE	-0.0023	-0.0029	-0.0026	0.1411	0.1149	0.1199	-0.0032	-0.0036	-0.0034
	[0.005]***	[0.001]***	[0.002]***	[0.005]***	[0.041]**	[0.029]**	[0.000]***	[0.000]***	[0.000]***
ROE	-0.0207	-0.0234	-0.0181	-0.7603	-0.9446	-0.8081	-0.0165	-0.0184	-0.0139
	[0.074]*	[0.033]**	[0.129]	[0.201]	[0.120]	[0.181]	[0.082]*	[0.098]*	[0.237]
CV	-0.0002	0.0002	-0.0001	0.0906	0.1144	0.0997	-0.0006	-0.0002	-0.0005
	[0.742]	[0.759]	[0.910]	[0.002]***	[0.000]***	[0.000]***	[0.355]	[0.722]	[0.498]
OP	0.0165	0.0148	0.0168	-0.5397	-0.7326	-0.7342	0.0193	0.0184	0.0205
	[0.387]	[0.387]	[0.399]	[0.594]	[0.502]	[0.491]	[0.189]	[0.267]	[0.285]
lnBS	0.0006	0.0005	0.0006	0.1887	0.1862	0.1849	0.0002	0.0001	0.0002
	[0.813]	[0.817]	[0.795]	[0.044]**	[0.047]**	[0.048]**	[0.925]	[0.934]	[0.920]
CA	-0.0435	-0.0524	-0.0511	-0.9125	-1.2308	-1.2017	-0.0391	-0.0481	-0.0473
	[0.074]*	[0.033]**	[0.041]**	[0.474]	[0.299]	[0.327]	[0.142]	[0.069]*	[0.077]*
MERGER	-0.0012	-0.0011	-0.0011	-0.0237	-0.0171	-0.0242	-0.0011	-0.0010	-0.0009
	[0.165]	[0.169]	[0.230]	[0.608]	[0.698]	[0.607]	[0.202]	[0.204]	[0.258]
Constant	0.0292	0.0301	0.0311	-0.0558	-0.0055	0.0968	0.0309	0.0337	0.0329
	[0.000]***	[0.000]***	[0.000]***	[0.900]	[0.916]	[0.833]	[0.000]***	[0.000]***	[0.000]***
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Wald Chi	532.25***	556.51***	414.61***	267.16***	374.47***	323.46***	398.69***	420.44***	344.33***
Arellano-Bond	-3.03	-3.04	-2.96	-3.54	-3.58	-3.47	-2.65	-2.64	-2.59
AR(1)	[0.002]***	[0.002]***	[0.003]***	[0.000]***	[0.000]***	[0.001]***	[0.008]***	[0.008]***	[0.009]***
Arellano-Bond	1.09	0.96	1.11	0.31	0.34	0.34	0.93	0.78	0.94
AR(2)	[0.277]	[0.339]	[0.269]	[0.761]	[0.734]	[0.735]	[0.355]	[0.434]	[0.345]
Hansen's J	45.97	38.82	46.76	43.53	40.41	39.28	43.55	37.43	37.70
Statistics	[0.971]	[0.949]	[0.966]	[0.811]	[0.902]	[0.900]	[0.679]	[0.713]	[0.777]
Number of Instruments	214	214	214	214	214	214	214	214	214
N	352	352	352	352	352	352	352	352	352

Panel B. Systematic GMM: CEO overconfidence, dominance, overconfidence–dominance effect on inverse Z-score, NPL(%) and -DD

Variables	Inverse Z-Score			NPL(%)			-DD		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)	Model(7)	Model(8)	Model(9)
OV	2.2041			0.1161			0.1578		
	[0.704]			[0.217]			[0.497]		
DOM		11.4753			0.0153			0.8541	
		[0.031]**			[0.690]			[0.217]	
OV_DOM			9.8115			0.1606			0.7397
			[0.085]*			[0.104]			[0.078]*
SIZE	1.8261	-0.1426	0.9071	0.0911	0.0557	0.0558	-1.6489	-1.8387	-1.5797
	[0.624]	[0.967]	[0.797]	[0.386]	[0.618]	[0.607]	[0.000]***	[0.000]***	[0.000]***
ROE				1.5043	1.4111	1.2341	-1.8703	-3.7936	-3.6154
				[0.182]	[0.198]	[0.304]	[0.679]	[0.458]	[0.445]
CV	-2.8299	-1.4376	-2.6381	-0.1053	-0.0998	-0.0927	0.5955	0.6863	0.6646
	[0.215]	[0.504]	[0.217]	[0.083]*	[0.079]*	[0.057]*	[0.013]**	[0.004]***	[0.001]***
OP	-23.6556	-40.1132	-44.5967	0.9551	1.1198	0.3697	-5.6302	-12.5463	-8.7666
	[0.333]	[0.018]**	[0.044]**	[0.279]	[0.317]	[0.688]	[0.440]	[0.155]	[0.218]
lnBS	-9.4377	-7.9633	-8.9191	-0.0573	-0.0742	-0.0579	3.0275	3.1628	2.3266
	[0.331]	[0.402]	[0.347]	[0.690]	[0.604]	[0.694]	[0.019]**	[0.017]**	[0.026]**
CA	54.2634	-5.2762	32.4716	0.5324	0.2084	-0.4719	-16.8877	-24.433	-20.7585
	[0.666]	[0.964]	[0.783]	[0.773]	[0.915]	[0.800]	[0.038]**	[0.032]**	[0.016]**
MERGER	5.2529	3.1886	3.3055	-0.0161	0.0113	-0.0237	-0.1877	-0.3511	-0.5911
	[0.666]	[0.539]	[0.538]	[0.733]	[0.808]	[0.628]	[0.621]	[0.230]	[0.037]*
Constant	74.7082	87.0295	81.5792	0.5307	0.7641	0.8243	-3.8994	-2.6486	-1.8883
	[0.020]*	[0.001]***	[0.004]***	[0.228]	[0.066]*	[0.047]**	[0.180]	[0.348]	[0.476]
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Wald Chi	25.32*	42.92***	38.97***	83.00***	72.33***	75.73***	610.82***	559.52***	578.21***
Arellano–Bond	0.77	-2.09	-1.78	-1.26	-0.74	-1.13	-0.89	-1.35	-1.81
AR(1)	0.438	[0.037]**	[0.076]*	[0.207]	[0.457]	[0.257]	[0.376]	[0.248]	[0.071]*
Arellano–Bond	1.12	1.17	1.38	-1.09	-1.42	-1.53	0.03	0.04	0.29
AR(2)	[0.212]	[0.244]	[0.168]	[0.277]	[0.155]	[0.125]	[0.978]	[0.969]	[0.735]
Hansen's J	13.98	21.26	15.73	23.76	24.46	21.23	23.51	26.79	21.89
Statistics	[0.479]	[0.504]	[0.791]	[0.754]	[0.926]	[0.988]	[0.649]	[0.753]	[0.899]
Number of Instruments	150	150	150	190	190	190	170	170	170
N	263	263	263	299	299	299	260	260	260

In short, the CEO overconfidence–dominance effects on bank risk-taking incentives, such as total risk, systematic risk, earnings volatility, and default risk, have been further confirmed using the system GMM estimation approach. CEO overconfidence is only significantly and positively related to bank systematic risk, while CEO dominance is positively related to bank systematic risk and earnings volatility, respectively. No significant evidence is found for the relations between the CEO attributes and bank idiosyncratic risk and credit risk.

4.7 Conclusion

This chapter explores CEO overconfidence, dominance, and overconfidence–dominance effects on promoting bank risk incentives. The previous literature suggests that overconfident CEOs underestimate risk uncertainty while overestimating their personal liabilities, thus leading to excessive risk taking. The psychological approach theory further maintains that dominating CEOs tend to take excessive risks since they are more likely to receive positive signals and invest more aggressively. Given that power acts in the first place, followed by managerial overconfidence, the joint influence of CEO overconfidence–cum-dominance can impose even stronger effects on bank risk taking.

Using unbalanced panel data of the US banking sector over 1996–2006, this study finds evidence that generally confirms the existence of the positive effects of CEO

overconfidence, dominance, and overconfidence–dominance on bank risk taking. In particular, the CEO overconfidence–dominance proxy is shown to have significant positive relations with all six measures of bank risk.

CEO overconfidence is positively related to total bank risk, idiosyncratic risk, credit risk, and default risk. CEO dominance is positively related with bank systematic risk, earnings volatility, and credit risk. Differences exist between banks with different charter values for these effects. In terms of market-based risk, CEO overconfidence–dominance is positively related with the systematic risk for high charter value banks while it has a positive relation with total risk and idiosyncratic risk for low charter value banks. CEO overconfidence has a significant positive relation with only the idiosyncratic risk of low charter value banks, while CEO dominance has no significant impact on determining bank total risk, systematic risk, or idiosyncratic risk. For the remaining three risk proxies, CEO overconfidence–dominance is positively related with the default risk for high charter value banks. CEO dominance has a direct relation to the earnings volatility of high charter value banks. All of these CEO attributes have a positive relation with credit risk for both high and low charter value banks.

Using a sub-sample that contains CEOs who have had continuous tenure in their respective firms throughout 1996–2006, the one-year lagged CEO overconfidence–dominance factor still has significant relations with all risk measures

except for the idiosyncratic risk. One-year lagged CEO overconfidence has positive effects on bank systematic risk and credit risk, while one-year lagged CEO dominance imposes positive effects on bank systematic risk, earnings volatility, and credit risk, respectively. Finally, when considering the possible endogeneity problem in the sub-sample of continuous CEOs from 1996 to 2006, the system GMM estimation further confirms the significant role of CEO overconfidence–dominance in promoting bank risk taking, including total risk, systematic risk, earnings volatility and default risk. CEO overconfidence is only positively linked with systematic risk while CEO dominance is positively related with the systematic risk and earnings volatility.

Overall, this chapter's findings provide a new interpretation for mixed empirical results in the previous literature regarding the relation between CEO attributes and banking risk taking activities. The current research shows that managerial overconfidence or managerial dominance has heterogeneous effects on bank risk taking. Conditional on the risk measures used, insignificant results on a particular type of bank risk do not necessarily mean CEO attributes will not affect other types of bank risk. Further, this research provides good evidence that individual power plays an important role in promoting risk-taking behaviour. In particularly, we show that overconfident and dominating CEOs have a higher risk propensity and lower risk perception. Bank shareholders should be more cautious in designing equity based compensation for such types of CEOs.

Chapter 5

Conclusion and Future Research

Growing evidence suggests that governance failures and behavioural biases in some financial institutions are among the main contributing factors to the global financial crisis that started in 2007. The intellectual challenges of understanding the complex interactions between bank governance and behavioural factors and the derivation of profound implications for the reform of bank governance have motivated this thesis. This research considers behavioural processes and dynamics in and around the boardroom in relation to common bank financial decisions, such as M&As, payout policies, and risk taking. Building upon the empirical results that overconfident, dominating, and especially overconfident-dominating bank CEOs have negative effects on the terms of bank finance and investment decisions, this thesis argues that managerial incentives should not be the only focus of bank governance and more consideration of managerial psychological aspects should be taken in the process of reforming bank governance. The sample period is from 1996 to 2006, the crucial period in the run-up to the financial crisis. Included in the sample are a large number of American banks, selected because the American banking industry is arguably the most dynamic in the world of banking and finance and the problems of some American banks are generally believed to have been a primary source of the financial crisis. In addition, the American banking market is generally regarded as

informationally efficient. This allows the current research to assume away the irrationality of banking clients and to adopt the irrational manager's approach.

The central concerns of the irrational manager's approach are the biases of optimism and overconfidence. Under their influence, managers overvalue their firms or believe their firms to be undervalued, tend to make overinvestments from internal resources, and prefer internal to external funding. In the context of banks, these biases ultimately encourage excessive risk taking. This leads the current thesis to focus on the overconfidence bias of bank CEOs.

The peculiarities of banks warrant this research to consider a further aspect of bank CEO's perceptual distortion in the situation where a CEO shares a dual role in the board and owns the centralized control power with too much deference from other directors. Banks are powerful institutions, but this in itself is influenced by the power structure in bank boardrooms, which hold sway over bank direction and control. Therefore, the case of governance structure where a bank's CEO dominates the boardroom is considered. In a further step, the thesis goes deeper to study the extreme case where CEOs are both overconfident and dominating. This is intended to highlight the vital role that behavioural factors play in bank governance particularly in a financial system such as the USA's that is capital market oriented. In such a system, bank CEOs assume a dominant role in controlling the boards which are supposed to regulate CEOs and other bank managers.

Overall, CEO overconfidence, dominance, and joint overconfidence–dominance are examined in this study of their effects on bank mergers, bank payout policy, and bank risk taking behaviour. Investigating the effects of managerial attributes on bank takeovers in a sample of 100 US bank mergers over the period 1996–2006, this research finds that acquiring banks suffer a significant loss of value, while target banks enjoy significant gains. The role of managerial attributes in the process is examined by linking abnormal returns to CEO overconfidence, dominance, and overconfidence–dominance factors. The results show that dominating and overconfident–dominating CEOs of target banks add wealth to target shareholders, while acquiring CEOs with these three attributes would significantly reduce the wealth of acquiring shareholders. For the synergistic value of merged banks, overconfident, dominating, and overconfident–dominating acquiring CEOs are negatively associated with combined abnormal returns, whereas target CEOs have an insignificant relation with the merged synergistic value. Neither the negative abnormal returns earned by the bidder nor the synergistic value losses can be attributed to the bad quality of mergers undertaken by the acquiring CEOs who have judgemental biases. Overconfident, dominating, and overconfident–dominating CEOs of acquiring banks are more likely to conduct diversifying mergers that prove to destroy shareholders value.

Having controlled the sample selection bias using the two-step Heckman correction process, CEO overconfidence, dominance, and overconfidence–dominance effects are found to be insignificant in relation to target-side abnormal returns. Only the CEO overconfidence–dominance effect is significant for its negative association to bidder-side abnormal returns. Again, the largest loss in synergistic value occurred for mergers conducted by overconfident–dominating acquiring CEOs, while CEO overconfidence alone as an influencing factor has insignificant effects. Finally, post-merger performance is discussed over one-, two-, and three-year event windows through the Fama–French three-factor model. Results confirm that mergers conducted by overconfident, dominating, and overconfident–dominating CEOs significantly underperform those conducted by non-overconfident–dominating CEOs in the first and second years after the mergers are announced.

The effects of managerial cognitive and psychological biases on bank payout policy are another major concern. Given the phenomenon of disappearing dividends, research into the substitutability between dividends and share repurchases finds only ambiguous evidence. According to the signalling hypothesis, managers use dividends as a signal for operation performance. Once the dividends are distributed, it is difficult for managers to decrease the dividends, since this behaviour may be interpreted as sending a signal of poor performance to outside investors. However, this thesis finds that overconfident, dominating, and overconfident–dominating CEOs are reluctant to

pay dividends. In particular, overconfident–dominating CEOs are more likely to buy back shares from the open market. The main reason is that overconfident–dominating CEOs tend to overestimate their firms' performances and future investment opportunities and hence believe that it is more economical for them to buy back shares that are currently undervalued. As a result, CEO overconfidence–dominance imposes the largest negative effect on dividend payouts and total payout ratios. Interestingly, the overconfidence and overconfidence–dominance effects on dividend payouts are diminishing for banks with lower information asymmetry and more investment opportunities.

CEO overconfidence, dominance, and overconfidence–dominance impacts on corporate payouts are further tested when the tax effect is controlled. Two sub-samples, namely, before the tax change period (2000–2002) and after (2004–2006), are constructed based on the 2003 Jobs and Growth Tax Relief Reconciliation Act. Results show that only CEO overconfidence shows a significant and negative relation with the dividend payout ratio in both periods, while CEO overconfidence–dominance has a negative effect on dividend payouts in the period prior to the 2003 Tax Act. Finally, based on quarterly dividend-changing information from the CRSP dataset, no supportive evidence of a market surprise effect (positive abnormal returns) can be found for dividend-increasing announcements by overconfident CEOs, dominating CEOs, and overconfident–dominating CEOs.

Using the unbalanced panel data of US banks and BHCs, this thesis investigates the relation between banks' risk taking when CEOs are overconfident, dominating, and overconfident–dominating, respectively. The research finds that better incentive alignment between shareholders and CEOs who have behavioural biases can lead to abusive risk taking and thus adversely affect shareholder value. In particular, the results show that systematic risk and earnings volatility in the banking sector increased dramatically before the financial crisis. Further testing the outcome conditional on CEOs who are overconfident, dominating, and overconfident–dominating, respectively, yields results that indicate that CEO dominance and overconfidence–dominance have an inverse relation with the bank systematic risk, but these two factors' correlation with bank earnings volatility is positive. In high charter value banks, the joint effect of CEO overconfidence–dominance tends to lead these banks to take higher levels of systematic risk. CEO dominance alone has a significantly positive impact on the earnings volatility for these banks.

This study also considers other bank-related risk measures, such as total risk, idiosyncratic risk, credit risk, and default risk. Several important findings are obtained. First, overconfident CEOs lead to low charter value banks taking higher levels of idiosyncratic risk. The level of CEO overconfidence is positively associated with credit risk in both high and low charter value banks. Second, CEO dominance impacts only on banks' credit risk, with a significant and positive relation between the two.

Finally, overconfident–dominating CEOs are positively related to total risk and idiosyncratic risk for low charter value banks. This joint effect is also found to be positively related to default risk in high charter value banks and to credit risk in both high and low charter value banks. The significant effects of CEO overconfidence–dominance are robust to dynamic panel data analysis.

Certain areas of future research may prove fruitful. First, the effects of managerial cognitive bias on the earnings management of banks are still unclear. Theoretically, overconfident, dominating, and overconfident–dominating CEOs can manipulate earnings forecasts and thus confound the financial information for outside investors. Hribar and Yang (2010) investigate whether overconfident CEOs affect earnings management and show that overconfident CEOs are more likely to announce income-increasing forecasts. However, these authors do not consider the banking industry specifically. For the banking industry, Biurrun (2010) suggests it is where earnings management is the most problematic issue relative to other industries, and a common occurrence for bank CEOs to manipulate earnings information, thus creating challenges to the regulator.

Second, Kashyap (2010) indicates that financial firms with the worst performance in the recent financial crisis are worth further investigation. It would be interesting to examine what happened to troubled firms such as Bear Stearns, Lehman Brothers, and Merrill Lynch in comparison to other best practice financial firms. A promising area

of research in this regard comprises team psychological biases of top executive managers, including CEOs, CFOs, and COOs. The effects of such team psychological biases are conspicuously under-researched for these financially troubled firms. For other aspects of corporate governance, including executive compensation in terms of amount and structure, such research may also find many applications. Management team overconfidence can exert even bigger effects on bank operation decisions, such as decisions over investment and risk management activity. Insights from investigating the long time series data of team overconfidence can better our understanding of not only behavioural corporate finance and governance, but also the fundamental causes of the global financial crisis, since research directly covers financially troubled banking firms.

Third, potential psychological conflicts between managers and shareholders have not been adequately studied in the prior literature. By way of assuming the American banking market is informationally efficient, this thesis concentrates on the irrationality of banking management. This irrational manager's approach is taken at the expense of ignoring the possibility that investors can be irrational in reality as well. Indeed, if one can look at the overconfidence issue for both the bank shareholder and management, the research could be richer and more realistic. One obstacle in this regard may arguably be the availability of data on shareholder overconfidence. Actually, if one uses institutional investors as a proxy for banking shareholders, the information of these share-holding institutions' CEOs is available; hence analysis of

both the investors and managers irrationality can be performed. The excitement of such an investigation is that banks with both overconfident shareholders and managers can behave most aggressively and profound implications can be drawn for financial stability and regulatory efficiency.

Fourth, the most challenging task for future study is perhaps the development of new overconfidence measures. Recent literature on managerial overconfidence commonly adopts three overconfidence proxies, developed by Malmendier and Tate (2005), known as Holder 67, Netbuyer, and Longholder. Compared to Holder 67, the proxies of Netbuyer and Longholder have higher requirements for data quality. For example, to calculate Netbuyer, CEO tenure should be at least 10 years and thus it is hardly possible to examine the overconfidence effect on bank takeovers with Netbuyer, since target CEOs tend to have shorter tenures. Future studies may explore the possibility of whether the new overconfidence measures can be constructed from regression models. If the level data of optimal exercise of restricted stocks and options can be gathered through regressions on several firm-level attributes, then if the CEO's exercising level of stocks and options is lower than the estimated optimal level, he or she can be classified as being overconfident.

Appendix: Lists of Samples

A1. Sample Banks for Chapter Two

This appendix reports the detail information of 100 bank merger deals that are selected to the merger sample in Chapter Two. ANN is the merger announcement date which is presented in the first column. The second column to the fourth column provides the information of target firms, such as target firm name, TICKER symbol, and the standard industrial classification (SIC) Code, respectively. The fifth column to the seventh column refers to the information of acquiring banks including firm name, TICKER symbol and the SIC Code, respectively.

ANN	Target Name	TICKER	SIC CODE	Bidder Name	TICKER	SIC CODE
02/04/1996	HOME FEDERAL CORP MD	HFMD	6710	F & M BANCORP MD	FMBN	6020
21/06/1996	WESTPORT BANCORP INC	WBAT	6711	H U B C O INC	HUBC	6020
30/08/1996	BOATMENS BANCSHARES INC	BOAT	6710	NATIONSBANK CORP	NB	6712
12/09/1996	JEFFERSON BANCORP INC	JBNC	6711	COLONIAL BANCGROUP INC	CLBGA	6710
14/10/1996	INDEPENDENCE BANCORP INC NJ	IBNJ	6710	COMMERCE BANCORP INC NJ	COBA	6710
05/05/1997	FIRST MICHIGAN BANK CORP	FMBC	6711	HUNTINGTON BANCSHARES INC	HBAN	6711
24/06/1997	CENTRAL FIDELITY BANKS INC	CFBS	6711	WACHOVIA CORP NEW	WB	6719
15/08/1997	KEYSTONE HERITAGE GROUP INC	KHGI	6710	FULTON FINANCIAL CORP PA	FULT	6710
29/08/1997	BARNETT BANKS INC	BBI	6711	NATIONSBANK CORP	NB	6712
03/11/1997	COBANCORP INC	COBI	6710	FIRST BANCORPORATION OHIO INC	FBOH	6711
17/11/1997	CENTURY FINANCIAL CORP PA	CYFN	6020	CITIZENS BANCSHARES INC	CICS	6020
18/11/1997	PEOPLES FIRST CORP	PFKY	6710	UNION PLANTERS CORP	UPC	6021
01/12/1997	FIRST OF AMERICA BANK CORP	FOA	6712	NATIONAL CITY CORP	NCC	6712
08/12/1997	DEPOSIT GUARANTY CORP	DEPS	6711	FIRST AMERICAN CORP TN	FATN	6711
15/01/1998	HERITAGE FINANCIAL SVCS INC	HERS	6710	FIRST MIDWEST BANCORP DE	FMBI	6711
23/02/1998	MAGNA GROUP INC	MAGI	6710	UNION PLANTERS CORP	UPC	6021
31/03/1998	DIME FINANCIAL CORP	DIBK	6020	H U B C O INC	HUBC	6020
13/04/1998	N B D BANCORP INC	NBD	6711	BANC ONE CORP	ONE	6711
25/06/1998	1ST BANCORP	FBCV	6710	G A B BANCORP	GABC	6710
01/07/1998	FIRSTAR CORP NEW	FSR	6712	STAR BANC CORP	STB	6021
16/07/1998	SOUTHWEST NATIONAL CORP PA	SWPA	6710	FIRST COMMONWEALTH FINANCIAL CORP	FCF	6712
20/07/1998	CRESTAR FINANCIAL CORP	CF	6022	SUNTRUST BANKS INC	STI	6711
31/07/1998	EVERGREEN BANCORP INC DE	EVGN	6710	BANKNORTH GROUP INC DE	BKNG	6710
07/08/1998	HORIZON BANCORP INC	HZWV	6710	CITY HOLDING CO	CHCO	6710
14/12/1998	FIRST WESTERN BANCORP INC	FWBI	6710	CITIZENS BANCSHARES INC	CICS	6020
16/12/1998	VERMONT FINANCIAL SERVICES CORP	VFSC	6710	CHITTENDEN CORP	CNDN	6711
17/12/1998	WOOD BANCORP INC	FFWD	6020	CITIZENS BANCSHARES INC	CICS	6020
25/01/1999	CENTER BANKS INC	CTBK	6020	B S B BANCORP INC	BSBN	6020
01/02/1999	BROAD NATIONAL BANCORP	BNBC	6710	INDEPENDENCE COMMUNITY BANK CORP	ICBC	6710

12/04/1999	STATEWIDE FINANCIAL CORP	SFIN	6710	INDEPENDENCE COMMUNITY BANK CORP	ICBC	6710
19/04/1999	F & M BANCORPORATION INC	FMBK	6710	CITIZENS BANKING CORP MI	CBCF	6710
19/05/1999	ORANGE NATIONAL BANCORP	OGNB	6020	C V B FINANCIAL CORP	CVB	6022
02/06/1999	BANKNORTH GROUP INC DE	BKNG	6710	PEOPLES HERITAGE FINL GROUP INC	PHBK	6020
16/06/1999	C N B BANCSHARES INC	CNBE	6710	FIFTH THIRD BANCORP	FITB	6711
27/07/1999	K S B BANCORP INC	KSBK	6020	CAMDEN NATIONAL CORP	CAC	6021
30/07/1999	LETCHWORTH INDPT BCSHS CORP	LEBC	6710	TOMPKINS COUNTY TRUST CO NY	TCTC	6020
16/08/1999	J S B FINANCIAL INC	JSBF	6710	NORTH FORK BANCORPORATION NY INC	NFB	6022
16/08/1999	LAKE ARIEL BANCORP INC	LABN	6020	N B T BANCORP INC	NBTB	6020
20/08/1999	TRIANGLE BANCORP INC	TRBC	6710	CENTURA BANKS INC	CBC	6021
30/08/1999	RELIANCE BANCORP INC	RELY	6710	NORTH FORK BANCORPORATION NY INC	NFB	6022
07/09/1999	AMERICAN BANCSHARES INC FL	ABAN	6710	GOLD BANC CORP INC	GLDB	6710
18/10/1999	CAROLINA FINCORP INC	CFNC	6020	F N B CORP NC	FNBN	6710
10/01/2000	ANCHOR FINANCIAL CORP	AFSC	6710	CAROLINA FIRST CORP	CAFC	6710
07/02/2000	ONE VALLEY BANCORP WEST VA INC	OVWV	6710	SOUTHERN NATIONAL CORP NC	SNB	6021
10/04/2000	FIRST SECURITY CORP DE	FSCO	6711	NORWEST CORP	NOB	6711
17/05/2000	KEYSTONE FINANCIAL INC	KSTN	6711	FIRST EMPIRE STATE CORP	FES	6025
08/06/2000	CATSKILL FINANCIAL CORP	CATB	6020	TROY FINANCIAL CORP	TRYF	6710
06/07/2000	PENINSULA TRUST BANK INC VA	PNTB	6020	F & M NATIONAL CORP	FMN	6021
22/08/2000	SHORELINE FINANCIAL CORP	SLFC	6710	CHEMICAL FINANCIAL CORP	CHFC	6710
06/09/2000	MERCHANTS NEW YORK BANCORP INC	MBNY	6020	VALLEY NATIONAL BANCORP	VLY	6021
02/10/2000	U J B FINANCIAL CORP	UJB	6022	FLEET FINANCIAL GROUP INC NEW	FLT	6712
01/11/2000	IMPERIAL BANCORP	IBAN	6711	COMERICA INC	CMA	6712
20/11/2000	OLD KENT FINANCIAL CORP	OKEN	6711	FIFTH THIRD BANCORP	FITB	6711
31/01/2001	LAMAR CAPITAL CORP	LCCO	6719	HANCOCK HOLDING CO	HBHC	6710
22/02/2001	AMERICAN BANCORPORATION OH	AMBC	6711	WESBANCO INC	WSBC	6710
14/06/2001	B T FINANCIAL CORP	BTFC	6710	F N B CORP PA	FBAN	6710
19/06/2001	C N B FINANCIAL	CNBF	6710	N B T BANCORP INC	NBTB	6020
22/06/2001	BANK YORBA LINDA	BOYL	6020	BANCTEXAS GROUP INC	BTX	6022
26/06/2001	S J N B FINANCIAL CORP	SJNB	6710	MID PENINSULA BANCORP	MPBK	6710
31/07/2001	NATIONAL BANCSHARES CORP TEX	NBT	6021	INTERNATIONAL BANCSHARES CORP	IBOC	6020
16/08/2001	M C B FINANCIAL CORP	MCB	6021	BUSINESS BANCORP NEW	BZBC	6022
13/11/2001	FIRST FINANCIAL CORP RI	FTFN	6020	WASHINGTON TRUST BANCORP INC	WASH	6710
16/11/2001	SUN COMMUNITY BANCORP LTD	SCBL	6020	CAPITOL BANCORP LTD	CBCL	6710
20/11/2001	VISTA BANCORP INC	VBNJ	6710	UNITED NATIONAL BANCORP NJ	UNBJ	6025
22/07/2002	BIG FOOT FINANCIAL CORP	BFFC	6020	MIDWEST BANC HOLDINGS INC	MBHI	6710
23/09/2002	ACADIANA BANCSHARES INC LA NEW	ANA	6712	I S B FINANCIAL CORP LA	ISBF	6710
21/01/2003	FIRST VIRGINIA BANKS INC	FVB	6029	SOUTHERN NATIONAL CORP NC	SNB	6021
13/03/2003	F & M BANCORP MD	FMBN	6020	MERCANTILE BANKSHARES CORP	MRBK	6711

28/05/2003	EUFAULA BANCCORP INC	EUFA	6029	SOUTH ALABAMA BANCORPORATION INC	SABC	6710
12/08/2003	CALIFORNIA INDEPENDENT BANCORP	CIBN	6020	HUMBOLDT BANCORP	HBEK	6710
11/09/2003	FIRSTFED BANCSHARES INC	FFDP	6020	FIRST MIDWEST BANCORP DE	FMBI	6711
16/10/2003	PACIFIC CREST CAPITAL INC	PCCI	6020	SANTA BARBARA BANCORP CALIF	SABB	6020
27/10/2003	FLEET FINANCIAL GROUP INC NEW	FLT	6712	NATIONSBANK CORP	NB	6712
03/11/2003	SOUTHERN FINANCIAL FED SVNGS BK	SFFB	6021	PROVIDENT BANKSHARES CORP	PBKS	6710
11/12/2003	PATRIOT BANK CORP	PBIX	6021	SUSQUEHANNA BANCSHARES INC PA	SUSQ	6711
12/12/2003	G A FINANCIAL INC	GAF	6022	FIRST COMMONWEALTH FINANCIAL COR	FCF	6712
19/12/2003	GUARANTY SAVINGS & LOAN F A	GSLC	6020	UNION BANKSHARES CORP	UBSH	6710
24/12/2003	B S B BANCORP INC	BSBN	6020	PARTNERS TRUST FINL GROUP INC	PRTR	6712
08/01/2004	SECOND BANCORP INCORPORATED	SECD	6710	CITIZENS BANCSHARES INC	CICS	6020
14/01/2004	BANC ONE CORP	ONE	6711	CHEMICAL BANKING CORP	CHL	6025
17/02/2004	PROVIDENT BANCORP INC	PRBK	6711	NATIONAL CITY CORP	NCC	6712
11/03/2004	FIRST SHARES BANCORP INC	FBGI	6022	LINCOLN BANCORP IND	LNCB	6710
20/04/2004	SUN BANCORP INC	SUBI	6020	OMEGA FINANCIAL CORP	OMEF	6020
21/06/2004	SOUTHTRUST CORP	SOTR	6710	FIRST UNION CORP	FTU	6022
12/08/2004	PEOPLES HOME SAVINGS BANK	PHSB	6029	PENNFIRST BANCORP INC	PWBC	6025
25/08/2004	REDWOOD EMPIRE BANCORP	REB	6022	WESTAMERICA BANCORPORATION	WABC	6021
16/11/2004	PENNROCK FINANCIAL SERVICES CORP	PRFS	6021	COMMUNITY BANKS INC PA	CBKI	6710
04/05/2005	P F S BANCORP	PBNC	6021	PEOPLES COMMUNITY BANCORP INC	PCBI	6020
29/06/2005	1ST STATE BANCORP INC	FSBC	6021	CAPITAL BANK NC	CBKN	6020
30/06/2005	E F C BANCORP INC	EFC	6022	M A F BANCORP INC	MAFB	6710
06/07/2005	SOUTHWEST BANCORP OF TEXAS INC	SWBT	6710	ZIONS BANCORP	ZION	6711
12/07/2005	H U B C O INC	HUBC	6020	T D BANKNORTH INC	BNK	6022
26/07/2005	COLUMBIA BANCORP	CBMD	6710	FULTON FINANCIAL CORP PA	FULT	6710
31/08/2005	FIRST SAVINGS BANK FSB CLOVIS NM	FSBC	6020	FIRST STATE BANCORPORATION	FSNM	6020
19/09/2005	UNITED COMMUNITY BANCORP	UCBB	6022	F N B CORP NC	FNBN	6710
30/09/2005	CAVALRY BANCORP INC	CAVB	6021	PINNACLE FINANCIAL PARTNERS INC	PNFP	6021
09/11/2005	GOLD BANC CORP INC	GLDB	6710	MARSHALL & ILSLEY CORP	MRIS	6711
15/12/2005	FOOTHILL INDEPENDENT BANCORP	FOOT	6710	FIRST COMMUNITY BANCORP	FCBP	6712
16/05/2006	FALLBROOK NATIONAL BANK	FBRK	6020	FIRST COMMUNITY BANCORP	FCBP	6712
05/06/2006	FIRSTBANK CORP DE	FBNW	6021	STERLING FINANCIAL CORP	STSA	6021

A2. Sample Banks for Chapter Three

This appendix presents the information of sample banks that are adopted in the analysis of bank payout policy for Chapter Three. The first column reports the bank name while the second column shows the TICKER symbol of each firm. The last column is for the standard industrial classification (SIC) code.

Bank Name	TICKER	SIC CODE
SOUTH ALABAMA BANCORPORATION INC	SABC	6710
ONE VALLEY BANCORP WEST VA INC	OVWV	6710
TRANS FINANCIAL BANCORP INC	TRFI	6710
INDEPENDENT BANK CORP MA	INDB	6710
AMCORE FINANCIAL INC	AMFI	6710
TOMPKINS COUNTY TRUST CO NY	TCTC	6020
CENTER BANKS INC	CTBK	6020
T C F FINANCIAL CORP	TCB	6712
DIME FINANCIAL CORP	DIBK	6020
HORIZON BANK BELLINGHAM WA	HRZB	6020
GRANITE STATE BANKSHARES INC	GSBI	6710
BROAD NATIONAL BANCORP	BNBC	6710
F N B ROCHESTER CORP	FNBR	6710
F N B CORP PA	FBAN	6710
HARLEYSVILLE NATIONAL CORP PA	HNBC	6710
FIRST SAVINGS BANK FSB CLOVIS NM	FSBC	6020
UNITED SAVINGS BK FA GREAT FALLS	UBMT	6020
CHARTER ONE FINANCIAL INC	COFI	6710
HERITAGE FINANCIAL SVCS INC	HERS	6710
CENTRAL CO OPERATIVE BANK MA	CEBK	6020
FIRST CITIZENS BANCSHARES INC NC	FCNCA	6710
BANK SOUTH CAROLINA CHARLESTON	BKSC	6020
CAROLINA FIRST CORP	CAFC	6710
ANCHOR FINANCIAL CORP	AFSC	6710
PEOPLES HERITAGE FINL GROUP INC	PHBK	6020
FARMERS CAPITAL BANK CORP	FFKT	6710
COMMUNITY BANKS INC PA	CBKI	6710
FLAG FINANCIAL CORP	FLAG	6710
WEBSTER FINANCIAL CORP	WBST	6710
CENTENNIAL BANCORP	CEBC	6710
FIRST FEDERAL ALABAMA FSB JASPER	FAB	6022
FIRST LONG ISLAND CORP	FLIC	6710
STERLING FINANCIAL CORP WASH	STSA	6021
FIRST GEORGIA HOLDING INC	FGHC	6020
ORIENTAL BANKCORP	OBT	6020
CHESTER VALLEY BANCORP	CVAL	6710
FIRST BANCORP NC	FBNC	6710
WESBANCO INC	WSBC	6710
UNITED BANKSHARES INC	UBSI	6710
FIRST CHARTER CORP	FCTR	6710
NEWBERRY BANCORP INC	NEWB	6710
WASHINGTON TRUST BANCORP INC	WASH	6710
CITY HOLDING CO	CHCO	6710
HORIZON BANCORP IND	HBNC	6710
C P B INC	CPBI	6710
REPUBLIC BANCORP	RBNC	6710
ROYAL BANK OF PENN KING PRUSSIA	RBPAA	6020
SILICON VALLEY BANCSHARES	SIVB	6710
G B C BANCORP	GBCB	6710
PROVIDENT BANKSHARES CORP	PBKS	6710
PIKEVILLE NATIONAL CORP	PKVL	6710
SHORELINE FINANCIAL CORP	SLFC	6710
SURETY CAPITAL CORP	SRY	6719
CHEMICAL FINANCIAL CORP	CHFC	6710
OLD NATIONAL BANCORP	OLDB	6710
EXECUFIRST BANCORP INC	FXBC	6710
FIRST FINANCIAL CARIBBEAN CORP	FRCC	6029

AMERICAN BANCORPORATION OH	AMBC	6711
ARROW FINANCIAL CORP	AROW	6710
ASSOCIATED BANC CORP	ASBC	6711
BANPONCE CORP NEW	BPOP	6710
BANCORP HAWAII INC	BOH	6712
BANK GRANITE CORP	GRAN	6710
BRENTON BANKS INC	BRBK	6711
SYNOVUS FINANCIAL CORP	SNV	6021
C C B FINANCIAL CORP	CCBF	6710
C V B FINANCIAL CORP	CVB	6022
UNION BANK SAN FRANCISCO CA	UBNK	6023
COMPASS BANCSHARES INC	CBSS	6710
CENTRAL FIDELITY BANKS INC	CFBS	6711
CHITTENDEN CORP	CNDN	6711
CITY NATIONAL CORP	CYN	6712
COLONIAL BANCGROUP INC	CLBGA	6710
COMERICA INC	CMA	6712
COMMERCE BANCSHARES INC	CBSH	6711
STERLING BANCORP	STL	6021
CORESTATES FINANCIAL CORP	CFL	6021
CULLEN FROST BANKERS INC	CFBI	6711
DEPOSIT GUARANTY CORP	DEPS	6711
F & M NATIONAL CORP	FMN	6021
FIFTH THIRD BANCORP	FITB	6711
REGIONS FINANCIAL CORP	RGBK	6710
FIRST BANCORPORATION OHIO INC	FBOH	6711
FIRST AMERICAN CORP TN	FATN	6711
FIRST OF AMERICA BANK CORP	FOA	6712
TRUSTMARK CORP	TRMK	6711
FIRST COMMERCE CORP NEW ORLEANS	FCOM	6711
FIRST EMPIRE STATE CORP	FES	6025
FIRST FINANCIAL BANCORP OHIO	FFBC	6711
FIRST HAWAIIAN INC	FHWN	6710
FIRST INDIANA CORP	FISB	6020
FIRST MICHIGAN BANK CORP	FMBC	6711
FIRST MIDWEST BANCORP DE	FMBI	6711
STAR BANC CORP	STB	6021
FIRST SECURITY CORP DE	FSCO	6711
1ST SOURCE CORP	SRCE	6711
FIRST TENNESSEE NATIONAL CORP	FTEN	6711
FIRST UNION CORP	FTU	6022
FIRSTBANK ILLINOIS CO	FBIC	6711
NORWEST CORP	NOB	6711
FIRST REGIONAL BANCORP	FRGB	6710
HIBERNIA CORP	HIB	6021
HUNTINGTON BANCSHARES INC	HBAN	6711
IMPERIAL BANCORP	IBAN	6711
INDEPENDENT BANKSHARES INC	IBKS	6710
INTERCHANGE FINANCIAL SRVCS CORP	ISB	6022
JEFFERSON BANKSHARES INC	JBNK	6711
CITICORP	CCI	6711
FLEET FINANCIAL GROUP INC NEW	FLT	6712
CHEMICAL BANKING CORP	CHL	6025
MORGAN J P & CO INC	JPM	6711
BANKERS TRUST NY CORP	BT	6025
WELLS FARGO & CO	WFC	6025
WACHOVIA CORP NEW	WB	6719
MAGNA GROUP INC	MAGI	6710
U J B FINANCIAL CORP	UJB	6022
MARSHALL & ILSLEY CORP	MRIS	6711
SIGNET BANKING CORP	SBK	6025
BANK OF BOSTON CORP	BKB	6711

FIRST VIRGINIA BANKS INC	FVB	6029
MERCANTILE BANCORPORATION INC	MTL	6022
MERCANTILE BANKSHARES CORP	MRBK	6711
MERCHANTS NEW YORK BANCORP INC	MBNY	6020
FIRSTAR CORP NEW	FSR	6712
GOLDEN WEST FINANCIAL CORP	GDW	6711
MID AM INC	MIAM	6022
MID AMERICA BANCORP	MAB	6712
REPUBLIC NEW YORK CORP	RNB	6711
NATIONAL BANCORP AK	NBAK	6710
NATIONAL CITY BANCORPORATION	NCBM	6711
NATIONAL CITY CORP	NCC	6712
NATIONAL COMMERCE BANCORPORATION	NCBC	6711
N B D BANCORP INC	NBD	6711
NATIONAL PENN BANCSHARES INC	NPBC	6711
NORTH FORK BANCORPORATION NY INC	NFB	6022
NORTHERN TRUST CORP	NTRS	6710
BANKAMERICA CORP	BAC	6711
OLD KENT FINANCIAL CORP	OKEN	6711
MELLON BANK CORP	MEL	6711
NATIONSBANK CORP	NB	6712
P N C BANK CORP	PNC	6021
BARNETT BANKS INC	BBI	6711
AMSOUTH BANCORPORATION	ASO	6711
PIEDMONT BANKGROUP INC	PBGI	6710
BANCTEXAS GROUP INC	BTX	6022
PROVIDENT BANCORP INC	PRBK	6711
KEYCORP NEW	KEY	6021
BANC ONE CORP	ONE	6711
RAMAPO FINANCIAL CORP	RMPO	6711
H U B C O INC	HUBC	6020
RIGGS NATIONAL CORP WASH D C	RIGS	6710
RIVER FOREST BANCORP	RFBC	6710
SUNTRUST BANKS INC	STI	6711
SEACOAST BANKING CORP FLA	SBCFA	6711
SOUTHERN NATIONAL CORP NC	SNB	6021
SOUTHTRUST CORP	SOTR	6710
STATE STREET BOSTON CORP	STBK	6711
SUSQUEHANNA BANCSHARES INC PA	SUSQ	6711
SUFFOLK BANCORP	SUBK	6710
FIRST MERCHANTS CORP	FRME	6710
FOOTHILL INDEPENDENT BANCORP	FOOT	6710
FIRST WESTERN BANCORP INC	FWBI	6710
NEW MILFORD BANK & TRUST CO	NMBT	6710
BANKNORTH GROUP INC DE	BKNG	6710
GREAT SOUTHERN BANCORP INC	GSBC	6710
M A F BANCORP INC	MAFB	6710
CIVIC BANCORP	CIVC	6710
1ST BANCORP	FBCV	6710
CAPITOL BANCORP LTD	CBCL	6710
SUBURBAN BANCSHARES INC	SBNK	6710
BANK NASHVILLE TENN	TBON	6020
CENTURY SOUTH BANKS INC	CSBI	6710
STATE BANCORP INC NY	STBC	6710
PEOPLES FIRST CORP	PFKY	6710
SECOND BANCORP INCORPORATED	SECD	6710
PENNFIRST BANCORP INC	PWBC	6025
J S B FINANCIAL INC	JSBF	6710
PARK NATIONAL CORP	PRK	6712
COMMERCIAL BANCORP OR	CBOR	6710
PINNACLE BANC GROUP INC	PINN	6710
PROFESSIONAL BANCORP	MDB	6712

SAVANNAH BANCORP INC	SAVB	6021
STATE FINANCIAL SERVICES CORP	SFSW	6710
SUMMIT FINANCIAL CORP	SUMM	6710
CENTURA BANKS INC	CBC	6021
CATHAY BANCORP INC	CATY	6710
NORTHRIM BANK	NRIM	6020
M B N A CORP	KRB	6712
HANCOCK HOLDING CO	HBHC	6710
INTERWEST SAVINGS BANK	IWBK	6020
SIERRA TAHOE BANCORP	STBS	6710
COMMUNITY FIRST BANKSHARES INC	CFBX	6710
REDWOOD EMPIRE BANCORP	REB	6022
A N B CORP	ANBC	6710
B O K FINANCIAL CORP	BOKF	6710
COOPERATIVE BANCSHARES INC	COOP	6710
NORTHERN STATES FINANCIAL CORP	NSFC	6710
WHITNEY HOLDING CORP	WTNY	6021
NATIONAL CITY BANCSHARES INC	NCBE	6710
INDIANA UNITED BANCORP	IUBC	6710
F & M BANCORP MD	FMBN	6020
FIRST FINANCIAL CORP IN	THFF	6022
N B T BANCORP INC	NBTB	6020
OMEGA FINANCIAL CORP	OMEF	6020
PEOPLES HOLDING CO	PHCO	6020
S & T BANCORP INC	STBA	6020
PRINCETON NATIONAL BANCORP INC	PNBC	6020
C B T CORP KY	CBTC	6021
HUDSON CHARTERED BANCORP INC	HCBK	6710
FIRST COMMONWEALTH FINANCIAL COR	FCF	6712
COLUMBIA BANKING SYSTEM INC	COLB	6022
FIRSTFED BANCSHARES INC	FFDP	6020
ANCHOR BANCORP WISCONSIN INC	ABCW	6025
U S T CORP	USTB	6710
MICHIGAN FINANCIAL CORP	MFCB	6710
STERLING WEST BANCORP	SWBC	6710
FIRST UNITED CORP	FUNC	6710
CASCADE FINANCIAL CORP	CASB	6710
STERLING BANCSHARES INC	SBIB	6710
AMBANC CORP	AMBK	6710
UNION PLANTERS CORP	UPC	6021
U M B FINANCIAL CORP	UMBF	6710
KANKAKEE BANCORP INC	KNKB	6021
M N B BANCSHARES INC	MNBB	6021
UNITED NATIONAL BANCORP NJ	UNBJ	6025
PEOPLES BANCORP INC	PEBO	6710
UNITED STATES BANCORP	USBC	6711
MADISON BANCSHARES GROUP LTD	MADB	6710
S Y BANCORP INC	SYBA	6710
UNITED BANCORP INC	UBCP	6710
UNION BANKSHARES LTD DEL	UBSC	6710
C B BANCSHARES INC	CBBI	6710
BANCFIRST CORP	BANF	6020
BANCFIRST OHIO CORP	BFOH	6712
CENTRAL VIRGINIA BANKSHARES INC	CVBK	6710
SUN BANCORP INC	SUBI	6020
TRICO BANCSHARES	TCBK	6710
MIDSOUTH BANCORP INC	MSL	6022
G A B BANCORP	GABC	6710
SUMMIT BANCSHARES INC	SBIT	6710
VISTA BANCORP INC	VBNJ	6710
CITIZENS BANCSHARES INC	CICS	6020
K S B BANCORP INC	KSBK	6020

CRESTAR FINANCIAL CORP	CF	6022
HORIZON BANCORP INC	HZWV	6710
MISSISSIPPI VALLEY BKSHARES INC	MVBI	6710
COBANCORP INC	COBI	6710
WOOD BANCORP INC	FFWD	6020
NSD BANCORP INC	NSDB	6020
FIRST LEESPORT BANCORP INC	FLPB	6710
FIRST COLONIAL GROUP INC	FTCG	6021
VILLAGE BANCORP INC	VBNK	6020
F & M BANCORPORATION INC	FMBK	6710
COMMERCIAL BANKSHARES INC	CLBK	6020
MERCHANTS BANCORP INC IL	MBIA	6020
QUAD CITY HOLDINGS INC	QCHI	6710
UNION BANKSHARES CORP	UBSH	6710
FIRST FINANCIAL BANKSHARES INC	FFIN	6710
FIRST STATE BANCORPORATION	FSNM	6020
OLD SECOND BANCORP INC	OSBC	6710
STATE BANCSHARES INC	SBNP	6021
PRESTIGE FINANCIAL CORP	PRFN	6710
LAKE ARIEL BANCORP INC	LABN	6020
SOUTHWEST BANCORP INC OKLA	OKSB	6021
PACIFIC CREST CAPITAL INC	PCCI	6020
REPUBLIC BANK CLEARWATER FL	REPB	6020
SOUTHERN FINANCIAL FED SVNGS BK	SFFB	6021
MASON DIXON BANCSHARES INC	MSDX	6710
VALLEY NATIONAL BANCORP	VLY	6021
CASCADE BANCORP	CACB	6710
HALLMARK CAPITAL CORP	HALL	6710
LETCHWORTH INDPT BCSHS CORP	LEBC	6710
BOSTON PRIVATE BANCORP INC	BPBC	6020
TRIANGLE BANCORP INC	TRBC	6710
LANDMARK BANCSHARES INC	LARK	6710
TEXAS REGIONAL BANCSHARES INC	TRBS	6710
METROBANCORP	METB	6020
BANK OF SUFFOLK	SFLK	6020
RELIANCE BANCORP INC	RELY	6710
A B C BANCORP	ABCB	6710
C N B FINANCIAL	CNBF	6710
CARROLLTON BANCORP	CRRB	6710
VERMONT FINANCIAL SERVICES CORP	VFSC	6710
F N B CORP NC	FNBN	6710
PEOPLES BANCTRUST CO INC	PBTC	6020
COLUMBIA BANCORP	CBMD	6710
COMMERCE BANK HARRISBURG PA	COBH	6020
F C N B CORP	FCNB	6710
FIRST VICTORIA NATL BK TEX NEW	FVNB	6020
PATRIOT NATIONAL BANK CONN	PNBK	6020
SCOTIABANK PERU SA	BWPSY	6021
MAHASKA INVESTMENT CO	OSKY	6710
BELMONT BANCORP	BLMT	6020
FIDELITY SOUTHERN CORP	LION	6710
WESTBANK CORP	WBKC	6710
ALABAMA NATIONAL BANCORP DEL	ALAB	6710
NEW ENGLAND COMMUNITY BNCP INC	NECB	6710
MONTEREY BAY BANCORP INC	MBBC	6710
CORNERSTONE BANK CONN	CBN	6022
FIRST WEST VIRGINIA BANCORP INC	FWV	6022
NATIONAL BANCSHARES CORP TEX	NBT	6021
COMMUNITY BANK SHRS INDIANA INC	CBIN	6710
FIRST SOUTHERN BANCSHARES INC	FSTH	6710
GUARANTY FED SVGS BANK MO	GFED	6022
I S B FINANCIAL CORP LA	ISBF	6710

A S B FINANCIAL CORP OH	ASBP	6710
UNITED SECURITY BANCORP WA	USBN	6020
F N B FINANCIAL SERVICES CORP	FNBF	6710
GUARANTY SAVINGS & LOAN F A	GSLC	6020
LOGANSPORT FINANCIAL CORP	LOGN	6710
MERIT HOLDING CORP	MRET	6710
YARDVILLE NATIONAL BANCORP	YANB	6020
BNCCORP	BNCC	6710
C C F HOLDING COMPANY	CCFH	6021
FRANKFORT FIRST BANCORP INC	FKKY	6710
HABERSHAM BANCORP INC	HABC	6710
WESTAMERICA BANCORPORATION	WABC	6021
U S TRUST CORP NEW	USTC	6022
AUBURN NATIONAL BANCORP	AUBN	6710
PENINSULA TRUST BANK INC VA	PNTB	6020
BOSTONFED BANCORP INC	BFD	6022
ALLEGIANT BANCORP INC	ALLE	6710
HARRODSBURG FIRST FINL BANCP INC	HFFB	6710
IMPERIAL THRIFT & LOAN ASSOC	ITLA	6022
OAK HILL FINANCIAL INC	OAKF	6710
STATEWIDE FINANCIAL CORP	SFIN	6710
FIRST SVGS BANK WASH BANCORP INC	FWWB	6710
PATRIOT BANK CORP	PBIX	6021
PIEDMONT BANCORP INC	PDB	6022
AREA BANCSHARES CORP NEW	AREA	6710
CAPITAL CORP OF THE WEST	CCOW	6710
USABANC COM INC	USAB	6710
WILMINGTON TRUST CORP	WILM	6020
AMERICAN BANCSHARES INC FL	ABAN	6710
ORANGE NATIONAL BANCORP	OGNB	6020
OHIO VALLEY BANC CORP	OVBC	6710
FALMOUTH COOPERATIVE BANK MASS	FCB	6021
G A FINANCIAL INC	GAF	6022
COMMUNITY FEDERAL BANCORP INC	CFTP	6710
CATSKILL FINANCIAL CORP	CATB	6020
RESOURCE BANK VIRGINIA BEACH VA	RBKV	6021
SANDY SPRING BANCORP INC	SASR	6710
EUFAULA BANCCORP INC	EUFA	6029
FIRST FEDERAL BANCSHARES ARK INC	FFBH	6710
FIRST FINANCIAL CORP RI	FTFN	6020
HARRINGTON FINANCIAL GROUP INC	HFGI	6710
PREMIER FINANCIAL BANCORP INC	PFBI	6710
SANTA BARBARA BANCORP CALIF	SABB	6020
BANK YORBA LINDA	BOYL	6020
COMM BANCORP INC	CCBP	6020
COMMERCIAL NATIONAL FINL CORP	CNAF	6020
CENTER BANCORP INC	CNBC	6020
CENTURY FINANCIAL CORP PA	CYFN	6020
SECURITY BANK CORP	SBCM	6022
ACADIANA BANCSHARES INC LA NEW	ANA	6712
P A B BANKSHARES INC	PAB	6021
ABIGAIL ADAMS NATL BANCORP INC	AANB	6710
CALIFORNIA INDEPENDENT BANCORP	CIBN	6020
HOME FINANCIAL BANCORP	HWEN	6710
SOUTHWEST GEORGIA FINANCIAL CORP	SGB	6022
GRAND PREMIER FINANCIAL INC	GPFI	6710
NORTH COUNTY BANCORP	NCBH	6020
R & G FINANCIAL CORP	RGFC	6710
SUN BANCORP INC	SNBC	6710
C B E S BANCORP INC	CBES	6710
FIRST M & F CORP	FMFC	6710
SECURITY BANK HOLDING COMPANY	SBHC	6020

MID PENINSULA BANCORP	MPBK	6710
BRITTON & KOONTZ CAPITAL CORP	BKBK	6710
CHESTER BANCORP	CNBA	6025
MARATHON FINANCIAL CORP	MFCV	6710
SUMMIT BANK CORP	SBGA	6710
ZIONS BANCORP	ZION	6711
UNIONBANCORP INC	UBCD	6710
COMMUNITY BANKSHARES INC S C	SCB	6022
CAROLINA FINCORP INC	CFNC	6020
GOLD BANC CORP INC	GLDB	6710
GOLETA NATIONAL BANK	GLTB	6020
BIG FOOT FINANCIAL CORP	BFFC	6020
FIRST MARINER BANCORP	FMAR	6710
WILSHIRE FINANCIAL SVCS GRP INC	WFSG	6710
BRIDGE VIEW BANCORP	BVB	6022
BANCO DE SANTIAGO	SAN	6022
FIRST NATIONAL CORP ORANGEBURG	FNC	6021
UNITY BANCORP INC	UBI	6022
SOUTHWEST BANCORP OF TEXAS INC	SWBT	6710
WAYNE BANCORP INC OHIO	WNNB	6710
CAPITAL CITY BANK GROUP	CCBG	6710
COMMUNITY CAPITAL CORP	CYL	6712
WINTRUST FINANCIAL CORPORATION	WTFC	6710
U S B HOLDING CO INC	UBH	6712
CODORUS VALLEY BANCORP INC	CVLY	6020
FIRSTFED BANCORP INC	FFDB	6022
FIRST STERLING BANKS INC	FSLB	6020
NEWSOUTH BANCORP INC	NSBC	6022
GREATER COMMUNITY BANCORP	GFLS	6022
OSWEGO CITY SAVINGS BANK	PBHC	6021
T I B FINANCIAL CORP	TIBB	6710
WESTERN BANCORP	WEBC	6710
PROVIDIAN FINANCIAL CORP	PVN	6021
COMMUNITY FIRST BANKING COMPANY	CFBC	6710
FIRSTBANK CORP DE	FBNW	6021
FALLBROOK NATIONAL BANK	FBRK	6020
BANK OF THE OZARKS INC	OZRK	6020
PEOPLES HOME SAVINGS BANK	PHSB	6029
SECOND NATIONAL FINANCIAL CORP	SEFC	6021
LAKELAND FINANCIAL CORP	LKFN	6020
SHORE BANK	SHBK	6710
BAR HARBOR BANKSHARES	BHB	6022
CENTURY BANCSHARES INC	CTRY	6710
FIRST INTERNATIONAL BANCORP INC	FNCE	6710
PRIME BANCSHARES INC	PBTX	6710
VIRGINIA COMMERCE BANK	VCBK	6020
CAMDEN NATIONAL CORP	CAC	6021
ANNAPOLIS NATIONAL BANCORP INC	ANNB	6710
SUCCESS BANCSHARES INC	SXNB	6710
BAY BANCSHARES INC	BAYB	6710
INTERVEST BANCSHARES CORP	INBA	6021
MID PENN BANCORP INC	MBP	6022
NORTHWAY FINANCIAL INC	NWFI	6710
BANK OF ESSEX VA	BSXT	6020
CAPITAL BANK NC	CBKN	6020
B T FINANCIAL CORP	BTFC	6710
GREAT PEE DEE BANCORP	PEDE	6710
S N B BANCSHARES INC GA	SNBJ	6022
C & F FINANCIAL CORP	CFFI	6710
EASTERN VIRGINIA BANKSHARES INC	EVBS	6020
LONG ISLAND COMMERCIAL BANK	LGCB	6020
MAHONING NATIONAL BANCORP INC	MGNB	6710

MYSTIC FINANCIAL INC	MYST	6021
NARA BANK NATIONAL ASSOC	NARA	6021
B N H BANCSHARES INC	BNHB	6710
SLADES FERRY BANCORP	SFBC	6020
STERLING FINANCIAL CORP	SLFI	6020
BANCORPSOUTH INC	BOMS	6710
SUSSEX BANCORP	SBB	6022
MIDWEST BANC HOLDINGS INC	MBHI	6710
REPUBLIC BANKING CORP FLA	RBCF	6710
BANK RHODE ISLAND	BARI	6020
CAVALRY BANCORP INC	CAVB	6021
COWLITZ BANCORPORATION	CWLZ	6710
GULF WEST BANKS INC	GWBK	6710
INTERNATIONAL BANCSHARES CORP	IBOC	6020
INDEPENDENCE COMMUNITY BANK CORP	ICBC	6710
NORWOOD FINANCIAL CORP	NWFL	6020
B S B BANCORP INC	BSBN	6020
E F C BANCORP INC	EFC	6022
LOCAL FINANCIAL CORP	LO	6021
COLONY BANKCORP INC	CBAN	6022
DEARBORN BANCORP INC	DEAR	6710
FRONTIER FINANCIAL CORP	FTBK	6710
NORTH VALLEY BANCORP	NOVB	6710
SOUTH UMPQUA STATE BANK	UMPQ	6020
CENTRAL COAST BANCORP	CCBN	6710
G L B BANCORP INC	GLBK	6710
GUARANTY BANCSHARES INC	GNTY	6710
JEFFERSONVILLE BANCORP	JFBC	6020
MAIN STREET BANCORP	MBNK	6022
SOUTHSIDE BANCSHARES INC	SBSI	6020
BRYN MAWR BANK CORP	BMTC	6710
COLORADO BUSINESS BANCSHARES INC	COBZ	6020
WASHINGTON BANKING COMPANY	WBCO	6710
POINTE FINANCIAL CORP	PNTE	6710
B W C FINANCIAL CORP	BWCF	6710
CARDINAL FINANCIAL CORP	CFNL	6020
C F S BANCORP INC	CITZ	6710
C N B BANCSHARES INC	CNBE	6710
F N B CORP VA	FNBP	6020
HOMESTEAD BANCORP INC	HSTD	6710
LIBERTY BANCORP INC NJ	LIBB	6710
MID STATE BANCSHARES	MDST	6710
P S B BANCORP INC	PSBI	6021
REPUBLIC BANCORP INC KY	RBCAA	6020
S V B FINANCIAL SERVICES INC	SVBF	6710
UNION FINANCIAL BANCSHARES INC	UFBS	6022
HERITAGE COMMERCE CORP	HTBK	6710
COMMUNITY INDEPENDENT BANK INC	INB	6021
SALISBURY BANCORP INC	SAL	6712
BANKFIRST CORP	BKFR	6710
MERRILL MERCHANTS BANCSHARES INC	MERB	6710
CAPE COD BK & TR CO HYANNIS	CCBT	6025
ADMIRALTY BANCORP INC	AAABB	6710
FIRST BUSEY CORP	BUSE	6020
C N B FINANCIAL CORP PA	CCNE	6710
COMMUNITY BANK N J FREEHOLD TWP	CBNJ	6020
BANCO SANTANDER PR SAN JUAN	SBP	6021
COLUMBIA BANCORP ORE	CBBO	6020
PROSPERITY BANCSHARES INC	PRSP	6710
U C B H HOLDINGS INC	UCBH	6712
WILSHIRE STATE BANK	WSBK	6020
E C B BANCORP INC	ECBE	6710

BANC CORP THE	TBNC	6710
UNITED FINANCIAL HOLDINGS INC	UFHI	6020
VAIL BANKS INC	VAIL	6710
LINCOLN BANCORP IND	LNCB	6710
METROCORP BANCSHARES INC	MCBI	6710
ONEIDA FINANCIAL CORP	ONFC	6710
LAMAR CAPITAL CORP	LCCO	6719
ALLIANCE FINANCIAL CORP NY	ALNC	6710
C N B INC	CNBB	6710
CRESCENT BANKING CO	CSNT	6020
G B & T BANCSHARES INC	GBTB	6712
CITIZENS BANKING CORP MI	CBCF	6710
ELDORADO BANCSHARES INC	ELBI	6020
EAST WEST BANCORP INC	EWBC	6710
TROY FINANCIAL CORP	TRYF	6710
AMERICAN NATIONAL BANKSHARES INC	AMNB	6021
FIRST BANCORP OF INDIANA INC	FBEI	6021
1ST STATE BANCORP INC	FSBC	6021
COMMERCE BANCORP INC NJ	COBA	6710
COMMUNITY BANK SYSTEM INC	CBSI	6710
FINANCIAL INSTITUTIONS INC	FISI	6020
TEAM FINANCIAL INC	TFIN	6710
BANK SIERRA PORTERVILLE CA	BSRR	6020
PRIVATEBANCORP INC	PVTB	6020
BERKSHIRE BANCORP INC	BERK	6022
FIRST NATIONAL LINCOLN CORP ME	FNLC	6020
SUN COMMUNITY BANCORP LTD	SCBL	6020
WESTERN SIERRA BANCORP	WSBA	6020
MERCANTILE BANK CORP	MBWM	6020
HAMILTON BANCORP INC FLORIDA	HABK	6710
U N B CORP OH	UNBO	6710
CITIZENS HOLDING CO	CIZ	6712
EAGLE BANCORP INC	EGBN	6020
ROME BANCORP INC	ROME	6712
PELICAN FINANCIAL INC	PFI	6021
M C B FINANCIAL CORP	MCB	6021
PREMIER BANCORP INC PA	PPA	6022
FAUQUIER BANKSHARES INC	FBSS	6020
MACATAWA BANK CORP	MCBC	6710
NATIONAL BANKSHARES INC	NKSH	6710
LAKELAND BANCORP INC	LBAI	6710
L N B BANCORP INC	LNBB	6710
EVERGREEN BANCORP INC DE	EVGN	6710
HUMBOLDT BANCORP	HBEK	6710
PEOPLES COMMUNITY BANCORP INC	PCBI	6020
N B C CAPITAL CORP	NBY	6712
GLACIER BANCORP INC	GBCI	6020
FIRST OAK BROOK BANCSHARES INC	FOBBA	6710
OLD POINT FINL CORP	OPOF	6021
FULTON FINANCIAL CORP PA	FULT	6710
PEOPLES FINANCIAL CORP	PFBX	6022
EXCHANGE NATIONAL BANCSHARES INC	EXJF	6021
FIRST COMMUNITY BANCORP	FCBP	6712
PACIFIC CONTINENTAL CORP	PCBK	6021
PACIFIC MERCANTILE BANCORP	PMBC	6712
UNITED SECURITY BANCSHARES INC	USBI	6712
AMERICAN COMMUNITY BNCSHRS INC	ACBA	6022
PENNROCK FINANCIAL SERVICES CORP	PRFS	6021
INDEPENDENT COMMUNITY BNKSHRS IN	ICBX	6021
AMERICAN RIVER HOLDINGS	AMRB	6022
MUTUAL BANKCORP	BKMU	6021
COMMONWEALTH BANKSHARES INC	CWBS	6021

PEAPACK GLADSTONE FINANCIAL CORP	PGC	6022
BRUNSWICK BANCORP	BRB	6712
HANMI FINANCIAL CORP	HAFC	6712
CENTERSTATE BANKS OF FLORIDA INC	CSFL	6712
EAST PENN BANK	EPEN	6021
INDEPENDENT BANK CORP MICH	IBCP	6710
COMMUNITY CAPITAL BANCSHARES INC	ALBY	6021
BUSINESS BANCORP NEW	BZBC	6022
FIRST COMMUNITY BANCSHARES INC	FCBC	6712
UNITED BANCSHARES INC	UBOH	6021
FIRST CITIZENS BANC CORP	FCZA	6022
SHORE BANCSHARES INC	SHBI	6021
FRANKLIN FINANCIAL CORP	FNFN	6021
MONROE BANCORP	MROE	6022
UNITED SECURITY BANK	UBFO	6021
GATEWAY BANK & TRUST CO	GBTS	6022
GLEN BURNIE BANCORP	GLBZ	6022
C N B C BANCORP	CNBD	6021
EVANS BANCORP INC	EVBN	6021
VINEYARD NATIONAL BANCORP	VNBC	6021
H D F C BANK LTD	HDB	6022
FIRSTBANK CORP	FBMI	6022
NORTH COUNTRY FINANCIAL CORP	NCFC	6022
TOWER FINANCIAL CORP	TOFC	6022
P F S BANCORP	PBNC	6021
RURBAN FINANCIAL CORP	RBNF	6022
PENNS WOODS BANCORP INC	PWOD	6022
IRWIN FINANCIAL CORP	IRWN	6710
ALLIANCE BANK CORP	ABVA	6022
COMMUNITY CENTRAL BANK CORP	CCBD	6022
1ST CONSTITUTION BANCORP	FCCY	6021
MADISON BANCSHARES INC	MDBS	6022
SOUTHERN COMMUNITY FINCL CORP	SCMF	6022
UNION BANKSHARES INC	UNB	6020
UNITED COMMUNITY BANCORP	UCBB	6022
VIRGINIA FINANCIAL GROUP INC	VFGI	6022
W G N B CORP	WGNB	6021
MILLENNIUM BANKSHARES CORP	MBVA	6021
AMERICAN BANK INC	AMBK	6022
UNITED COMMUNITY BANKS INC GA	UCBI	6022
KEYSTONE FINANCIAL INC	KSTN	6711
PARTNERS TRUST FINL GROUP INC	PRTR	6712
KEYSTONE HERITAGE GROUP INC	KHGI	6710
PINNACLE FINANCIAL PARTNERS INC	PNFP	6021
WEST BANCORPORATION INC	WTBA	6022
L S B BANCSHARES N C	LXBK	6711
CRESCENT FINANCIAL CORP	CRFN	6022
JAMES MONROE BANCORP INC	JMBI	6022
TEXAS UNITED BANCSHARES INC	TXUI	6022
NORTH BAY BANCORP	NBAN	6022
CENTER FINANCIAL CORP	CLFC	6712
FIRST NATIONAL BANCSHARES INC FL	FBMT	6021
GREENE COUNTY BANCSHARES INC	GCBS	6022
JACKSONVILLE BANCORP INC FL	JAXB	6022
TAYLOR CAPITAL GROUP INC	TAYC	6022
PARKE BANK	PKBK	6022
SOUTHERN COMMUNITY BANK & TRUST	SCBV	6022
SOMERSET HILLS BANCORP	SOMH	6022
BANCSHARES OF FLORIDA INC	BOFL	6022
CAROLINA BANK HOLDINGS INC	CLBH	6022
OHIO LEGACY CORP	OLCB	6021
BRIDGE BANK NATIONAL ASSOC	BBNK	6021

FIRST COMMUNITY CORP SC	FCCO	6021
BRIDGE STREET FINANCIAL INC	OCNB	6021
WACCAMAW BANKSHARES INC	WBNK	6022
ST JOSEPH CAPITAL CORP	SJOE	6022
I B T BANCORP INC PA	IRW	6022
HEARTLAND FINANCIAL USA INC	HTLF	6022
MONMOUTH COMMUNITY BANCORP	MCBK	6021
OPTIMUMBANK COM	OPBK	6022
FIRST WASHINGTON FINANCIAL CORP	FWFC	6021
N B & T FINANCIAL GROUP INC	NBTF	6021
PREMIERWEST BANCORP	PRWT	6022
ATLANTIC BANCGROUP INC	ATBC	6022
B N C BANCORP	BNCN	6022
TEXAS CAPITAL BANCSHARES INC	TCBI	6021
UNIVEST CORP OF PENNSYLVANIA	UVSP	6022
BANK OF WILMINGTON	BKWW	6022
COAST FINANCIAL HLDGS INC	CFHI	6022
OLD LINE BANCSHARES	OLBK	6022
WILBER CORP	GIW	6022
CENTRAL VALLEY COMM BANCORP	CVCY	6022
MERCHANTS BANCSHARES INC	MBVT	6710
BANK HOLDINGS THE	TBHS	6712
SMITHTOWN BANCORP INC	SMTB	6022
PANAMERICAN BANCORP NEW	PNB	6022
SOUTHERN CONNECTICUT BANCORP INC	SSE	6021
BANK OF COMMERCE HOLDINGS	BOCH	6022
ACCESS NATIONAL CORP	ANCX	6712
EPIC BANCORP	EPIK	6022
EUROBANCSHARES INC	EUBK	6712
SOUTHCOAST FINANCIAL CORP	SOCB	6022
GREENVILLE FIRST BANCSHARES INC	GVBK	6021
HERITAGE OAKS BANCORP	HEOP	6022
VALLEY BANCORP	VLLY	6712
AMES NATL CORP	ATLO	6021
COMMUNITY BANCORP	CBON	6021
FIRST STATE FINANCIAL CORP	FSTF	6712
BANCORP INC	TBBK	6022
CITIZENS & NORTHERN CORP	CZNC	6712
SUMMIT FINANCIAL GROUP INC	SMMF	6021
MERCANTILE BANCORP INC	MBR	6022
COMMUNITY SHORES BANK CORP	CSHB	6022
ENTERPRISE BANCORP INC	EBTC	6712
ENTERPRISE FINANCIAL SVCS CORP	EFSC	6712
T D BANKNORTH INC	BNK	6022
FIRST FED NORTHN MI BANCORP INC	FFNM	6712
PLUMAS BANCORP	PLBC	6712
BEACH FIRST NATL BANCSHARES INC	BFNB	6021
COLONIAL BANKSHARES INC	COBK	6712
WESTERN ALLIANCE BANCORPORATION	WAL	6022
F P B BANCORP INC	FPBI	6021
PACIFIC STATE BANCORP	PSBC	6022
TEMECULA VALLEY BANCORP INC	TMCV	6021
FIRST SECURITY GROUP INC	FSGI	6021
NEXITY FINANCIAL CORP	NXTY	6022
APPALACHIAN BANCSHARES INC	APAB	6022
CENTENNIAL BANK HOLDINGS INC	CBHI	6022
FIRST BUSINESS FINL SVCS INC	FBIZ	6021
FIRST NATIONAL BANCSHARES INC SC	FNSC	6021
PEOPLES BANK CATAWBA NC	PEBK	6025
CAPITALSOUTH BANCORP	CAPB	6022
CAROLINA NATIONAL CORP	CNCP	6021
AMERICASBANK CORP	AMAB	6022

BAY NATIONAL CORP	BAYN	6021
FIRST BANCSHARES INC MS	FBMS	6021
BEVERLY NATIONAL CORP	BNV	6712
NEW CENTURY BANCORP INC NC	NCBC	6022
TENNESSEE COMMERCE BANCORP INC	TNCC	6022
HAMPTON ROADS BANKSHARES INC	HMPR	6021
INTEGRITY BANCSHARES INC	ITYC	6022
TIDELANDS BANCSHARES INC	TDBK	6021
S J N B FINANCIAL CORP	SJNB	6710
CITIZENS FIRST CORP	CZFC	6021
SIMMONS 1ST NATIONAL CORP	SFNCA	6710
SOUTHWEST NATIONAL CORP PA	SWPA	6710
USBANCORP INC PA	UBAN	6710
WESTERNBANK PUERTO RICO	WBPR	6020

A3. Sample Banks for Chapter Four

This appendix shows the information of sample banks that are adopted in the analysis of bank risk taking for Chapter Four. The first column reports the bank name while the second column shows the TICKER symbol of each sample firm. The last column is for the standard industrial classification (SIC) code.

Bank Name	TICKER	SIC CODE
SOUTH ALABAMA BANCORPORATION INC	SABC	6710
ONE VALLEY BANCORP WEST VA INC	OVWV	6710
TRANS FINANCIAL BANCORP INC	TRFI	6710
INDEPENDENT BANK CORP MA	INDB	6710
AMCORE FINANCIAL INC	AMFI	6710
TOMPKINS COUNTY TRUST CO NY	TCTC	6020
CENTER BANKS INC	CTBK	6020
T C F FINANCIAL CORP	TCB	6712
DIME FINANCIAL CORP	DIBK	6020
HORIZON BANK BELLINGHAM WA	HRZB	6020
GRANITE STATE BANKSHARES INC	GSBI	6710
BROAD NATIONAL BANCORP	BNBC	6710
F N B ROCHESTER CORP	FNBR	6710
F N B CORP PA	FBAN	6710
HARLEYSVILLE NATIONAL CORP PA	HNBC	6710
FIRST SAVINGS BANK FSB CLOVIS NM	FSBC	6020
UNITED SAVINGS BK FA GREAT FALLS	UBMT	6020
CHARTER ONE FINANCIAL INC	COFI	6710
HERITAGE FINANCIAL SVCS INC	HERS	6710
CENTRAL CO OPERATIVE BANK MA	CEBK	6020
FIRST CITIZENS BANCSHARES INC NC	FCNCA	6710
BANK SOUTH CAROLINA CHARLESTON	BKSC	6020
CAROLINA FIRST CORP	CAFC	6710
ANCHOR FINANCIAL CORP	AFSC	6710
PEOPLES HERITAGE FINL GROUP INC	PHBK	6020
FARMERS CAPITAL BANK CORP	FFKT	6710
COMMUNITY BANKS INC PA	CBKI	6710
FLAG FINANCIAL CORP	FLAG	6710
WEBSTER FINANCIAL CORP	WBST	6710
CENTENNIAL BANCORP	CEBC	6710
FIRST LONG ISLAND CORP	FLIC	6710
FIRST GEORGIA HOLDING INC	FGHC	6020
ORIENTAL BANKCORP	OBT	6020
CHESTER VALLEY BANCORP	CVAL	6710
FIRST BANCORP NC	FBNC	6710
WESBANCO INC	WSBC	6710
UNITED BANKSHARES INC	UBSI	6710
FIRST CHARTER CORP	FCTR	6710
NEWBERRY BANCORP INC	NEWB	6710
WASHINGTON TRUST BANCORP INC	WASH	6710
CITY HOLDING CO	CHCO	6710
HORIZON BANCORP IND	HBNC	6710
C P B INC	CPBI	6710
REPUBLIC BANCORP	RBNC	6710
ROYAL BANK OF PENN KING PRUSSIA	RBPAA	6020
SILICON VALLEY BANCSHARES	SIVB	6710
G B C BANCORP	GBCB	6710
PROVIDENT BANKSHARES CORP	PBKS	6710
PIKEVILLE NATIONAL CORP	PKVL	6710
SHORELINE FINANCIAL CORP	SLFC	6710
SURETY CAPITAL CORP	SRY	6719
CHEMICAL FINANCIAL CORP	CHFC	6710
OLD NATIONAL BANCORP	OLDB	6710
EXECUFIRST BANCORP INC	FXBC	6710
FIRST FINANCIAL CARIBBEAN CORP	FRCC	6029
AMERICAN BANCORPORATION OH	AMBC	6711
ARROW FINANCIAL CORP	AROW	6710

ASSOCIATED BANC CORP	ASBC	6711
BANPONCE CORP NEW	BPOP	6710
BANCORP HAWAII INC	BOH	6712
BANK GRANITE CORP	GRAN	6710
BRENTON BANKS INC	BRBK	6711
SYNOVUS FINANCIAL CORP	SNV	6021
C C B FINANCIAL CORP	CCBF	6710
C V B FINANCIAL CORP	CVB	6022
UNION BANK SAN FRANCISCO CA	UBNK	6023
COMPASS BANCSHARES INC	CBSS	6710
CHITTENDEN CORP	CNDN	6711
CITY NATIONAL CORP	CYN	6712
COLONIAL BANCGROUP INC	CLBGA	6710
COMERICA INC	CMA	6712
COMMERCE BANCSHARES INC	CBSH	6711
STERLING BANCORP	STL	6021
CORESTATES FINANCIAL CORP	CFL	6021
CULLEN FROST BANKERS INC	CFBI	6711
DEPOSIT GUARANTY CORP	DEPS	6711
F & M NATIONAL CORP	FMN	6021
FIFTH THIRD BANCORP	FITB	6711
REGIONS FINANCIAL CORP	RGBK	6710
FIRST BANCORPORATION OHIO INC	FBOH	6711
FIRST AMERICAN CORP TN	FATN	6711
FIRST OF AMERICA BANK CORP	FOA	6712
TRUSTMARK CORP	TRMK	6711
FIRST COMMERCE CORP NEW ORLEANS	FCOM	6711
FIRST EMPIRE STATE CORP	FES	6025
FIRST FINANCIAL BANCORP OHIO	FFBC	6711
FIRST HAWAIIAN INC	FHWN	6710
FIRST INDIANA CORP	FISB	6020
FIRST MIDWEST BANCORP DE	FMBI	6711
STAR BANC CORP	STB	6021
FIRST SECURITY CORP DE	FSCO	6711
1ST SOURCE CORP	SRCE	6711
FIRST TENNESSEE NATIONAL CORP	FTEN	6711
FIRST UNION CORP	FTU	6022
FIRSTBANK ILLINOIS CO	FBIC	6711
NORWEST CORP	NOB	6711
FIRST REGIONAL BANCORP	FRGB	6710
HIBERNIA CORP	HIB	6021
HUNTINGTON BANCSHARES INC	HBAN	6711
IMPERIAL BANCORP	IBAN	6711
INDEPENDENT BANKSHARES INC	IBKS	6710
INTERCHANGE FINANCIAL SRVCS CORP	ISB	6022
CITICORP	CCI	6711
FLEET FINANCIAL GROUP INC NEW	FLT	6712
CHEMICAL BANKING CORP	CHL	6025
MORGAN J P & CO INC	JPM	6711
BANKERS TRUST NY CORP	BT	6025
WELLS FARGO & CO	WFC	6025
WACHOVIA CORP NEW	WB	6719
MAGNA GROUP INC	MAGI	6710
U J B FINANCIAL CORP	UJB	6022
MARSHALL & ILSLEY CORP	MRIS	6711
BANK OF BOSTON CORP	BKB	6711
FIRST VIRGINIA BANKS INC	FVB	6029
MERCANTILE BANCORPORATION INC	MTL	6022
MERCANTILE BANKSHARES CORP	MRBK	6711
MERCHANTS NEW YORK BANCORP INC	MBNY	6020
FIRSTAR CORP NEW	FSR	6712
GOLDEN WEST FINANCIAL CORP	GDW	6711

MID AM INC	MIAM	6022
MID AMERICA BANCORP	MAB	6712
REPUBLIC NEW YORK CORP	RNB	6711
NATIONAL BANCORP AK	NBAK	6710
NATIONAL CITY BANCORPORATION	NCBM	6711
NATIONAL CITY CORP	NCC	6712
NATIONAL COMMERCE BANCORPORATION	NCBC	6711
N B D BANCORP INC	NBD	6711
NATIONAL PENN BANCSHARES INC	NPBC	6711
NORTH FORK BANCORPORATION NY INC	NFB	6022
NORTHERN TRUST CORP	NTRS	6710
BANKAMERICA CORP	BAC	6711
OLD KENT FINANCIAL CORP	OKEN	6711
MELLON BANK CORP	MEL	6711
NATIONSBANK CORP	NB	6712
P N C BANK CORP	PNC	6021
AMSOUTH BANCORPORATION	ASO	6711
PIEDMONT BANKGROUP INC	PBGI	6710
BANCTEXAS GROUP INC	BTX	6022
PROVIDENT BANCORP INC	PRBK	6711
KEYCORP NEW	KEY	6021
BANC ONE CORP	ONE	6711
RAMAPO FINANCIAL CORP	RMPO	6711
H U B C O INC	HUBC	6020
RIGGS NATIONAL CORP WASH D C	RIGS	6710
RIVER FOREST BANCORP	RFBC	6710
SUNTRUST BANKS INC	STI	6711
SEACOAST BANKING CORP FLA	SBCFA	6711
SOUTHERN NATIONAL CORP NC	SNB	6021
SOUTHTRUST CORP	SOTR	6710
STATE STREET BOSTON CORP	STBK	6711
SUSQUEHANNA BANCSHARES INC PA	SUSQ	6711
SUFFOLK BANCORP	SUBK	6710
FIRST MERCHANTS CORP	FRME	6710
FOOTHILL INDEPENDENT BANCORP	FOOT	6710
FIRST WESTERN BANCORP INC	FWBI	6710
NEW MILFORD BANK & TRUST CO	NMBT	6710
BANKNORTH GROUP INC DE	BKNG	6710
GREAT SOUTHERN BANCORP INC	GSBC	6710
M A F BANCORP INC	MAFB	6710
CIVIC BANCORP	CIVC	6710
1ST BANCORP	FBCV	6710
CAPITOL BANCORP LTD	CBCL	6710
SUBURBAN BANCSHARES INC	SBNK	6710
BANK NASHVILLE TENN	TBON	6020
CENTURY SOUTH BANKS INC	CSBI	6710
STATE BANCORP INC NY	STBC	6710
PEOPLES FIRST CORP	PFKY	6710
SECOND BANCORP INCORPORATED	SECD	6710
PENNFIRST BANCORP INC	PWBC	6025
J S B FINANCIAL INC	JSBF	6710
PARK NATIONAL CORP	PRK	6712
COMMERCIAL BANCORP OR	CBOR	6710
PINNACLE BANC GROUP INC	PINN	6710
PROFESSIONAL BANCORP	MDB	6712
SAVANNAH BANCORP INC	SAVB	6021
STATE FINANCIAL SERVICES CORP	SFSW	6710
SUMMIT FINANCIAL CORP	SUMM	6710
CENTURA BANKS INC	CBC	6021
CATHAY BANCORP INC	CATY	6710
NORTHRIM BANK	NRIM	6020
M B N A CORP	KRB	6712

HANCOCK HOLDING CO	HBHC	6710
SIERRA TAHOE BANCORP	STBS	6710
COMMUNITY FIRST BANKSHARES INC	CFBX	6710
REDWOOD EMPIRE BANCORP	REB	6022
A N B CORP	ANBC	6710
B O K FINANCIAL CORP	BOKF	6710
COOPERATIVE BANCSHARES INC	COOP	6710
NORTHERN STATES FINANCIAL CORP	NSFC	6710
WHITNEY HOLDING CORP	WTNY	6021
NATIONAL CITY BANCSHARES INC	NCBE	6710
INDIANA UNITED BANCORP	IUBC	6710
F & M BANCORP MD	FMBN	6020
FIRST FINANCIAL CORP IN	THFF	6022
N B T BANCORP INC	NBTB	6020
OMEGA FINANCIAL CORP	OMEF	6020
PEOPLES HOLDING CO	PHCO	6020
S & T BANCORP INC	STBA	6020
PRINCETON NATIONAL BANCORP INC	PNBC	6020
HUDSON CHARTERED BANCORP INC	HCBK	6710
FIRST COMMONWEALTH FINANCIAL COR	FCF	6712
FIRSTFED BANCSHARES INC	FFDP	6020
U S T CORP	USTB	6710
MICHIGAN FINANCIAL CORP	MFCB	6710
STERLING WEST BANCORP	SWBC	6710
FIRST UNITED CORP	FUNC	6710
CASCADE FINANCIAL CORP	CASB	6710
STERLING BANCSHARES INC	SBIB	6710
AMBANC CORP	AMBK	6710
UNION PLANTERS CORP	UPC	6021
U M B FINANCIAL CORP	UMBF	6710
KANKAKEE BANCORP INC	KNKB	6021
UNITED NATIONAL BANCORP NJ	UNBJ	6025
PEOPLES BANCORP INC	PEBO	6710
MADISON BANCSHARES GROUP LTD	MADB	6710
S Y BANCORP INC	SYBA	6710
UNITED BANCORP INC	UBCP	6710
UNION BANKSHARES LTD DEL	UBSC	6710
C B BANCSHARES INC	CBBI	6710
BANCFIRST CORP	BANF	6020
BANCFIRST OHIO CORP	BFOH	6712
CENTRAL VIRGINIA BANKSHARES INC	CVBK	6710
SUN BANCORP INC	SUBI	6020
TRICO BANCSHARES	TCBK	6710
MIDSOUTH BANCORP INC	MSL	6022
G A B BANCORP	GABC	6710
SUMMIT BANCSHARES INC	SBIT	6710
VISTA BANCORP INC	VBNJ	6710
CITIZENS BANCSHARES INC	CICS	6020
K S B BANCORP INC	KSBK	6020
CRESTAR FINANCIAL CORP	CF	6022
HORIZON BANCORP INC	HZWV	6710
MISSISSIPPI VALLEY BKSHARES INC	MVBI	6710
COBANCORP INC	COBI	6710
NSD BANCORP INC	NSDB	6020
FIRST LEESPORT BANCORP INC	FLPB	6710
FIRST COLONIAL GROUP INC	FTCG	6021
VILLAGE BANCORP INC	VBNK	6020
F & M BANCORPORATION INC	FMBK	6710
COMMERCIAL BANKSHARES INC	CLBK	6020
MERCHANTS BANCORP INC IL	MBIA	6020
QUAD CITY HOLDINGS INC	QCHI	6710
UNION BANKSHARES CORP	UBSH	6710

FIRST FINANCIAL BANKSHARES INC	FFIN	6710
FIRST STATE BANCORPORATION	FSNM	6020
OLD SECOND BANCORP INC	OSBC	6710
PRESTIGE FINANCIAL CORP	PRFN	6710
LAKE ARIEL BANCORP INC	LABN	6020
REPUBLIC BANK CLEARWATER FL	REPB	6020
SOUTHERN FINANCIAL FED SVNGS BK	SFFB	6021
MASON DIXON BANCSHARES INC	MSDX	6710
VALLEY NATIONAL BANCORP	VLY	6021
CASCADE BANCORP	CACB	6710
HALLMARK CAPITAL CORP	HALL	6710
LETCHWORTH INDPT BCSHS CORP	LEBC	6710
BOSTON PRIVATE BANCORP INC	BPBC	6020
TRIANGLE BANCORP INC	TRBC	6710
TEXAS REGIONAL BANCSHARES INC	TRBS	6710
METROBANCORP	METB	6020
BANK OF SUFFOLK	SFLK	6020
RELIANCE BANCORP INC	RELY	6710
A B C BANCORP	ABCB	6710
C N B FINANCIAL	CNBF	6710
CARROLLTON BANCORP	CRRB	6710
VERMONT FINANCIAL SERVICES CORP	VFSC	6710
F N B CORP NC	FNBN	6710
PEOPLES BANCTRUST CO INC	PBTC	6020
COLUMBIA BANCORP	CBMD	6710
COMMERCE BANK HARRISBURG PA	COBH	6020
F C N B CORP	FCNB	6710
FIRST VICTORIA NATL BK TEX NEW	FVNB	6020
PATRIOT NATIONAL BANK CONN	PNBK	6020
MAHASKA INVESTMENT CO	OSKY	6710
BELMONT BANCORP	BLMT	6020
FIDELITY SOUTHERN CORP	LION	6710
WESTBANK CORP	WBKC	6710
ALABAMA NATIONAL BANCORP DEL	ALAB	6710
NEW ENGLAND COMMUNITY BNCP INC	NECB	6710
MONTEREY BAY BANCORP INC	MBBC	6710
CORNERSTONE BANK CONN	CBN	6022
FIRST WEST VIRGINIA BANCORP INC	FWV	6022
NATIONAL BANCSHARES CORP TEX	NBT	6021
COMMUNITY BANK SHRS INDIANA INC	CBIN	6710
FIRST SOUTHERN BANCSHARES INC	FSTH	6710
GUARANTY FED SVGS BANK MO	GFED	6022
I S B FINANCIAL CORP LA	ISBF	6710
A S B FINANCIAL CORP OH	ASBP	6710
UNITED SECURITY BANCORP WA	USBN	6020
F N B FINANCIAL SERVICES CORP	FNBF	6710
LOGANSPORT FINANCIAL CORP	LOGN	6710
MERIT HOLDING CORP	MRET	6710
YARDVILLE NATIONAL BANCORP	YANB	6020
BNCCORP	BNCC	6710
C C F HOLDING COMPANY	CCFH	6021
FRANKFORT FIRST BANCORP INC	FKKY	6710
HABERSHAM BANCORP INC	HABC	6710
WESTAMERICA BANCORPORATION	WABC	6021
AUBURN NATIONAL BANCORP	AUBN	6710
PENINSULA TRUST BANK INC VA	PNTB	6020
BOSTONFED BANCORP INC	BFD	6022
ALLEGIANT BANCORP INC	ALLE	6710
HARRODSBURG FIRST FINL BANCP INC	HFFB	6710
OAK HILL FINANCIAL INC	OAKF	6710
STATEWIDE FINANCIAL CORP	SFIN	6710
FIRST SVGS BANK WASH BANCORP INC	FWWB	6710

PATRIOT BANK CORP	PBIX	6021
PIEDMONT BANCORP INC	PDB	6022
AREA BANCSHARES CORP NEW	AREA	6710
CAPITAL CORP OF THE WEST	CCOW	6710
WILMINGTON TRUST CORP	WILM	6020
AMERICAN BANCSHARES INC FL	ABAN	6710
ORANGE NATIONAL BANCORP	OGNB	6020
OHIO VALLEY BANC CORP	OVBC	6710
FALMOUTH COOPERATIVE BANK MASS	FCB	6021
G A FINANCIAL INC	GAF	6022
COMMUNITY FEDERAL BANCORP INC	CFTP	6710
RESOURCE BANK VIRGINIA BEACH VA	RBKV	6021
SANDY SPRING BANCORP INC	SASR	6710
EUFAULA BANCCORP INC	EUFA	6029
FIRST FEDERAL BANCSHARES ARK INC	FFBH	6710
FIRST FINANCIAL CORP RI	FTFN	6020
HARRINGTON FINANCIAL GROUP INC	HFGI	6710
PREMIER FINANCIAL BANCORP INC	PFBI	6710
SANTA BARBARA BANCORP CALIF	SABB	6020
BANK YORBA LINDA	BOYL	6020
COMM BANCORP INC	CCBP	6020
COMMERCIAL NATIONAL FINL CORP	CNAF	6020
CENTER BANCORP INC	CNBC	6020
ACADIANA BANCSHARES INC LA NEW	ANA	6712
P A B BANKSHARES INC	PAB	6021
ABIGAIL ADAMS NATL BANCORP INC	AANB	6710
CALIFORNIA INDEPENDENT BANCORP	CIBN	6020
SOUTHWEST GEORGIA FINANCIAL CORP	SGB	6022
GRAND PREMIER FINANCIAL INC	GPFI	6710
NORTH COUNTY BANCORP	NCBH	6020
R & G FINANCIAL CORP	RGFC	6710
SUN BANCORP INC	SNBC	6710
FIRST M & F CORP	FMFC	6710
SECURITY BANK HOLDING COMPANY	SBHC	6020
MID PENINSULA BANCORP	MPBK	6710
BRITTON & KOONTZ CAPITAL CORP	BKBK	6710
MARATHON FINANCIAL CORP	MFCV	6710
SUMMIT BANK CORP	SBGA	6710
ZIONS BANCORP	ZION	6711
UNIONBANCORP INC	UBCD	6710
COMMUNITY BANKSHARES INC S C	SCB	6022
GOLD BANC CORP INC	GLDB	6710
GOLETA NATIONAL BANK	GLTB	6020
FIRST MARINER BANCORP	FMAR	6710
BRIDGE VIEW BANCORP	BVB	6022
BANCO DE SANTIAGO	SAN	6022
UNITY BANCORP INC	UBI	6022
SOUTHWEST BANCORP OF TEXAS INC	SWBT	6710
WAYNE BANCORP INC OHIO	WNNB	6710
CAPITAL CITY BANK GROUP	CCBG	6710
COMMUNITY CAPITAL CORP	CYL	6712
WINTRUST FINANCIAL CORPORATION	WTFC	6710
U S B HOLDING CO INC	UBH	6712
CODORUS VALLEY BANCORP INC	CVLY	6020
FIRST STERLING BANKS INC	FSLB	6020
NEWSOUTH BANCORP INC	NSBC	6022
GREATER COMMUNITY BANCORP	GFLS	6022
T I B FINANCIAL CORP	TIBB	6710
COMMUNITY FIRST BANKING COMPANY	CFBC	6710
FALLBROOK NATIONAL BANK	FBRK	6020
BANK OF THE OZARKS INC	OZRK	6020
LAKELAND FINANCIAL CORP	LKFN	6020

SHORE BANK	SHBK	6710
BAR HARBOR BANKSHARES	BHB	6022
CENTURY BANCSHARES INC	CTRY	6710
FIRST INTERNATIONAL BANCORP INC	FNCE	6710
VIRGINIA COMMERCE BANK	VCBK	6020
CAMDEN NATIONAL CORP	CAC	6021
ANNAPOLIS NATIONAL BANCORP INC	ANNB	6710
SUCCESS BANCSHARES INC	SXNB	6710
BAY BANCSHARES INC	BAYB	6710
INTERVEST BANCSHARES CORP	INBA	6021
MID PENN BANCORP INC	MBP	6022
NORTHWAY FINANCIAL INC	NWFI	6710
BANK OF ESSEX VA	BSXT	6020
CAPITAL BANK NC	CBKN	6020
B T FINANCIAL CORP	BTFC	6710
GREAT PEE DEE BANCORP	PEDE	6710
S N B BANCSHARES INC GA	SNBJ	6022
C & F FINANCIAL CORP	CFFI	6710
EASTERN VIRGINIA BANKSHARES INC	EVBS	6020
LONG ISLAND COMMERCIAL BANK	LGCB	6020
NARA BANK NATIONAL ASSOC	NARA	6021
SLADES FERRY BANCORP	SFBC	6020
BANCORPSOUTH INC	BOMS	6710
SUSSEX BANCORP	SBB	6022
MIDWEST BANC HOLDINGS INC	MBHI	6710
BANK RHODE ISLAND	BARI	6020
COWLITZ BANCORPORATION	CWLZ	6710
GULF WEST BANKS INC	GWBK	6710
INTERNATIONAL BANCSHARES CORP	IBOC	6020
NORWOOD FINANCIAL CORP	NWFL	6020
B S B BANCORP INC	BSBN	6020
COLONY BANKCORP INC	CBAN	6022
DEARBORN BANCORP INC	DEAR	6710
FRONTIER FINANCIAL CORP	FTBK	6710
NORTH VALLEY BANCORP	NOVB	6710
SOUTH UMPQUA STATE BANK	UMPQ	6020
CENTRAL COAST BANCORP	CCBN	6710
G L B BANCORP INC	GLBK	6710
GUARANTY BANCSHARES INC	GNTY	6710
JEFFERSONVILLE BANCORP	JFBC	6020
SOUTHSIDE BANCSHARES INC	SBSI	6020
BRYN MAWR BANK CORP	BMTC	6710
COLORADO BUSINESS BANCSHARES INC	COBZ	6020
WASHINGTON BANKING COMPANY	WBCO	6710
B W C FINANCIAL CORP	BWCF	6710
CARDINAL FINANCIAL CORP	CFNL	6020
C N B BANCSHARES INC	CNBE	6710
F N B CORP VA	FNBP	6020
MID STATE BANCSHARES	MDST	6710
REPUBLIC BANCORP INC KY	RBCAA	6020
S V B FINANCIAL SERVICES INC	SVBF	6710
HERITAGE COMMERCE CORP	HTBK	6710
MERRILL MERCHANTS BANCSHARES INC	MERB	6710
CAPE COD BK & TR CO HYANNIS	CCBT	6025
ADMIRALTY BANCORP INC	AAABB	6710
FIRST BUSEY CORP	BUSE	6020
C N B FINANCIAL CORP PA	CCNE	6710
COMMUNITY BANK N J FREEHOLD TWP	CBNJ	6020
BANCO SANTANDER PR SAN JUAN	SBP	6021
COLUMBIA BANCORP ORE	CBBO	6020
PROSPERITY BANCSHARES INC	PRSP	6710
U C B H HOLDINGS INC	UCBH	6712

WILSHIRE STATE BANK	WSBK	6020
E C B BANCORP INC	ECBE	6710
BANC CORP THE	TBNC	6710
UNITED FINANCIAL HOLDINGS INC	UFHI	6020
VAIL BANKS INC	VAIL	6710
METROCORP BANCSHARES INC	MCBI	6710
LAMAR CAPITAL CORP	LCCO	6719
ALLIANCE FINANCIAL CORP NY	ALNC	6710
C N B INC	CNBB	6710
CRESCENT BANKING CO	CSNT	6020
G B & T BANCSHARES INC	GBTB	6712
CITIZENS BANKING CORP MI	CBCF	6710
EAST WEST BANCORP INC	EWBC	6710
TROY FINANCIAL CORP	TRYF	6710
AMERICAN NATIONAL BANKSHARES INC	AMNB	6021
1ST STATE BANCORP INC	FSBC	6021
COMMERCE BANCORP INC NJ	COBA	6710
COMMUNITY BANK SYSTEM INC	CBSI	6710
FINANCIAL INSTITUTIONS INC	FISI	6020
TEAM FINANCIAL INC	TFIN	6710
BANK SIERRA PORTERVILLE CA	BSRR	6020
PRIVATEBANCORP INC	PVTB	6020
BERKSHIRE BANCORP INC	BERK	6022
FIRST NATIONAL LINCOLN CORP ME	FNLC	6020
WESTERN SIERRA BANCORP	WSBA	6020
MERCANTILE BANK CORP	MBWM	6020
HAMILTON BANCORP INC FLORIDA	HABK	6710
U N B CORP OH	UNBO	6710
CITIZENS HOLDING CO	CIZ	6712
EAGLE BANCORP INC	EGBN	6020
PELICAN FINANCIAL INC	PFI	6021
PREMIER BANCORP INC PA	PPA	6022
FAUQUIER BANKSHARES INC	FBSS	6020
MACATAWA BANK CORP	MCBC	6710
NATIONAL BANKSHARES INC	NKSH	6710
LAKELAND BANCORP INC	LBAI	6710
L N B BANCORP INC	LNBB	6710
EVERGREEN BANCORP INC DE	EVGN	6710
HUMBOLDT BANCORP	HBEK	6710
PEOPLES COMMUNITY BANCORP INC	PCBI	6020
N B C CAPITAL CORP	NBY	6712
GLACIER BANCORP INC	GBCI	6020
FIRST OAK BROOK BANCSHARES INC	FOBBA	6710
FULTON FINANCIAL CORP PA	FULT	6710
PEOPLES FINANCIAL CORP	PFBX	6022
EXCHANGE NATIONAL BANCSHARES INC	EXJF	6021
FIRST COMMUNITY BANCORP	FCBP	6712
PACIFIC MERCANTILE BANCORP	PMBC	6712
UNITED SECURITY BANCSHARES INC	USBI	6712
AMERICAN COMMUNITY BNCSHRS INC	ACBA	6022
PENNROCK FINANCIAL SERVICES CORP	PRFS	6021
INDEPENDENT COMMUNITY BNKSHRS IN	ICBX	6021
AMERICAN RIVER HOLDINGS	AMRB	6022
COMMONWEALTH BANKSHARES INC	CWBS	6021
PEAPACK GLADSTONE FINANCIAL CORP	PGC	6022
BRUNSWICK BANCORP	BRB	6712
HANMI FINANCIAL CORP	HAFC	6712
CENTERSTATE BANKS OF FLORIDA INC	CSFL	6712
EAST PENN BANK	EPEN	6021
INDEPENDENT BANK CORP MICH	IBCP	6710
COMMUNITY CAPITAL BANCSHARES INC	ALBY	6021
FIRST COMMUNITY BANCSHARES INC	FCBC	6712

UNITED BANCSHARES INC	UBOH	6021
FIRST CITIZENS BANC CORP	FCZA	6022
FRANKLIN FINANCIAL CORP	FNFN	6021
MONROE BANCORP	MROE	6022
GATEWAY BANK & TRUST CO	GBTS	6022
EVANS BANCORP INC	EVBN	6021
VINEYARD NATIONAL BANCORP	VNBC	6021
H D F C BANK LTD	HDB	6022
FIRSTBANK CORP	FBMI	6022
NORTH COUNTRY FINANCIAL CORP	NCFC	6022
TOWER FINANCIAL CORP	TOFC	6022
RURBAN FINANCIAL CORP	RBNF	6022
PENNS WOODS BANCORP INC	PWOD	6022
IRWIN FINANCIAL CORP	IRWN	6710
ALLIANCE BANK CORP	ABVA	6022
COMMUNITY CENTRAL BANK CORP	CCBD	6022
1ST CONSTITUTION BANCORP	FCCY	6021
MADISON BANCSHARES INC	MDBS	6022
SOUTHERN COMMUNITY FINCL CORP	SCMF	6022
UNION BANKSHARES INC	UNB	6020
UNITED COMMUNITY BANCORP	UCBB	6022
VIRGINIA FINANCIAL GROUP INC	VFGI	6022
W G N B CORP	WGNB	6021
MILLENNIUM BANKSHARES CORP	MBVA	6021
AMERICAN BANK INC	AMBK	6022
KEYSTONE FINANCIAL INC	KSTN	6711
PINNACLE FINANCIAL PARTNERS INC	PNFP	6021
WEST BANCORPORATION INC	WTBA	6022
L S B BANCSHARES N C	LXBK	6711
CRESCENT FINANCIAL CORP	CRFN	6022
JAMES MONROE BANCORP INC	JMBI	6022
TEXAS UNITED BANCSHARES INC	TXUI	6022
NORTH BAY BANCORP	NBAN	6022
FIRST NATIONAL BANCSHARES INC FL	FBMT	6021
GREENE COUNTY BANCSHARES INC	GCBS	6022
JACKSONVILLE BANCORP INC FL	JAXB	6022
TAYLOR CAPITAL GROUP INC	TAYC	6022
PARKE BANK	PKBK	6022
SOUTHERN COMMUNITY BANK & TRUST	SCBV	6022
SOMERSET HILLS BANCORP	SOMH	6022
CAROLINA BANK HOLDINGS INC	CLBH	6022
OHIO LEGACY CORP	OLCB	6021
BRIDGE BANK NATIONAL ASSOC	BBNK	6021
FIRST COMMUNITY CORP SC	FCCO	6021
BRIDGE STREET FINANCIAL INC	OCNB	6021
WACCAMAW BANKSHARES INC	WBNK	6022
ST JOSEPH CAPITAL CORP	SJOE	6022
I B T BANCORP INC PA	IRW	6022
HEARTLAND FINANCIAL USA INC	HTLF	6022
MONMOUTH COMMUNITY BANCORP	MCBK	6021
OPTIMUMBANK COM	OPBK	6022
N B & T FINANCIAL GROUP INC	NBTF	6021
PREMIERWEST BANCORP	PRWT	6022
ATLANTIC BANCGROUP INC	ATBC	6022
B N C BANCORP	BNCN	6022
TEXAS CAPITAL BANCSHARES INC	TCBI	6021
BANK OF WILMINGTON	BKWW	6022
COAST FINANCIAL HLDGS INC	CFHI	6022
OLD LINE BANCSHARES	OLBK	6022
WILBER CORP	GIW	6022
CENTRAL VALLEY COMM BANCORP	CVCY	6022
MERCHANTS BANCSHARES INC	MBVT	6710

BANK HOLDINGS THE	TBHS	6712
SMITHTOWN BANCORP INC	SMTB	6022
PANAMERICAN BANCORP NEW	PNB	6022
SOUTHERN CONNECTICUT BANCORP INC	SSE	6021
BANK OF COMMERCE HOLDINGS	BOCH	6022
ACCESS NATIONAL CORP	ANCX	6712
EPIC BANCORP	EPIK	6022
EUROBANCSHARES INC	EUBK	6712
SOUTHCOAST FINANCIAL CORP	SOCB	6022
GREENVILLE FIRST BANCSHARES INC	GVBK	6021
HERITAGE OAKS BANCORP	HEOP	6022
AMES NATL CORP	ATLO	6021
COMMUNITY BANCORP	CBON	6021
FIRST STATE FINANCIAL CORP	FSTF	6712
BANCORP INC	TBBK	6022
PEOPLES BANK CATAWBA NC	PEBK	6025
CAROLINA NATIONAL CORP	CNCP	6021
S J N B FINANCIAL CORP	SJNB	6710
SIMMONS 1ST NATIONAL CORP	SFNCA	6710
SOUTHWEST NATIONAL CORP PA	SWPA	6710
USBANCORP INC PA	UBAN	6710
WESTERNBANK PUERTO RICO	WBPR	6020

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