The Impact of Investor Protection and Bank Regulation on the Shareholder Wealth: Evidence from Merger and Acquisition Announcements in the Banking Industry

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Abstract

This thesis studies the impact of investor protection and bank regulation on the shareholder wealth around merger and acquisition announcements in the banking industry during the period 1995-2005. The analysis is based on 508 targets, 1,424 bidders and 388 combined firms covering over 30 countries. Using the event study methodology, the results show that targets, bidders and combined firms obtain 13.25%, -0.63% and 0.39% cumulative abnormal returns over a 3 day (-1,+1) event window, respectively.

In addition, cross-sectional analysis reveals that target cumulative abnormal returns are positively related to investor protection measured as the antidirector rights and rule of law in a target country. The findings also indicate that targets gain more when bank regulation in a target country has more restriction on bank activity, official supervisors have more power to intervene the deals and supervisors have more power to correct the problem in mergers and acquisitions separately.

Furthermore, the results show that bidders have lower gains when investor protection in a bidder country measured as rule of law is strong. The results also find that bidders gain less when bank regulation in a bidder country has more restriction on bank activity. However, the findings show that bidders gain more when supervisory authority in a bidder country is more independent. With respect to combined firms, the results find that combined firms obtain higher announcement returns when investor protection measured as the combination of the antidirector rights index in a target and bidder country is strong.

To My Grandmother, Feng-Chiao,

who is a spirit of my family,

and

My Parents,

who has taught me to be a good man

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Chapter 1 Introduction

1.1 Background and motivation

Over the last decade, the banking industry has experienced significant changes all over the world. These changes may derive from several broad forces, including deregulation, globalization, and technological development (DeLong (2001); Kiymaz (2004); Ismail and Davidson (2007); Ekkayokkaya *et al*. (2007); DeYoung *et al*. (2009)). DeLong (2001) argues that banks are allowed to expand geographically due to regulatory changes. Ismail and Davidson (2007) also argue that regulation changes remove product and geographical restrictions on banks. Accordingly, banks can increase their product services and enlarge their market shares by reaching different markets.

In addition, technological development enables the financial firms to reform their service systems, such as back-office processing and payment systems (Berger (2003); Humphrey *et al*. (2006); DeYoung *et al*. (2009)). These changes have significantly altered the competitive conditions faced by financial firms (Frame and White (2004); DeYoung (2007); DeYoung *et al*. (2009)). Thus, the financial market becomes more competitive. Consequently, a number of banking firms experience a decrease in profitability and an increase in operating costs. Some banking firms attempt to solve these disadvantages through mergers and acquisitions.

The economic rationale of mergers and acquisitions is based on the belief that the benefits can be obtained through the reduction of expense and earning volatility and the increase of the market power and economies of scale and scope (Pilloff and Santomero (1996); Kiymaz (2004)). Pilloff and Santomero (1996) argue that merger and acquisition activities can significantly reduce operating costs if economies of scale or scope can be achieved. This may derive from the fact that larger firms can be more efficient if redundant facilities are eliminated.

On the other hand, Berger and Hannan (1998) and DeYoung *et al*. (2009) argue that

mergers and acquisitions can increase firm size. Firms with large size can increase market power in determining higher prices or generating profits. In addition, Pilloff and Santomero (1996) also argue that mergers may enhance value through products and services diversification. Greater diversification provides value to stabilise earning volatility and thus increases firm value and shareholder wealth.

Merger and acquisition activities have drawn much attention in academic research. One stream of research investigates whether mergers and acquisitions can create or destroy value to shareholders, and prior empirical studies apply event study methodology to examine the market reaction around bank merger and acquisition announcements (Cybo-Ottone and Murgia (2000); Cornett *et al*. (2003); Ismail and Davidson (2007)). Lensink and Maslennikova (2008) argue that the event study methodology is based on the Efficient Market Hypothesis, in which the market reacts to the newly released information quickly. If there is no event, such as the announcements of bank mergers and acquisitions, the return of the stock should not deviate from its normal returns. If any abnormal return can be detected, the level of the abnormal return can be regarded as the impact on shareholder wealth around bank merger and acquisition announcements.

However, prior empirical studies do not provide a clear picture of the impact of shareholder wealth on bank mergers, as the empirical evidence is mixed. Toyne and Tripp (1998) argue that the empirical findings appear to be sensitive to the time period selected. In addition, the empirical results also vary depending on the market studied. Prior empirical studies have examined shareholder wealth of bank mergers in the U.S. market (e.g., Neely (1987); DeLong (2001); Cornett *et al*. (2003); Akhigbe *et al*. (2004); Becher and Campbell (2005)), in the EU market (e.g., Cybo-Ottone and Murgia (2000); Beitel *et al*. (2004); Ismail and Davidson (2007); Lensink and Maslennikova (2008)), and in the international market[1] (e.g., Biswas *et al*. (1997); DeLong (2003); Fields *et al*. (2007);

[1] The international market means that the market covers both the U.S. and EU market and/or markets from the rest of the world.

Valkanov and Kleimeier (2007)). Overall, these studies report that targets earn positive announcement returns and combined firms obtain slightly positive announcement returns around bank merger and acquisition announcements.

However, the empirical results for bidding firms are inconsistent. Bidding firms are normally found to experience negative announcement returns in the U.S. studies and obtain in general slightly positive announcement returns in the EU studies. However, few studies analyse both U.S. and European banks involved in M&As and there is thus little prior comparison of the wealth effects of bank mergers and acquisitions in different markets. In addition, the existing literature in the international studies is limited and does not use a large international sample of bank mergers from a number of countries. The limited evidence and inconclusive results offer an opportunity to carry out further research in this area. As a consequence, this thesis starts from investigating whether bank mergers and acquisitions create or destroy value to shareholders. The analysis specifically examines the impact of shareholder wealth for targets, bidders and combined firms covering from over 30 countries.

In addition to examining the impact of shareholder wealth, prior empirical studies also employ cross-sectional regression analysis in an attempt to explain the cross-sectional variations in cumulative abnormal returns around bank merger and acquisition announcements. In this aspect, prior empirical studies aim to explore the determinants that may affect shareholder wealth in bank mergers. As will be discussed in chapter 2, the existing literature has demonstrated that the deal and firm specific characteristics have its importance to explain the cumulative abnormal returns. However, little is known about whether the effectiveness of corporate governance mechanisms can influence shareholder wealth in bank mergers.

According to agency theory, there are likely to be conflicts between managers and shareholders. The conflicts occur in that managers may pursue their own purpose at the expense of shareholders. Mergers and acquisitions can cause significant conflicts between

managers and shareholders as mergers and acquisitions are major corporate investments to the firms. Poor bank governance may allow insiders to use bank resources for their own purposes and give shareholders disappointing returns on their investments (Morck *et al*. (1990); Shleifer and Vishny (1997); Hagendorff *et al*. (2007)). Thus, the presence of corporate governance mechanisms provides a function to monitor managerial behaviour. If corporate governance mechanisms can effectively monitor managerial behaviour, the interests between managers and shareholders may be more closely aligned. This is due to the fact that corporate governance mechanisms can limit managerial discretion and thus protect minority shareholders. In other words, the existence of corporate governance mechanisms is to mitigate the conflicts between managers and shareholders and reduce the expropriation by managers. In turn, the effectiveness of corporate governance mechanisms can be expected to enhance shareholder wealth in bank mergers and acquisitions.

A number of prior empirical studies have explored the value effects of bank mergers and governance variables, such as executive compensation (Bliss and Rosen (2001); Becher and Campbell (2005)), managerial ownership (Hughes *et al*. (2003)) and board composition (Brickley and James (1987); Subrahmanyam *et al*. (1997); Cornett *et al*. (2003)). However, these prior empirical studies only focus on the variables from firm level corporate governance mechanisms.

It may be argued that the country level corporate governance mechanisms can also affect the value effects of bank mergers. La Porta *et al*. (1998) argue that the legal system is an important determinant to protect shareholders. Hagendorff *et al*. (2007) argue that investors in low protection environments may require compensation for lower governance standards and a higher risk of expropriation by insiders. Anderson *et al*. (2009) also argue that strong investor protection in a target country offers higher bargaining power to targets.

However, it is largely ignored whether the country level corporate governance mechanisms in terms of the legal and regulation system can explain the variations of the announcement returns in mergers and acquisitions. Several prior empirical studies have

explored the relationship between investor protection and the cumulative abnormal returns of the firms (e.g., Kuipers *et al*. (2003); Bris and Cabolis (2004); Stark and Wei (2004); Rossi and Volpin (2004); Freund *et al*. (2008); Martynova and Renneboog (2008)). These prior empirical studies above only look at the industrial firms. Hagendorff and Keasey (2008) argue that there is limited evidence exploring the valuation effects of mergers in different investor protection regimes for banking firms. It is not clear as to whether the empirical evidence from industrial firms can be applicable to the banking firms.

In addition to the legal system of investor protection, Caprio *et al*. (2007) argue that investor protection laws may not provide an effective corporate governance mechanism to protect minority shareholders. Thus, bank regulation may serve as an alternative mechanism to discipline managerial behaviour. Strong bank regulation can reduce the opportunity to be expropriated by managers through mergers and acquisitions. Thus, the strength of bank regulation can be expected to affect shareholder wealth of bank mergers. However, due to limited evidence, little is known as to whether bank regulation can influence shareholder wealth in bank mergers as will be discussed in chapter 3. It remains a question to determine as to whether bank regulation can also have an influence on shareholder wealth of bank mergers.

While this thesis covers a wide range of countries in terms of international studies, the cross-country approach makes the current study to investigate the effect of the differences in legal environment in terms of investor protection and bank regulation on the shareholder wealth in bank mergers and acquisitions. In addition, due to limited evidence in the academic research, this thesis can provide more evidence to address whether investor protection and bank regulation can be important determinants to explain the cumulative abnormal returns around bank merger and acquisition announcements.

1.2 Objectives

The aim of this thesis is to explore the impact of investor protection and bank

regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. From this perspective, this thesis examines whether bank mergers create or destroy value to shareholders and further explores as to whether investor protection and bank regulation can be important determinants to explain the cross-sectional variations of the cumulative abnormal returns around bank merger and acquisition announcements.

Prior empirical studies examining shareholder wealth of bank mergers mainly focus on the U.S. market, or the EU market, with only a few studies also analysing markets from the rest of the world, as will be discussed in chapter 2. However, prior empirical studies do not use a large international sample of bank mergers from a number of countries and the results are inconclusive. The existing literature does not provide a clear picture to address whether bank mergers create or destroy value to shareholders. In this study, I use a large sample of 508 targets and 1,424 bidders from 36 and 39 countries to carry out the analysis, respectively.

In addition, as will be discussed in chapter 3, there is limited evidence to explore the relationship between investor protection and bank regulation and shareholder wealth in bank mergers. If investor protection and bank regulation can serve as effective corporate governance mechanisms to monitor managerial behaviour, bank mergers can be expected to create value for shareholders. This is because managers may have less ability to expropriate shareholders. Consequently, minority shareholders can be well protected if investor protection and bank regulation in a country are strong. However, due to limited evidence in academic research, little is known as to whether investor protection and bank regulation can be important determinants to explain the cumulative abnormal returns around bank merger and acquisition announcements.

While little is known regarding whether bank mergers create or destroy value to shareholders and whether investor protection and bank regulation can be important determinants to explain the cumulative abnormal returns around bank merger and

acquisition announcements, more evidence and a clearer understanding of these issues in academic research are valuable. This thesis attempts to fill this gap.

1.3 Findings

The aim of this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. First, this thesis examines the impact of shareholder wealth in bank mergers. In this aspect, this thesis measures the abnormal returns and cumulative abnormal returns for targets, bidders and combined firms. Furthermore, this thesis employs the cross-sectional regression analysis to explore as to whether investor protection and bank regulation can be important determinants to explain the cross-sectional variations of the cumulative abnormal returns around bank merger and acquisition announcements. In the regression analysis, this thesis also controls for the deal and firm specific characteristics and the country level specific characteristics in order to accurately explore the relationship between investor protection and bank regulation and the cumulative abnormal returns. Hence, the empirical results are presented in chapter 6, 7 and 8 for targets, bidders and combined firms, respectively. The empirical findings are summarised as follows.

With regard to target shareholder wealth, the empirical results show that targets on average earn 13.25% cumulative abnormal returns over a 3-day (-1,+1) event window. Splitting the sample based on the market, the results show cumulative abnormal returns of 16.47% to U.S. targets, 8.88% to EU targets and 2.57% to targets from other markets over a 3-day (-1,+1) event window. The results suggest that U.S. banking takeover market is more competitive as a result of higher announcement returns to U.S. targets. Taking into account the type of deals, the results show that targets obtain cumulative abnormal returns of 13.66% and 11.26% for focusing and diversifying deals, respectively. The findings suggest that the market is more favourable of focusing deals to targets in that managers do not need to manage more types of risks after the transactions.

In the cross-sectional regression analysis, the results show that target cumulative abnormal returns are positively and significantly related to the level of investor protection in a target country, measured as the antidirector rights index and the rule of law. The results suggest that targets have higher bargaining power when targets are in a country with strong investor protection. The results indicate that targets gain more when investor protection in a target country is strong.

In addition, the results also reveal that target cumulative abnormal returns are positively and significantly associated with bank regulation in a bidder country measured as overall activities restrictiveness, official supervisory power and prompt corrective power. The results suggest that targets earn higher announcement returns when bank regulation in a bidder country has more restriction on bank activity, official supervisors have strong power to intervene the transactions and bank regulation has more power to correct the problem from the transactions. This suggests that bank regulation in a bidder country allows bidders to closely evaluate the transactions. This can be expected to increase future gains to targets. With regard to control variables, the results only show that targets obtain higher gains when target size is small.

Furthermore, the results find that targets gains more when the difference of the rule of law in a bidder and target country is small. The results show that targets gain more when targets come from a country with strong investor protection. The findings also uncover that target cumulative abnormal returns are negatively and significantly associated with the difference of prompt corrective power in a bidder and target country. When bank regulation in a target country has more power to correct the problem in the transactions, targets can obtain higher announcement returns in that bank regulation in a target country can be expected to better protect target shareholders.

Turning to bidder shareholder wealth, the results show that bidding firms on average experience -0.63% cumulative abnormal returns over a 3-day (-1,+1) event window. The results are statistically significant at the 0.01 level. This illustrates that bidders experience

negative announcement returns, showing losses to bidder shareholders. This can also be an indication of wealth transfer from bidders to targets.

Taking into account the market, the results show that bidders obtain -0.91%, -0.10% and -0.39% cumulative abnormal returns over a 3-day (-1,+1) event window in the U.S., EU market and other markets, respectively. The findings reveal that U.S. bidders experience more losses as a result of more competitive banking takeover market. In addition, the findings reveal that bidders obtain -0.89% and 0.05% cumulative abnormal returns over a 3-day (-1,+1) event window for focusing and diversifying deals, respectively. The results are statistically significant at the 0.01 level for focusing deals only. The difference is statistically significant.

In the cross-sectional regression analysis, the results show that bidder cumulative abnormal returns are negatively and significantly related to investor protection in a bidder country measured as the rule of law. A possible explanation is that strong investor protection can limit bidder manager's ability to pursue risky investment projects through mergers and acquisitions. This can reduce the future gains to bidders. Thus, bidders obtain lower announcement returns when investor protection in a bidder country is strong.

With respect to bank regulation, the results show that bidder cumulative abnormal returns are negatively and significantly associated with overall activities restrictiveness. When bank regulation in a bidder country has more restriction on bank activity, bidders can also be expected to obtain lower gains in mergers and acquisitions.

On the other hand, the results show that bidder cumulative abnormal returns are positively and significantly related to bank regulation in a bidder country measured as independence of overall supervisory authority. The findings suggest that bidders obtain higher announcement returns when supervisory authority is more independent. Supervisory authority can be expected to reduce the external influence, such as the political consideration. They can fairly evaluate the transactions. This can thus benefit bidder shareholders.

With regard to control variables, the results show that higher bidder cumulative abnormal returns are associated with cash payment, with higher growth potential measured as the market to book ratio, and with a higher capital ratio. The results reveal that bidders gain more in cash payment. When bidders with higher growth potential engage in mergers and acquisitions, they can be expected to create higher synergies after the transactions. Thus, bidders gain more when bidders have higher growth potential. In addition, when bidders have higher capital ratio, their capital can serve a cushion to against unexpected losses in mergers and acquisitions. Bidders gain more when bidders have higher capital ratio.

In contrast, the results show that higher cumulative abnormal returns to bidders are correlated to smaller relative size of the target to bidder, lower profitability measured as ROA, smaller bidder size and less competitive banking market in a bidder country measured as net interest margin. A further analysis reveals that bidder cumulative abnormal returns are positively and significantly related to the difference of bank regulation in a bidder and target country measured as prompt corrective power.

This thesis uses the weighted average approach to measure the announcement returns to combined firms, and the results show that combined firms on average obtain 0.39% cumulative abnormal returns over a 3-day (-1,+1) event window. Positive announcement returns to combined firms indicate that bank mergers overall create value to shareholders. The results also show that combined firms on average obtain 0.42% and 0.23% cumulative abnormal returns over a 3-day (-1,+1) event window for focusing and diversifying deals, respectively. However, the difference is not statistically significant.

In the cross-sectional regression analysis, the results show that combined firms cumulative abnormal returns are positively and significantly associated with investor protection measured as the combination of the antidirector rights index in a target and bidder country. The results suggest that strong investor protection in a target and bidder country can be better to protect shareholders. Combined firms can then earn higher gains

when investor protection in a target and bidder country is strong. In addition, the results show that higher cumulative abnormal returns to combined firms are related to smaller bidder size and less competitive banking market in a bidder country measured as net interest margin.

1.4 Contributions

This thesis makes contributions in different dimensions for academic research and practices. In academic research, this thesis firstly provides more evidence to address the impact of shareholder wealth in bank mergers and acquisitions. Using a large international sample of bank mergers to examine shareholder wealth of bank mergers, the empirical evidence in this thesis can be expected to provide a clearer picture to academic researchers.

In addition, as mentioned previously, the empirical evidence is extended to explore the effectiveness of the country level corporate governance mechanisms in terms of the legal and regulation system on the impact of shareholder wealth in bank mergers. The empirical findings in this thesis contribute to our knowledge and understanding as to whether investor protection and bank regulation can be important determinants to explain the variations of the announcement returns in bank mergers. The results assist academic researchers not only to reveal how investor protection and bank regulation play a role in the decision making of bank mergers and acquisitions, but also to uncover how the announcement returns of bank mergers can be affected by the strength of investor protection and bank regulation.

With regard to the practical implications, the empirical findings in this thesis are of relevance to investors, managers and policymakers/regulators. The empirical evidence in the current study can assist investors to realise how the announcements of bank mergers and acquisitions can affect their shareholder wealth. Investors may establish different investment strategies in order to increase/reduce a positive/negative impact of their wealth from bank merger and acquisition announcements.

The empirical evidence can also help managers to understand how the level of investor protection and bank regulation can influence their decisions making on the impact of shareholder wealth in bank mergers. Managers may be able to carry out different strategies to protect shareholders and increase shareholder wealth. In addition, the empirical evidence in this thesis can also assist policymakers/regulators to improve and design their investor protection and bank regulation laws in order to protect minority shareholders.

1.5 The organisation of this thesis

This thesis is organised as follows. Chapter 2 presents the review of literature in bank mergers and acquisitions. Chapter 3 reviews the prior empirical studies related to corporate governance. Research questions and hypotheses are provided in chapter 4. Chapter 5 describes the sample selection and methodology. The empirical results are presented in chapter 6, 7 and 8 for targets, bidders and combined firms, respectively. Finally, chapter 9 presents conclusion and suggestion.

Chapter 2 Literature review on bank mergers and acquisitions

2.1 Introduction

The aim of this chapter is to review empirical studies with respect to bank mergers and acquisitions. As can be seen from Bruner's (2003) and Martynova and Renneboog's (2008) reviews of the existing literature on takeover activities, academic researchers in the area of mergers and acquisitions mainly concentrate on non-financial firms. However, the empirical evidence from non-financial firms may not necessarily be applied to financial firms as more regulations are imposed on financial firms. Hence, the review of prior empirical studies in this chapter is limited to bank mergers and acquisitions.

This chapter starts with reviewing the motives of mergers and acquisitions. This not only provides an understanding of the theoretical background, but also distinguishes the competing motives and its implication of takeover gains. While reviewing the prior empirical studies on bank mergers, the main focus is to highlight the main findings, while also taking into account the models and the event windows, as such choices may have an impact on the level of abnormal returns. Furthermore, the review of the prior studies also considers factors that influence the level of abnormal returns. The review of prior empirical studies can not only help our understanding of how prior studies conduct their studies and what empirical findings they report, but also point out the limitations from prior empirical studies. This allows this thesis to further explore the impact of the shareholder wealth on bank mergers.

To uncover what is known regarding the wealth effects of bank mergers, this chapter will review prior empirical studies for targets, bidders and combined firms, respectively. Thus, this chapter is organised as follows. Section 2.2 discusses the motives of takeovers. Section 2.3 reviews the empirical evidence for target firms. The empirical studies for bidding firms are discussed in section 2.4. The empirical evidence for combined firms is

presented in section 2.5. Finally, the conclusion is discussed in section 2.6.

2.2 The motives of takeovers

In theory, three major motives of takeovers have been documented in the existing literature (Berkovitch and Narayanan (1993); Zhang (1998)). These motives include the synergy motive, the hubris motive and the agency motive. Each motive has its own implication in association with the gains to the participant of the firms in mergers and acquisitions. The discussion can be expected to offer a clear picture to illustrate the motives of takeovers in relation to the gains of the participated firms.

2.2.1 The synergy motive

The synergy hypothesis has been widely documented in the existing literature in an attempt to explain the motive of mergers and acquisitions (Berkovitch and Narayanan (1993); Zhang (1998); Becher (2000); Lensink and Maslennikova (2008); Carline *et al*. (2009)). The synergy motive suggests that takeovers occur when the combination of the two firms results in economic gains. Managers of targets and acquirers engage in takeover activity when the transaction results in gains to the firms. In this aspect, managers aim to maximise shareholder wealth (Berkovitch and Narayanan (1993)). This implies that both targets and bidders gain during the takeover activity. While both targets and bidders gain, it can be expected that combined firms also obtain the benefits after the transaction.

2.2.2 The hubris motive

An alternative hypothesis for mergers and acquisitions is the hubris motive. The hubris hypothesis suggests that managers may overpay to targets as a result of valuation errors (Roll (1986); Berkovitch and Narayanan (1993); Zhang (1998); Becher (2000); Lensink and Maslennikova (2008)). Lensink and Maslennikova (2008) argue that “The acquirer mistakenly (because of hubris or self-confidence) believes that the value of the

target is higher than its actual market value. As a result, the bidder overpays and realises negative gains while shareholders of the target realise a profit." (p. 186). When targets gain and bidders lose, it may not clearly quantify the gains to combined firms depending on the level of gains or losses to targets and bidders, respectively, although joint abnormal returns may be expected to approximately approach to zero.

2.2.3 The agency motive

Several papers apply the agency hypothesis to account for the motives of takeovers (Berkovitch and Narayanan (1993); Zhang (1998); Lensink and Maslennikova (2008); Carline *et al*. (2009)). Berkovitch and Narayanan (1993) argue that managers pursue their own interests to engage in takeover activity at the expense of shareholders. Carline *et al*. (2009) also argue that managers may aim to their own interests by increasing firm size. Managers may also increase perquisite consumption that may damage firm value.

If mergers and acquisitions are motivated by managers' self-interests, the transactions may not necessarily create value to bidders. Although targets still obtain gains due to higher bargaining power, the gains to combined firm may be expected to be negative as a result of the gains to targets and losses to bidders.

2.3 Target firms

This section aims to review prior empirical studies for target firms in bank mergers. The review of prior empirical studies can provide insights to the impact of shareholder wealth for target firms. To fully appreciate the impact of shareholder wealth, this section discusses the empirical evidence for target firms in terms of U.S. studies, EU studies and international studies, respectively. The review of prior studies can uncover the differences in the impact on shareholder wealth from M&As in different markets. This allows this thesis to further investigate shareholder wealth in different markets.

2.3.1 Empirical evidence from U.S. studies

Neely (1987) studies the effects on shareholder returns of merger and acquisition announcements for publicly traded banks and bank holding companies from 1979 to 1985. There are 26 acquisitions in the final sample.

Applying the market model[2], the model parameters are estimated from week -119 to week -11, where week 0 is the announcement week. Neely finds significant cumulative abnormal returns of 8.45% over a 2-week (-2,-1) pre-event window, followed by further abnormal returns of 15.04% during the announcement week, week 0. As the cumulative abnormal returns are 15.10% for the seven weeks prior to the announcement week, Neely documents that information leakage may have played a role in the abnormal returns. However, the author argues that information leakage may not exist for all of the acquisitions. Information for a few mergers may be leaked and cause significant positive returns for the entire sample.

In another study with similar sample size, Baradwaj, Fraser and Furtado (1990) use daily data to investigate the wealth effects of hostile bids for publicly traded banking organisations during the period of 1980-1987. The final sample contains 23 acquiring and 24 target banks. In addition, the authors also analyse a control sample of friendly bank mergers in order to compare wealth effects with the hostile bids. The control sample includes 30 bidders and 30 targets.

Applying the market model with parameters estimated from day -210 to day -61, Baradwaj *et al*. find that target firms in hostile bids earn 17.29% cumulative abnormal returns over a 2-day (-1,0) event window relative to 10.92% for friendly bank mergers, both significant at the 0.01 level. The difference between hostile and friendly bids is significant at the 0.05 level.

Extending the investigation period to the early 1990s, Houston and Ryngaert (1994) study the stock market reaction of bank mergers from 1985 to 1991. Their final sample

[2] The market model will be further discussed in chapter 5 in the section on the methodology.

contains 153 merger announcements, of which 131 are completed deals and 22 are cancelled deals. Their sample is significantly larger than those in the studies of Neely (1987) and Baradwaj *et al*. (1990). This may reflect the fact that there was a boom in bank merger activities between the middle of the 1980s and the early 1990s.

The market model is utilised with parameters estimated from day -230 to day -31, where day 0 is the leakage date.[3] The authors find that target firms earn positive cumulative abnormal returns of 14.39% over a 5-day (-4,0) event window, significant at the 0.01 level.

Further analysis shows that target firms in the completed deals obtain 14.77% cumulative abnormal returns over the event window compared to 9.79% for cancelled deals, both significant at the 0.01 level. The difference between completed and cancelled deals is significant at the 0.10 level. Houston and Ryngaert (1994) suggest that "target managements and/or shareholders may choose to back out of deals where merger premia are too small." (p. 1162).

In the cross-sectional regression analysis, Houston and Ryngaert aim to explain the cross-sectional variation in cumulative abnormal returns by looking at several factors, including the operating performance of the bidder and target, the extent to which the operations of the target and bidder overlap, the financing of the deal, and the size of the deal. The authors find that there is a positive relation between target cumulative abnormal returns and the measure of overlap.[4] The authors argue that "the results suggest that the target bank generally receives a larger portion of the benefits resulting from the potential for future cost-cutting as a result of the merger." (p. 1171).

Controlling for the method of payment and the relative size of the target to bidder, Houston and Ryngaert find that stock payment has a negative but insignificant impact on

[3] Houston and Ryngaert (1994) argue that "The leakage date for the target is the first announcement that the target was a takeover candidate." (p. 1160).

[4] Houston and Ryngaert (1994) state that the measure of overlap indicates how many offices are closed after a merger.

the level of target cumulative abnormal returns. The relative size of the target to bidder is negatively and significantly related to target cumulative abnormal returns.

Zhang (1995) examines U.S. bank takeovers from 1980 to 1990 by applying the size-adjusted return model to a sample of 107 pairs of target and bidding banks. To measure the wealth gains from a takeover, the mean-adjusted return model multiplied by the market value of the firm in terms of the size-adjusted abnormal returns is applied. The author argues that the mean-adjusted return model is not affected by inconsistent model parameters due to the problem of infrequent trading.[5]

The author reports that target firms gain an insignificant 0.78% abnormal returns on the announcement date, although the results show that the cumulative abnormal returns for target firms are 5.60% over a 2-day (-1,0) event window, significant at the 0.01 level. However, the abnormal returns on the announcement date are rather low compared to significant 5.60% cumulative abnormal returns over a 2-day (-1,0) event window, suggesting a problem in classifying the event date. If a wrong announcement date is used, the abnormal returns cannot truly reflect the impact of bank mergers during the event period.

Siems (1996) examines the impact on shareholder wealth from 19 bank megamerger deals in 1995. Megamerger deals are defined as transactions where the value exceeds 500 million U.S. dollars. Applying the market model with parameters estimated from day -150 to day -15[6], Siems reports that target banks gain cumulative abnormal returns of 13.04% over a 3-day (-1,+1) event window, significant at the 0.01 level.

However, Siems's (1996) study only looks at relatively large deals of 500 million U.S. dollars or above in 1995, resulting in a small sample size. Instead, Houston and Ryngaert (1994) focus on deals above 100 million U.S. dollars, using a large sample size. The results

[5] Zhang (1995) notes that the size-adjusted return model is adopted to avoid the infrequent trading problem. However, the use of the mean adjusted return model may be inappropriate in that this model does not take into account the risk factor as will be discussed in chapter 5.

[6] However, the estimation period is so close to the event date. It can be argued that the model parameters may be influenced by any bid speculation.

from the studies of Siems (1996) and Houston and Ryngaert (1994) do not show a significant difference. It can, therefore, be argued that the deal value and sample size can influence shareholder wealth of bank mergers.

Grullon, Michaely and Swary (1997) analyse what determines the payment method and the announcement date change in equity value for target and bidding banks in bank mergers between 1981 and 1990. The final sample contains 146 bank mergers. Using the market model with parameters estimated from day -62 to day –2, Grullon *et al*. find that target firms earn positive abnormal returns of 2.68% on the announcement date, significant at the 0.01 level.

However, it can be argued that such a short parameter estimation period could affect the analysis of abnormal returns in that inaccurate parameters could enlarge or narrow down the abnormal returns. In addition, their estimation period is so close to the event date that the model parameters may be influenced by any bid speculation. However, a strength of their study is that the authors use alternative approaches as a robust check.[7]

When analysing subgroups based on the method of payment, the authors find that target firms obtain positive cumulative abnormal returns of 9.74%, 10.95% and 9.82%, respectively, over a 3-day (-1,+1) event window for stock offers, cash offers and combination of stock and cash offers. The differences are statistically insignificant. However, as can be seen, there is a large difference of target announcement returns between the announcement date and a 3-day (-1,+1) event window. This may, therefore, suggest that Grullon *et al*. may have a problem to classify the announcement date to measure the announcement returns.

In the cross-sectional regression analysis, Grullon *et al*. aim to explain target announcement returns by controlling for factors, such as the method of payment, the capital ratio of the firm measured as the equity to assets value and the relative size of the

[7] Grullon *et al*. (1997) report that the results are practically identical when using the mean-adjusted returns model and the market-adjusted returns model. This can assist to conclude that their results are robust. Similarly, this thesis also applies these two models as a robustness check, where the model specifications are discussed in chapter 5.

target to bidder measured as target assets to bidder assets. The results show that stock payment is negatively, but insignificantly, correlated to target cumulative abnormal returns. The authors report that the effect of the capital ratio and the relative size are negative and significant, indicating that the stock price reaction is more favourable when the capital ratio of the target is lower and the size is relatively small. These results indicate that target wealth gains are sensitive to the capital ratio and the relative size of the target and bidder.

In a study with a relatively large sample size, Becher (2000) investigates the valuation effects for bank mergers from 1980 to 1997. The final sample consists of 583 bank mergers. Abnormal returns are calculated by subtracting a market index from the firm's raw returns, and Becher finds that target firms gain 22.64% and 17.10% cumulative abnormal returns over a 36-day (-30,+5) and 11-day (-5,+5) event window, respectively, both significant at the 0.01 level.[8]

When analysing the method of payment, the results show that target firms obtain 20.84% and 15.88% cumulative abnormal returns over a 36-day (-30,+5) and 11-day (-5,+5) event window for stock offers, respectively. For cash with mixed offers, target cumulative abnormal returns are 25.38% and 19.07%. The difference between stock payment and cash with mixed payment is statistically significant. Becher's findings are consistent with the study of Grullon *et al*. (1997) that targets paid in stock receive lower announcement returns than those in other payment methods.

While Grullon *et al*.'s results regarding the payment effects were insignificant, Becher (2000) reports a significant difference in the level of abnormal returns depending on the method of payment. This may imply that the results can be influenced by sample size.

In a recent paper, DeLong and DeYoung (2007) examine 216 domestic U.S.

[8] As can be seen, the level of the announcement returns depends on the event window interval selected. A longer event window can be better to fully capture the shareholder wealth of bank mergers during the event period. Thus, this thesis applies various event windows, e.g. 61-day (-30,+30) event window, to capture the drift of the announcement returns in bank mergers as will be presented in the empirical section (chapter 6,7 and 8).

acquisitions over the 1987 to 1999 period, where both the target and the bidder are either commercial banks or bank holding companies. Applying the market model with the model parameters estimated from day -300 to day -50, their findings show that target banks gain positive cumulative abnormal returns of 13.92% and 14.96% over a 11-day (-5,+5) and 21-day (-10,+10) event window, respectively, both significant at the 0.01 level.

2.3.1.1 Geography vs. activity diversification

In addition to the empirical studies of U.S. bank mergers as discussed above, several studies specifically analyse bank mergers with respect to geography and activity diversifications. Becher and Campbell (2005) argue that legislation that significantly reduced barriers to interstate banking allows banks to make decisions free of geographic restrictions. However, Adkisson and Fraser (1990) argue that targets have a protected niche to earn excess profits if geographic expansion restrictions form a barrier. “These excess profits become part of the premium in merger negotiations.” (p. 145).

In addition to geographical diversification, Cornett *et al*. (2003) argue that activity diversification allows banks to engage in different types of risk. Thus, studying the value effects of geographical and activity diversification mergers “allows us to make inferences on the desirability of various organisational structures in the banking industry.” (DeLong (2001), p. 223).

Trifts and Scanlon (1987) investigate the wealth effects of interstate bank mergers in the U.S. market. The final sample includes 21 mergers prior to December 1985.[9] The market model is applied with parameters estimated over the 20 weeks ending on week -41 before the announcement date.[10]

Trifts and Scanlon find that acquired banks earn 21.37% cumulative abnormal returns over a 61-week (-40,+20) event window, significant at the 0.05 level. With significant

[9] However, Trifts and Scanlon (1987) do not specify the starting date for the sample period and their sample is small. A small sample can influence the power of the statistical analysis.

[10] Trifts and Scanlon (1987) acknowledge that the model parameters do not change significantly when estimating from the post-estimation period. However, the use of the post-estimation period cannot be applied in this thesis in that targets may be delisted soon after the transactions. If targets are delisted soon after the transactions, it is not possible to obtain target share price to measure target shareholder wealth.

cumulative abnormal returns of 16.15% over a 40-week (-40,-1) pre-event window, Trifts and Scanlon conclude that "This is evidence of significant leakage during the pre-announcement period." (p. 307).

Cornett and De (1991a) use daily data to examine stock market reactions to the announcements of interstate bank mergers over the period of 1982-1986. The final sample consists of 152 interstate bank acquisition bids made by 59 bidding banks. Applying the market model, the model parameters are estimated from day +16 to day +75.[11] The authors find that target banks gain cumulative abnormal returns of 8.10% for a 2-day (-1,0) event window, significant at the 0.01 level.

In another paper, Cornett and De (1991b) study the role of the medium of payment in interstate bank mergers between 1982 and 1986. The final sample contains 132 interstate bank acquisitions. Using the market model with parameters estimated from day -75 to day -16, their findings show that target banks gain significant abnormal returns of 7.69% on the announcement date, significant at the 0.01 level. Further analysis shows that target banks obtain significant positive abnormal returns of 8.14%, 9.04% and 5.66% on the announcement date for stock, cash and mixed payment, respectively, all significant at the 0.01 level. The differences in abnormal returns depending on the method of payment are not statistically significant.

While examining the method of payment, Cornett and De (1991b) and Grullon *et al*. (1997) report that targets with cash payment obtain higher announcement returns than those with other payment methods. Although the results show higher target abnormal returns for cash payment, Cornett and De argue that any conclusions in their study should be drawn with care due to the small number of observations.

Toyne and Tripp (1998) examine interstate merger activity in the U.S. banking industry during the period 1991-1995. The final sample consists of 68 matched targets and

[11] However, their estimation period is rather short and so close to the event date. If the estimation period is so close to the event date, the model parameters may be influenced by any bid speculation.

bidders. Using the market model, the model parameters are estimated from day +16 to day +75. Toyne and Tripp find that target firms gain 10.97% cumulative abnormal returns over a 3-day (-1,+1) event window, significant at the 0.01 level. However, similar to Cornett and De (1991a,b), of some concern is the short estimation period, as this may have an impact on the accuracy of the estimation of the model parameters.

Becher and Campbell (2005) examine the valuation effect of full interstate deregulation on merger announcements during the period 1990-1999. The final sample contains 443 bank mergers. Applying the market model with parameters estimated from day -120 to day -31, Becher and Campbell report that cumulative abnormal returns for targets amount to 16.70% over a 7-day (-5,+1) event window, significant at the 0.01 level.

So far, some papers with regard to interstate bank mergers have been discussed above. However, in a paper, Cornett and Tehranian (1992) examine both interstate and intrastate acquisitions over the period of 1982 to 1987. Bids are included where the transaction value exceeds 100 million U.S. dollars. Their final sample is constituted of 15 interstate and 15 intrastate bank acquisitions.

The market model is applied with parameters estimated from day -136 to day -16. Cornett and Tehranian find that the level of cumulative abnormal returns for the full sample of targets is 8.00% over a 2-day (-1,0) event window, significant at the 0.01 level. In addition, the results indicate that there are 4.70% cumulative abnormal returns over a 2-day (-1,0) event window for interstate mergers compared to 11.00% for intrastate mergers, both significant at the 0.01 level.

Although there is a substantial difference of cumulative abnormal returns between interstate and intrastate bank mergers, the authors do not test the significance level for the difference of cumulative abnormal returns. Furthermore, their study covers both interstate and intrastate acquisitions, but their sample size is small. Thus, it is necessary to exercise caution when comparing their results to those of other empirical studies. On the other hand, as Cornett and Tehranian (1992) report a large difference of target announcement returns

between interstate and intrastate acquisitions, their results suggest that geographic differences can cause different levels of target cumulative announcement returns. Thus, when the deals take place in the form of cross-border transactions, it can be expected that bank mergers generate different levels of target announcement returns.

Several studies extend their analysis to different markets in terms of cross-border deals. The review of these studies also offers additional insights to target shareholder wealth. Hudgins and Seifert (1996) investigate whether there are gains to shareholders of U.S. financial firms involved in domestic or cross-border acquisitions over the period from 1968 to 1989. The final sample of financial firms comprises 72 American targets and 88 American acquirers. In addition, the final sample of banks contains 50 American targets and 66 American bidders.

Applying the market model with the Scholes and Williams (1977) approach to take into account the problem of nonsynchronous trading, parameters are estimated from day -90 to day -16.[12] In cross-border deals, targets earn 7.30% cumulative abnormal returns over a 3-day (-1,+1) event window when foreign firms acquire U.S. financial firms. The results are significant at the 0.01 level. In addition, when foreign firms acquire U.S. banks, targets obtain 8.95% cumulative abnormal returns over a 3-day (-1,+1) event window, significant at the 0.01 level.

With regard to domestic deals for U.S. targets, the results show that targets earn 6.44% cumulative abnormal returns over a 3-day (-1,+1) event window when U.S. firms acquire U.S. financial firms. The results are significant at the 0.01 level. However, the authors document that "a matched comparison between the announcement gains for the U.S. targets acquired by foreigners and those acquired by domestic firms reveals no significant differences." (p. 175).

[12] Hudgins and Seifert's (1996) estimation period is so close to the event date. The model parameters may be influenced by any bid speculation. In addition, their estimation period is short that can be sensitive to reflect any unexpected shock in a short period as a result of incorrect model parameters.

Kiymaz (2004) examines the impact of mergers and acquisitions on U.S. targets and bidders involved in cross-border mergers of financial institutions over the period of 1989-1999. The final sample includes 207 foreign acquisitions by U.S. bidders and 70 cross-border acquisitions of U.S. targets.

Using the market model with parameters estimated from day -316 to day -61, Kiymaz finds that U.S. target firms in these cross-border acquisitions gain 3.41% cumulative abnormal returns for a 3-day (-1,+1) event window, significant at the 0.01 level.

In the cross-sectional regression analysis, Kiymaz reports that targets earn higher announcement returns if the relative size of the bidder to target is large. However, controlling for the method of payment, cash payment is positive but not statistically significant.

In addition to the empirical studies with respect to geographical acquisitions discussed above, DeLong (2001) investigates the wealth effect of bank mergers during the period 1988-1995, analysing activity focus and diversifying mergers. Bids are included if a firm acquires more than 50% or adds to a lower percentage in order to reach more than 50% of the voting shares of another firm. The final sample includes 280 mergers.

Applying the market model with parameters estimated from day -300 to day -51, DeLong reports that target firms obtain cumulative abnormal returns of 16.61% over a 12-day (-10,+1) event window, significant at the 0.01 level. DeLong further finds that target firms in activity focus mergers gain 17.61% cumulative abnormal returns compared to 15.94% in activity diversification transactions, both significant at the 0.01 level. The difference between activity focus and activity diversification mergers is statistically insignificant.

As discussed above, prior empirical studies report that targets in U.S. bank mergers receive positive announcement returns. The level of target announcement returns depends

on the investigation period, the model and the choice of event window. Positive announcement returns suggest that targets obtain benefits during bank mergers and acquisitions.

Although targets obtain positive announcement returns in geographic and activity acquisitions, targets earn lower announcement returns in interstate acquisitions than those in intrastate acquisitions in domestic U.S. market. In addition, Kiymaz (2004) also reports lower announcement returns to targets in cross-border deals. This may suggest that the transactions involved in geographical diversification appear to generate lower gains to targets, although Hudgins and Seifert (1996) find no significant difference between domestic and cross-border deals.

Besides, DeLong (2001) finds that targets obtain higher announcement returns in activity focusing acquisitions than those in activity diversifying acquisitions, suggesting that the market may not precisely value the risk diversification effects through activity diversification acquisitions. While the existing literatures in U.S. studies are discussed above, it is unclear whether the results in U.S bank mergers can be applicable to those in EU bank mergers. As a result, the empirical evidence for target firms in EU bank mergers is reviewed in the next section.

2.3.2 Empirical evidence from EU studies

Beitel, Schiereck and Wahrenburg (2004) examine 98 large M&As in the European financial sector between 1985 and 2000 to determine the factors that drive shareholder wealth for merger entities. Bids are included if the transaction value is larger than 100 million U.S. dollars.[13]

In addition, bids are only included if the bidder controls over 50% of target shares after the transaction. Using the market model, parameters are estimated from day -272 to

[13] Beitel *et al*. (2004) state that Europe is defined as EU-15, including Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the UK plus Norway and Switzerland.

day -21.[14] The results show that targets obtain 12.39% cumulative abnormal returns over a 3-day (-1,+1) event window, significant at the 0.01 level. Beitel *et al*. confirm that European banks involved in M&A transactions clearly benefit target shareholder, which is consistent with the majority of the primarily U.S.-focused research.

In the cross-sectional regression analysis, the authors find that target cumulative abnormal returns are lower if the relative size of the target to bidder is large. In addition, the results show that the target stock performance, measured as the difference of target stock performance and the industry index performance, is negatively correlated with target cumulative abnormal returns. Thus, the authors argue that "the shareholders of a target benefit from the transfer of corporate control from the former management of a target to the management of a bidder if the target was poorly managed prior to a transaction." (p. 132).

In another study with similar investigation period from 1987 to 2000, Ismail and Davidson (2007) study the determinants of target returns in European bank mergers. Their final sample contains 76 matched targets and bidders. Applying the market model with parameters estimated from day -210 to day -21, Ismail and Davidson report that target cumulative abnormal returns are 3.31% over a 21-day (-20,0) event window, significant at the 0.01 level.

In the cross-sectional regression analysis, the authors find that the method of payment in terms of cash offers and mixed offers has a positive and significant association with target cumulative abnormal returns in comparison to stock financed acquisitions. In addition, the evidence shows that target's profitability, measured as return on average assets prior to the transaction, is also positively and highly significantly related to target cumulative abnormal returns. When controlling for the capitalisation, measured as the total

[14] Beitel *et al*. (2004) argue that as their study concentrates on large scale bank transactions, the stocks are liquid and display very active trading activity. Thus, the adjustment of the model parameters for non-synchronous trading is not taken into account in their study. However, their argument cannot be applied in this thesis in that the sample does not require the deals to be larger than 100 million U.S. dollars in the current study. Thus, this thesis takes into account the problem of thin trading when analysing the shareholder wealth of bank mergers.

capital ratio of the target bank, the results are negative and significant. Accordingly, Ismail and Davidson argue that “acquirers see high capitalisation as implying that targets with high Total Capital Ratios are not using their capital efficiently.” (p. 629).

Their findings also indicate that there is a positive but insignificant relationship between the relative size of the bidder to target and target cumulative abnormal returns. Additionally, target cumulative abnormal returns are positively and significantly related to the relative asset growth of target to acquirer. Ismail and Davidson claim that “this suggests that a target’s growth history is a determinant factor for earning higher excess returns.” (p. 630).

2.3.2.1 Geography vs. activity diversification

Several papers further examine target shareholder wealth with respect to geographic and activity diversification acquisitions in EU bank mergers. Ismail and Davidson (2005) argue that diversification outside the national borders provides an opportunity to access into new markets. In addition, activity diversification acquisitions may also offer an opportunity to diversify the risk. Thus, the review of these studies provides additional insights to target shareholder wealth and also makes a comparison to those in the U.S. studies.

Rad and Beek (1999) analyse the wealth effect of cross-border mergers in the European banking sector between 1989 and 1996. Bids are included only if European banks are involved in cross-border mergers and acquisitions. Their final sample contains 17 target banks and 56 bidding banks. The market model is utilised with parameters estimated from day -240 to day -41. The authors report that target banks gain 4.65% cumulative abnormal returns over a 3-day (-1,+1) event window, significant at the 0.05 level.

Campa and Hernando (2006) investigate the success in mergers and acquisitions activity in the European financial industry from 1998 to 2002. Bids are excluded if the

bidder owns more than 50% of the target share before the merger announcement. Their final sample consists of 172 transactions from 15 EU markets.[15] Using the CAPM model to calculate the expected returns during the 6 months prior to the event window, the results show that target firms gain 3.24% cumulative abnormal returns over a 3-day (-1,+1) event window, significant at the 0.05 level.

Further analysis shows that target firms in cross-border deals gain cumulative abnormal returns of 3.82% over a 3-day (-1,+1) event window compared to 2.99% in domestic deals, both significant at the 0.05 level. However, the difference between cross-border and domestic deals is not significant.

In the cross-sectional regression analysis, the authors include some variables to gain insights into target cumulative abnormal returns, including a domestic dummy, a bank to bank dummy and the relative size. The results show that the relative size, measured as target market value to the sum of target and bidder market value, is positively and significantly related to target cumulative abnormal returns.

Furthermore, several papers extend the analysis to examine the effects of activity diversifications. Cybo-Ottone and Murgia (2000) examine the stock market valuation of mergers and acquisitions in the European banking industry between 1988 and 1997. Bids are included if the transaction is larger than 100 million U.S. dollars. The final sample includes targets and bidders in 54 deals.

The market model is applied with parameters adjusted for the problem of nonsynchronous trading by using the Scholes-Williams (1977) approach and estimated from day -270 to day -21.[16] The results show that the level of cumulative abnormal returns

[15] Their sample covers 15 EU markets, including Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and UK.

[16] However, Cybo-Ottone and Murgia (2000) argue that "the large size of the average and median deal contained in our sample should signal that the stocks we analysed are generally liquid ones." (p. 840). Consistently, both Cybo-Ottone and Murgia (2000) and Beitel *et al*. (2004) argue that the problem of nonsynchronous trading may not be a problem when focusing on large transactions as a result of frequently trading stock.

for target firms is 12.93% over a 3-day (-1,+1) event window, significant at the 0.01 level. In addition, focusing on an 11-day (-10,0) event window, the authors find that target banks in cross-border deals obtain higher cumulative abnormal returns than those in domestic deals, at 22.22% and 14.28%, respectively, both significant at the 0.01 level.

Cybo-Ottone and Murgia also report that cross-products (bank to other financial institution) deals for target firms generate higher cumulative abnormal returns at 18.11% than one-line business (bank to bank) deals at 15.26%, respectively, both significant at the 0.01 level. However, the difference between each subgroup is not significant.

Ismail and Davidson (2005) examine shareholder wealth effects for both domestic and cross-border deals in European banking from 1987 to 1999. Their final sample contains 89 targets and 89 bidders from 102 deals. Applying the market model with parameters estimated from day -210 to day -21,[17] Ismail and Davidson find that target firms gain positive cumulative abnormal returns of 2.35% over a 3-day (-1,+1) event window, significant at the 0.01 level.

However, the authors also report additional analysis for different types of deals based on an 11-day (-10,0) event window. The evidence shows that targets in cross-border deals obtain higher cumulative abnormal returns than those in domestic deals, at 5.16% and 1.72%, respectively, significant at the 0.05 and 0.01 level.

Furthermore, the authors report that the deals with bank to bank transactions generate higher cumulative abnormal returns than cross-products deals, at respectively 2.43% and 1.79%, only significant for bank to bank deals. The difference between bank to bank and cross-products deals is not significant. The results further show that target firms gain cumulative abnormal returns of 3.43%, 3.83% and 0.24% for cash, mixed and stock offers, respectively, only significant for cash and mixed payment deals. The difference among the method of payment is only significant between mixed and stock payment.

[17] Ismail and Davidson (2005) report that the results are very similar when applying different indices to compute the returns. In addition, the results are little changed when employing the Scholes-Williams (1977) method to adjust the beta estimate in order to take into account the problem of non-synchronous trading.

As discussed above, the empirical evidence for EU bank mergers is consistent with that of U.S. studies, reporting positive announcement returns to targets. However, the level of target announcement returns is in general lower in EU bank mergers than in U.S. studies, suggesting that EU banking takeover market is less competitive.

Further analysis in EU bank mergers shows that targets in cross-border deals obtain higher announcement returns than those in domestic deals, suggesting that targets obtain higher gains when the transactions take place over different markets. These findings contradict to those of U.S. studies, reporting that targets earn higher announcement returns in domestic deals than those in cross-border transactions.

When analysing activity diversifying acquisitions, Ismail and Davidson (2005) find that target announcement returns in bank to bank deals are higher than those in cross-product deals, which are consistent with DeLong's (2001) findings in the U.S. study. In contrast, Cybo-Ottone and Murgia (2000) report that targets in cross-products deals earn higher announcement returns than those in bank to bank deals.

While prior empirical evidence in U.S. and EU studies is discussed above, it can be argued that these results may not be applicable to other markets in that the U.S. and EU markets are relatively highly developed. In addition, none of the prior studies above analyses both U.S. and EU bank mergers. The lack of direct comparative evidence indicates that it might be useful to review prior empirical evidence from international studies. As a result, the next section reviews several papers with respect to international studies.

2.3.3 Empirical evidence from international studies[18]

Biswas, Fraser and Mahajan (1997) study the impact of international acquisitions on the shareholder wealth during the period of 1977-1987. Bids are classified as international

[18] The international markets mean that the sample of bank mergers and acquisitions are collected from a number of different markets, including U.S., EU and/or markets from the rest of the world.

bank acquisitions from different countries.[19] Their final sample is composed of 125 bidders and 81 targets from 171 merger and acquisition announcements.

Applying the market model with parameters estimated from day -90 to day -20[20], the results show that the magnitude of cumulative abnormal returns for target firms in international acquisitions is 6.23% over a 2-day (-1,0) event window, significant at the 0.05 level. Further analysis shows that cumulative abnormal returns of U.S. and non-U.S. target firms in international acquisitions are 7.75% and 3.51% over a 2-day (-1,0) event window, respectively, both significant at the 0.05 level. The difference between U.S. and non-U.S. target firms in international acquisitions is not significant.

On the other hand, the authors find that target firms in U.S. domestic deals realise cumulative abnormal returns of 10.70% over a 2-day (-1,0) event window, significant at the 0.05 level. Biswas *et al*. claim that the international market is more competitive, resulting in lower cumulative abnormal returns. However, the authors do not report the significance level for the difference between domestic and international acquisitions.

In the cross-sectional regression analysis, the authors only find that payment in cash is positively and significantly related to target cumulative abnormal returns. This finding demonstrates that the method of payment is an important factor to explain target shareholder wealth in bank mergers.

DeLong (2003) investigates the market reaction of non-U.S. domestic mergers compared with U.S. domestic mergers from 1988 to 1999. The final sample comprises 438 mergers, of which 397 are domestic U.S. transactions and 41 are non-U.S. domestic bank mergers.

The market model is applied with parameters estimated over a period extending to approximately one year prior to the merger announcement. The evidence shows that target

[19] Biswas *et al.*'s (1997) sample covers 14 countries, including Australia, Canada, France, Germany, Hong Kong, Ireland, Italy, Japan, Netherlands, Singapore, Spain, Switzerland, United Kingdom and United States.

[20] However, such a short estimation period may result in biased model parameters. If there is any unexpected shock during this short estimation period, the model parameters cannot entirely reflect the movement between the stock price and the market index. When applying biased model parameters to estimate the abnormal returns, the results cannot fully reflect the impact of bank mergers.

firms earn 14.76% cumulative abnormal returns for the entire sample over a 12-day (-10,+1) event window, significant at the 0.01 level. Further analysis shows that U.S. and non-U.S. target firms earn 15.39% and 8.60% cumulative abnormal returns, respectively, both significant at the 0.01 level. The difference between domestic non-U.S. and U.S. mergers is significant at the 0.01 level.

In the cross-sectional regression analysis, DeLong aims to explain the market reaction of a bank merger by controlling for various factors, including the relative size of the bidder to target and the method of payment. The results show that the relationship between target cumulative abnormal returns and the relative size of the bidder to target is negative and significant. However, the effect of payment in cash is positively, but not significantly, related to target cumulative abnormal returns.

Fields, Fraser and Kolari (2007) examine wealth changes in bancassurance mergers from 1997 to 2002. Their study investigates mergers between commercial banks and insurance companies in the United States and internationally (primarily Europe). Bids are included if the bidding firm does not control over 50% of target shares prior to the merger announcement and holds more than 50% of target shares after the transaction. Their final sample contains 129 transactions.

Applying the mean adjusted returns approach[21], the estimation period is from day -200 to day -52. The results show that target firms gain 2.98% over a 2-day (-1,0) event window, significant at the 0.01 level. When analysing the pre-announcement (-51,-2) event window, the level of cumulative abnormal returns is 7.25%, significant at the 0.10 level. Fields *et al*. state that the results may suggest the existence of information leakage, which is consistent with the evidence from studies in the U.S. (Neely (1987); Trifts and Scanlon (1987); Zhang (1995)) and EU (Cybo-Ottone and Murgia (2000)).

[21] Fields *et al*. (2007) argue that the mean adjusted returns approach "avoids potential bias introduced from exchange rate movements when the sample includes a number of cross-border events (and does not require the selection of the "appropriate" market index." (p. 3654). However, it is not clear how exchange rate movement can affect the measure of abnormal returns. In addition, the mean adjusted returns model does not take into account the risk factor to estimate the abnormal returns that this model may be unrealistic. The mean adjusted returns model will be further discussed in chapter 5.

2.3.3.1 U.S. vs. EU

In addition to international studies discussed above, two papers examine target shareholder wealth to compare with the sample of U.S. and EU bank mergers. Scholtens and de Wit (2004) explore the announcement effect of large bank mergers in the European and U.S. stock market over the period 1990-2000. The final sample consists of 81 bidding banks and 78 target banks, in which 61 targets and bidders are in the U.S. and 17 targets and 20 bidders are in Europe.

Comparing the stock returns to the benchmark of the market index, the authors report that European (U.S.) target banks gain 9.28% (12.65%) cumulative abnormal returns over a 35-day (-3,+31) event window, significant at the 0.05 (0.01) level. However, the difference between European and U.S. target banks is not significant, possibly due to the relatively small sample of EU bank mergers.

Valkanov and Kleimeier (2007) examine the role of regulatory capital in bank mergers and acquisitions during the period 1997-2003. Bids are included if the bidder controls over 50% of target shares after the transaction. The final sample contains 105 matched targets and bidders in 100 domestic M&As and 5 cross-border M&As.[22]

Applying the market model with parameters estimated from day -240 to day -41, Valkanov and Kleimeier find that target banks earn 19.06% cumulative abnormal returns for a 3-day (-1,+1) event window, significant at the 0.01 level. Valkanov and Kleimeier further report that U.S. target banks obtain 20.15% cumulative abnormal returns over a 3-day (-1,+1) event window relative to 14.74% cumulative abnormal returns for European target banks, both significant at the 0.01 level. Thus, Valkanov and Kleimeier conclude that bank mergers and acquisitions in both U.S. and European markets create significant wealth for targets. However, Valkanov and Kleimeier do not report whether the difference between U.S. and EU target banks is significant or not.

[22] Valkanov and Kleimeier (2007) state that the majority of the final sample is domestic mergers and acquisitions although their sample covers 10 countries, including U.S., Belgium, Denmark, France, Germany, Greece, Italy, Norway, Sweden and the UK.

In the cross-sectional regression analysis, the authors find that higher target abnormal returns are associated with higher excess capital, measured as the capital over and above the regulatory requirements. The authors argue that “This can reflect the probability of the merger being approved by regulators.” (p. 64). In addition, the results also indicate that target abnormal returns are negatively, but insignificantly, related to the size of the target. The relative size of the target to bidder is negatively and significantly associated with target abnormal returns.

Several papers related to international studies are discussed above, and the results are consistent with those in U.S. and EU studies, reporting positive announcement returns to targets. The results in international studies also show that U.S. targets earn higher announcement returns than EU targets. These findings lend support to the previous discussion of U.S. and EU studies.

However, prior international studies mainly cover the sample in the U.S. and EU market. Additionally, these studies do not incorporate a large sample of bank mergers to investigate target shareholder wealth and the prior empirical evidence in international studies is limited.

Furthermore, prior empirical evidence shows a degree of variation in the abnormal returns to targets. It does not provide a clear conclusion regarding the level of target announcement returns in bank mergers. This suggests a need to further investigate target shareholder wealth of bank mergers.

2.4 Bidding firms

This section aims to review prior studies with respect to bidder shareholder wealth in bank mergers. The review of prior empirical studies for bidding firms can also assist to reveal whether target shareholder wealth is transferred from bidder shareholder wealth. Similar to the discussion of target firms, the empirical evidence for bidders is reviewed

with regard to U.S. studies, EU studies and international studies, respectively. This also sheds lights on the difference of bidder shareholder wealth in bank mergers from different markets.

2.4.1 Empirical evidence from U.S. studies

As discussed in section 2.3.1 on targets, Neely (1987) studied domestic U.S. bank mergers by using weekly data during the 1979-1985 period. Based on a sample of 26 bidding banks, the author finds that acquiring firms experience abnormal returns of -1.23% during the announcement week 0, significant at the 0.05 level.

In a study with similar sample size, Baradwaj *et al*. (1990) analysed 23 and 30 bidding firms from 1980 to 1987 involved in hostile and friendly bids, respectively. The authors find bidders earn cumulative abnormal returns of -1.28% and -1.27% over a 2-day (-1,0) event window in hostile and friendly bids, respectively, both significant at the 0.01 level. The difference between hostile and friendly bids is not significant. Although Baradwaj *et al*. find no difference between hostile and friendly bids, this may be due to a small sample size. It is necessary to exercise care to interpret the results in that Baradwaj *et al*.'s results may not be applicable to a large sample size.

Instead of analysing hostile and friendly bids, Louis (2004) studies how the stock market reaction to a merger announcement is affected when a merger is used as a defensive mechanism. The final sample comprises 227 mergers over the 1993-1999 period, where 50 mergers are classified as targeted acquirers and 177 mergers are categorised as nontargeted acquirers.[23]

Using the market model with parameters estimated from day -259 to day -60, the author finds that the level of cumulative abnormal returns is -1.21% over a 2-day (-1,0) event window for the acquirers in mergers involving nontargeted banks, significant at the

[23] Louis (2004) argues that if banks do not want to be acquired and use a defensive mechanism, they are classified as targeted banks. For example, targeted banks may increase their size to the point where they are no longer viable takeover candidates. If banks do not display a defensive mechanism during the process of the takeover, they are categorised as nontargeted banks.

0.01 level. When targets deploy defensive mechanisms, acquiring firms obtain -2.51% cumulative abnormal returns over a 2-day (-1,0) event window, significant at the 0.01 level. The difference between targeted acquirers and nontargeted acquirers is significant at the 0.05 level. Thus, the results indicate that the market responds more negatively to defensive acquisitions.

In the cross-sectional regression analysis, Louis controls for several factors, including a dummy for interstate mergers, relative capital adequacy, the method of payment and the relative size of the target to bidder as well as several other factors. The author finds that the relationship between cash finance and acquirer cumulative abnormal returns is positive and significant. In addition, the results show that there is a negative and significant relationship between the relative size of the target to bidder and acquirer cumulative abnormal returns. The relative capital adequacy of the target to bidder is positively, but insignificantly, correlated to acquirer cumulative abnormal returns. The interstate dummy is positive but again insignificant. The author argues that "One possible explanation is that, as more states were allowing interstate mergers, entry into another state became easier and entry rights less valuable." (p. 302).

In a study based on 153 bank acquisitions to cover the early 1990s, Houston and Ryngaert (1994) analysed the stock market reaction to bank mergers during the period of 1985-1991. The authors find that bidding firms experience -2.32% cumulative abnormal returns over a 5-day (-4,0) event window, significant at the 0.01 level. In addition, bidding firms in cancelled deals obtain -2.93% cumulative abnormal returns compared to -2.25% in completed deals, both significant at the 0.01 level. The difference between cancelled and completed deals is not statistically significant. While the market does not respond favourably to completed deals, the market reaction is even worse for cancelled deals. This may be due to the fact that acquiring banks fail to achieve their company strategy. However, the difference is not significant.

In the cross-sectional regression analysis, Houston and Ryngaert find that bidder

cumulative abnormal returns are positively influenced by the measure of market overlap.[24] In addition, the results show that bidder cumulative abnormal returns are positively and significantly related to payment in stock. Their results thus contradict Louis' findings of a positive relationship for cash payment. The results also show that the relative size of the target to bidder has a negative and significant impact.

Based on a sample of 107 bank mergers from 1980 to 1990, Zhang (1995) used the size-adjusted return approach to analyse bank mergers. The author reports negative abnormal returns of 0.02% on the announcement date, but positive cumulative abnormal returns of 0.53% over the 2-day (-1,0) event window, neither statistically significant.

Siems (1996) analysed 19 bank megamergers in 1995[25], and finds that acquiring banks experience -1.96% cumulative abnormal returns over a 3-day (-1,+1) event window, significant at the 0.01 level. Siems argues that,

> "…acquiring banks received negative average abnormal returns because management was either attempting to maximize its own utility, and not that of its shareholders, or it simply paid too much for the target institutions." (p. 6).

In a study to examine the impact of the method of payment, Grullon *et al*. (1997) analysed 146 bank mergers from 1981 to 1990. The authors find that acquiring banks experience abnormal returns of -0.40% on the announcement date, significant at the 0.01 level. However, the authors further analyse bidder announcement returns for the method of payment based on a 3-day (-1,+1) event window, showing that bidders obtain cumulative abnormal returns of -2.46%, -0.87% and -1.93% for stock offers, cash offers and combination of stock and cash offers, respectively. However, Grullon *et al*. do not report any statistical test for the significance of the differences in abnormal returns between each group with respect to the method of payment.

In the cross-sectional regression analysis, Grullon *et al*. find that bidder cumulative

[24] Houston and Ryngaert (1994) state that the measure of overlap indicates how many offices are closed after a merger.

[25] Megamerger deals are defined as transactions where the deal value exceeds 500 million U.S. dollars.

abnormal returns have a negative and significant relationship with stock payment. Grullon *et al*. state that "at least in bank mergers, the method of payment is an important factor in the merger decision." (p. 120). In addition, the capital ratio of the bidder is positively, but insignificantly, related to bidder cumulative abnormal returns. The relative size of the target to bidder has a negative impact but is not significant.

Analysing a relatively large sample of 583 bank mergers with a longer investigation period from 1980 to 1997, Becher (2000) reports that bidding firms experience insignificant cumulative abnormal returns of -0.10% over a 36-day (-30,+5) event window but a significant -1.08% over an 11-day (-5,+5) event window.

In addition, the results show that bidding firms obtain -1.04% and 0.65% cumulative abnormal returns over a 36-day (-30,+5) event window for stock and cash with mixed offers, respectively. For an 11-day (-5,+5) event window, bidding firms obtain -1.55% and -0.32% cumulative abnormal returns for stock and cash with mixed offer, respectively. The difference between stock offers and cash with mixed offers is statistically significant, and is consistent with the study of Grullon *et al*. (1997) that payment in stock earns lower announcement returns compared to other payment methods.

In a study with a similar longer investigation period from 1987 to 1999, DeLong and DeYoung (2007) analysed the effects of bank mergers based on a sample of 216 transactions. The authors find that acquiring banks earn cumulative abnormal returns of -3.15% and -3.09% over a 11-day (-5,+5) and 21-day (-10,+10) event window, respectively, both significant at the 0.01 level.

2.4.1.1 Geography vs. activity diversification

In addition to domestic U.S. studies reviewed above, several papers also examine bidder shareholder wealth in geography and activity diversification acquisitions. A review of prior studies with respect to geography and activity diversification is beneficial in that these studies shed light on bidder shareholder wealth for different types of bank mergers.

This enables this thesis to further uncover bidder announcement returns with respect to geographical and activity diversification acquisitions.

As discussed in section 2.3, Trifts and Scanlon (1987) analysed 21 interstate bank mergers prior to December 1985. The authors find that abnormal returns for acquiring banks are -1.73% during the announcement week, significant at the 0.05 level. Trifts and Scanlon suggest that "the market for interstate bank acquisitions is sufficiently competitive to eliminate the opportunity for excess returns for acquiring firms." (p. 308).

In a study analysing bank mergers from 1982 to 1986, Cornett and De (1991a) used daily data to analyse 152 interstate bank mergers made by 59 bidding banks. Applying the market model, the model parameters are estimated from day +16 to day +75 for bidders.[26] The authors report that bidding firms obtain 0.55% cumulative abnormal returns over a 2-day (-1,0) event window, statistically significant.

In the cross-sectional regression analysis, the authors find that payment in stock and the relative size of the bidder to target are negatively, but insignificantly, related to bidder cumulative abnormal returns. However, Cornett and De claim that their model does not have statistical explanatory power to explain bidder cumulative abnormal returns.

In a related paper to analyse interstate bank mergers from 1982 to 1986, Cornett and De (1991b) analysed the role of the medium of payment. Using the market model with parameters estimated from day +16 to day +75, the authors report that bidding banks gain 0.89% abnormal returns on the announcement date, significant at the 0.01 level.

In addition, Cornett and De find that bidding banks reap abnormal returns of 0.93%, 0.88% and 0.80% on the announcement date for stock, cash and mixed offers, respectively. Cornett and De state that "it appears that stockholders of bidding banks benefit from the announcement of the acquisition bid regardless of the proposed method of financing." (p. 774). The results are consistent with their pervious (1991a) study reporting positive

[26] Cornett and De (1991a) argue that the use of model parameters from the post-announcement estimation period for bidding firms would not be biased due to a period of abnormal price increases. However, their estimation period is so short that the model parameters may not precisely reflect the co-movement of the share price and the market price.

announcement returns to bidding firms. However, positive announcement returns with respect to stock offers are clearly opposite to the findings in the studies of Grullon *et al*. (1997) and Becher (2000).

In a short paper, Toyne and Tripp (1998) investigated interstate bank mergers from 1991 to 1995 based on a sample of 68 transactions. The authors find that bidder cumulative abnormal returns are -2.24% over a 3-day (-1,+1) event window, significant at the 0.01 level. Becher and Campbell (2005) extended this to analyse interstate bank mergers with a large sample of 443 acquisitions from 1990 to 1999. The authors report that bidding firms generate negative cumulative abnormal returns, amounting to -1.29% over a 7-day (-5,+1) event window, significant at the 0.01 level. The results in the study of Toyne and Tripp (1998) and Becher and Campbell (2005) contradict those of the studies of Cornett and De (1991a,b), but lend support to the study of Trifts and Scanlon (1987).

So far, several papers related to interstate acquisitions have been discussed above. Extending the analysis to both interstate and intrastate bank mergers, Baradwaj, Dubofsky and Fraser (1991) investigate the returns for bidders between 1981 and 1987. Their final sample contains 108 acquisitions, of which 37 are interstate acquisitions and 71 are intrastate acquisitions.

Applying the market model, parameters are adjusted for the problem of nonsynchronous trading using the Scholes and Williams' approach from day -60 to day -11 and from day +11 to day +60. A strength in their study is that the authors also apply a longer pre-event estimation period from day –120 to day –61 and find insignificant difference in the results. Baradwaj *et al*. report that bidding banks on average experience cumulative abnormal returns of -1.38% over a 2-day (-1,0) event window, significant at the 0.01 level.

In addition, the results show that acquiring firms earn -1.11% and -1.91% cumulative abnormal returns over a 2-day (-1,0) event window for intrastate and interstate acquisitions,

respectively, both significant at the 0.01 level. However, the difference between intrastate and interstate acquisitions is not significant.

When conducting the cross-sectional regression analysis to explain the abnormal returns, Baradwaj *et al*. acknowledge that payment in cash has a positive and significant impact on the level of bidder cumulative abnormal returns. In addition, the results show that bidder cumulative abnormal returns are, respectively, negatively and positively related to the relative size of the bidder to target and the capitalisation measured as the percentage of the equity to total assets.

In a paper based on 15 interstate and 15 intrastate bank mergers from 1982 to 1987, Cornett and Tehranian (1992) document that the magnitude of cumulative abnormal returns for the full sample is -0.80% over a 2-day (-1,0) event window, significant at the 0.05 level. Their findings also show that acquiring banks in interstate mergers reap 0.34% cumulative abnormal returns over a 2-day (-1,0) event window compared to -1.90% for intrastate mergers. However, the authors do not report the significance of the difference in cumulative abnormal returns between interstate and intrastate bank mergers.

Cornett, Hovakimian, Palia and Tehranian (2003) study whether corporate governance mechanisms assist in reducing the managerial incentive to enter value-destroying bank acquisitions. Their focus of corporate governance mechanisms is the internal corporate governance mechanisms. However, the authors also analyse bidder shareholder wealth with respect to interstate and intrastate bank mergers. 177 bidding banks involved 423 in acquisition announcements over the 1988 to 1995 period constitute the final sample.

Applying the market model with parameters estimated from day -136 to day -16, the results show that bidding firms experience cumulative abnormal returns of -0.74% over a 3-day (-1,+1) event window, significant at the 0.05 level. The authors also report that cumulative abnormal returns of bidding firms in intrastate and interstate acquisitions are -0.40% and -1.06% over a 3-day (-1,+1) event window, respectively. The difference

between interstate and intrastate bank mergers is significant at the 0.05 level.

Turning to the issue of corporate governance, Cornett *et al*. find that the abnormal returns to the bidding bank shareholders are higher when the CEO owns a higher stake of the firm. The authors also find that a higher percentage of outside directors results in higher abnormal returns for the bidding banks. Other control variables are also found to be significant. In particular, cash payment is positively and significantly related to bidder announcement returns.

With regard to the primary capital ratios[27], the results show this to have an inverse but insignificant relation with bidding bank cumulative abnormal returns. However, the authors only look at internal corporate governance mechanisms. The current study further examines the external governance mechanisms in terms of investor protection and bank regulation on the impact of the shareholder wealth as will be discussed in chapter 3.

As Baradwaj *et al*. (1991), Cornett and Tehranian (1992), Cornett *et al*. (2003) report that bidders obtain higher announcement returns in intrastate acquisitions than in interstate acquisitions although the results generally show negative bidder announcement returns. These findings suggest that bidder shareholder wealth can be affected by geographical differences. Thus, when the transactions involve different markets in terms of cross-border deals, it can be expected that bank mergers create different levels of bidder announcement returns.

While several papers with respect to interstate and intrastate acquisitions are discussed above, these studies only look at the domestic U.S. market. However, several studies extend their studies to various markets in terms of cross-border deals. As discussed in section 2.3.1.1, Hudgins and Seifert (1996) examined domestic and cross-border deals to shareholders of U.S. financial firms from 1968 to 1989.

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[27] Cornett *et al*. (2003) state that primary capital ratios for the bank holding companies are derived from FDIC Call Reports the year prior to the initial acquisition announcement from the FDIC Call Report tapes. The computation of primary capital ratio can be found at: http://www.fdic.gov/regulations/laws/rules/6000-2000.html (Sources: FDIC (Federal Deposit Insurance Corporation))

In cross-border deals, the authors find that the level of cumulative abnormal returns for acquiring firms is -0.25% over a 3-day (-1,+1) event window when U.S. financial firms acquire foreign firms. However, the results are not statistically significant. The results show that acquiring firms earn cumulative abnormal returns of -0.34% over a 3-day (-1,+1) event window, not statistically significant, when U.S. banks acquire foreign firms. In domestic deals, acquiring firms obtain 0.49% cumulative abnormal returns over a 3-day (-1,+1) event window when U.S. financial firms acquire U.S. firms. The difference in abnormal returns between foreign acquirers and domestic acquirers is not significant.

In another study, extending the investigation period from 1989 to 1999, Kiymaz (2004) analysed cross-border deals and finds that the level of cumulative abnormal returns for U.S. bidders is 0.38% over a 3-day (-1,+1) event window, significant at the 0.10 level. In the cross-sectional regression analysis, Kiymaz finds that payment in cash is negative and significant in association with bidder cumulative abnormal returns. The results also show that there is a reverse relation between the size of the bidder and the bidder wealth gains.

In addition to the empirical studies with regard to geographical acquisitions discussed above, several papers also examine bidder shareholder wealth related to activity diversifying acquisitions. For a sample of 280 bank mergers from 1988 to 1995, DeLong (2001) finds that bidding firms experience -0.95% and -2.17% cumulative abnormal returns in activity focus and activity diversification over the 12-day (-10,+1) event window, respectively, significant at the 0.05 and 0.01 level. The difference between activity focus and activity diversification is significant at the 0.10 level.

Looking at the same period of 1988-1995, Cornett *et al*. (2003) analysed 177 bidding banks and find that bidders obtain -1.31% and -0.17% cumulative abnormal returns over a 3-day (-1,+1) event window in activity diversification and focusing acquisitions,

respectively.[28] The difference between activity diversifying and activity focusing is significant at the 0.05 level. With respect to the analysis of diversifying and focusing acquisitions, Cornett *et al*. claim that bank acquisitions in activity diversification produce significantly lower announcement period AR than acquisitions that focus activities.

Akhigbe and Madura (2004) examine the effects of bank acquisitions of security firms during the period 1986-2000. The final sample contains 28 banks that acquire security firms and 28 banks that acquire other commercial banks. Applying the market model with parameters estimated from day -300 to day -20, the authors find that bidders obtain 0.24% cumulative abnormal returns over a 2-day (-1,0) event window when they acquire security firms, and -0.78% when acquiring other commercial banks. The difference is not statistical significant.

As discussed above, prior empirical evidence from U.S. studies show that bidders obtain negative announcement returns in bank mergers, except for Cornett and De (1991a,b) and Zhang (1995) who report positive cumulative abnormal returns to bidders. Negative announcement returns to bidders may be an indication of wealth transfer from bidders to targets as targets earn significant positive announcement returns.

Taking into account geographical diversification, the results suggest that bidders obtain higher announcement returns in intrastate acquisitions than in interstate acquisitions although the results generally show negative announcement returns. Analysing activity diversifying acquisitions, bidders obtain higher announcement returns in focusing acquisitions than those in diversification acquisitions, although bidders normally experience negative announcement returns in both activity focusing and diversifying acquisitions. In contrast, Akhigbe and Madura (2004) find higher announcement returns to bidders in bank to bank deals.

[28] Cornett *et al*. (2003) argue that a merger or acquisition is classified as activity focusing if the bidding and target banks are engaged in similar types of risk and therefore similar types of activities. Otherwise, a merger or acquisition is grouped as activity diversification.

However, prior empirical studies in U.S. bank mergers may not be applicable to those in EU studies as EU targets in general obtain lower announcement returns than U.S. targets. Thus, the following section reviews prior empirical evidence for bidders in EU studies.

2.4.2 Empirical evidence from EU studies

Focusing on 15 EU markets plus Norway and Switzerland from 1985 to 2000, Beitel *et al*. (2004) investigated 98 transactions of EU bank mergers and find that bidding banks obtain -0.01% cumulative abnormal returns over a 3-day (-1,+1) event window, statistically insignificant.

In a paper with a sample of 76 bank mergers, Ismail and Davidson (2007) used a similar investigation period from 1987 to 2000 to analyse the wealth effects of bank mergers. Their sample also covers the 15 EU markets plus Norway and Switzerland. The authors report that acquiring firms obtain 0.10% cumulative abnormal returns over a 21-day (-20,0) event window, significant at the 0.01 level.

2.4.2.1 Geography vs. activity diversification

Two empirical studies analyse bidder shareholder wealth related to geographic acquisitions in terms of domestic and cross-border deals. In a study examining 56 bidding banks from 1989 to 1996, Rad and Beek (1999) report that acquiring banks on average experience -0.33% cumulative abnormal returns over a 3-day (-1,+1) event window, statistically insignificant. Rad and Beek argue that insignificant abnormal returns for bidding banks are the results from the existence of a competitive market.

Further analysis indicates that cumulative abnormal returns of bidding firms are -0.37% and -0.29% over a 3-day (-1,+1) event window for cross-border and domestic deals, respectively. However, the difference between cross-border and domestic deals is not significant.

In a paper with a relatively shorter investigation period from 1998 to 2002, Campa

and Hernando (2006) analysed 172 bank mergers in 15 EU markets. The authors find that the magnitude of cumulative abnormal returns for bidding firms is -0.87% over a 3-day (-1,+1) event window, significant at the 0.05 level. Further analysis shows that acquiring firms in cross-border deals experience -0.39% cumulative abnormal returns over a 3-day (-1,+1) event window compared to -1.08% for national deals. The difference between cross-border and national deals is not significant.

In addition to analysing domestic and cross-border deals, several papers also extend their analysis to cover the extent of diversifying activities acquisitions. Focusing on large transactions from 1988 to 1997, Cybo-Ottone and Murgia (2000) analysed a sample of 54 bank mergers from 14 European banking markets.[29] The authors report that cumulative abnormal returns of bidding firms are 0.99% over a 3-day (-1,+1) event window, significant at the 0.01 level. Cybo-Ottone and Murgia state that the results for acquiring banks are significantly different from those for U.S. bank mergers as U.S. bidders in general experience negative announcement returns.

In addition, cumulative abnormal returns of acquiring firms in cross-borders deals are higher than those in domestic deals, at 2.00% and 0.19%, respectively, over an 11-day (-10,0) event window, although neither is statistically significant. The difference in cumulative abnormal returns between domestic and cross-border deals is not significant. The results are in contrast to the study of Rad and Beek (1999) and Campa and Hernando (2006), who find negative announcement returns to bidders for both domestic and cross-border deals.

Furthermore, the authors report that acquiring firms in cross-products deals generate higher cumulative abnormal returns than those in commercial banking deals, at 1.54% versus 0.26% over an 11-day (-10,0) event window, respectively. However, the difference

[29] 14 European banking markets include Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and UK.

between each group is not significant.

For a sample of 89 bank mergers from 1987 to 1999, Ismail and Davidson (2005) document that acquiring firms gain 0.03% cumulative abnormal returns over a 3-day (-1,+1) event window, not statistically significant. However, the authors use a longer 11-day (-10,0) event window to analyse different types of deals. The results show that bidders earn 0.06% cumulative abnormal returns for both domestic and cross-border deals.

Furthermore, the authors report that acquiring firms earn 0.15% cumulative abnormal returns over an 11-day (-10,0) event window for bank to bank deals compared to -0.14% for cross-product (bank to other financial company) deals. The difference for each group is not statistically significant.

While focusing on EU bank mergers, two recent papers extend their investigation period to 2004. Ekkayokkaya, Holmes and Paudyal (2007) explore the impact on announcement period gains during the period 1990-2004. The deal value is restricted to be at least one million U.S. dollars. Their final sample comprises 963 bids. Applying the market-adjusted returns model[30], the results show that the level of cumulative abnormal returns for acquiring banks is 0.03% over a 3-day (-1,+1) event window, not statistically significant.

In addition, the authors report that acquiring firms obtain insignificant cumulative abnormal returns of 0.11% and -0.03% over a 3-day (-1,+1) event window for cross-border and domestic acquisitions, respectively. The difference between cross-border and domestic acquisitions is not significant.

Furthermore, cumulative abnormal returns of acquiring banks in diversification (bank to other financial company) acquisitions are 0.55% over a 3-day (-1,+1) event window compared to -0.33% for focused bids. The difference between focused and diversification

[30] Ekkayokkaya *et al*. (2007) argue that their sample does not have a long time series of data as a result of multiple bids. Thus, the market adjusted returns model does not require a long estimation period prior to the event. In addition, the market adjusted returns model does not require to compute the model parameters. The results are not affected by the difference of the model parameters. However, as will be discussed in chapter 5, the market adjusted returns model may be unrealistic in that it assumes that the beta is 1. It is arguable that not each stock has the same risk factor to measure the abnormal returns.

acquisitions is significant. Ekkayokkaya *et al*. claim that "diversifying deals announced by European banks continue to be value enhancing." (p. 16).

Lensink and Maslennikova (2008) examine value gains to acquirers in European bank mergers and acquisitions during the period from 1996 to 2004. Their final sample contains 107 deals, with 16 transactions by a single acquirer. This suggests that bidders may have multiple bidding activities if they have past good experience for the transactions.

Applying the Fama-French three-factor model[31] estimated from day -270 to day -21, the results show that acquiring firms obtain 0.39% cumulative abnormal returns over a 3-day (-1,+1) event window, not statistically significant. Further analysis shows that acquiring firms in domestic activity diversifying deals earn 0.22% cumulative abnormal returns over a 3-day (-1,+1) event window compared to 1.14% for domestic but nondiversifying transactions. On the other hand, acquiring firms in cross-border diversifying deals experience -0.29% cumulative abnormal returns compared to 0.45% for cross-border but non-diversifying transactions. However, Lensink and Maslennikova do not report the significance levels of the differences between the various groups.

As discussed in the review of papers on EU studies above, the results for bidders are inconclusive. The inconclusive results for EU bidders may derive from the composition of the sample and the investigation period as well as the choice of the event window. However, the results show that EU bidders in general obtain higher announcement returns than U.S. bidders. The higher announcement returns to EU bidders may imply that EU banking takeover market is less competitive.

As the results are mixed, it is not clear to determine whether bank mergers create or destroy bidder shareholder wealth. This suggests a need to review prior empirical evidence in international studies. The review of prior empirical evidence in international studies

[31] The Fama-French three-factor model controls for two other risk factors, the size factor and the book-to-market factor. While the current study covers a number of countries in terms of the international study, it may not be clear to find a universal method to determine the measure of the variables employed to Fama-French three-factor model. Thus, this model may not be applicable to the current study.

sheds further lights on bidder shareholder wealth in bank mergers.

2.4.3 Empirical evidence from international studies[32]

In a study of 125 bidding firms from 1977 to 1987, Biswas *et al*. (1997) find that cumulative abnormal returns for acquiring firms in international acquisitions[33] are 0.13% over a 2-day (-1,0) event window, not statistically significant. The authors also report that U.S. and non-U.S. acquiring firms in international acquisitions reap 0.28% and 0.02% cumulative abnormal returns over a 2-day (-1,0) event window, respectively, neither statistically significant.

In the cross-sectional regression analysis, the authors find a positive but insignificant relationship between bidder cumulative abnormal returns and cash payment. The results show that bidder cumulative abnormal returns are positively, but insignificantly, related to bank to bank deals.

DeLong (2003) studied both domestic U.S. and non-U.S. bank mergers from 1988 to 1999. Using a sample of 438 transactions, the author finds that acquiring firms for the entire sample on average experience cumulative abnormal returns of -1.89% over a 12-day (-10,+1) event window, significant at the 0.01 level. However, in the analysis of domestic U.S. versus non-U.S. mergers, the results show that cumulative abnormal returns of acquiring firms are -2.10% and 0.17%, respectively. The difference between domestic non-U.S. and U.S. mergers is significant at the 0.01 level.

Using a sample of 129 acquisitions from 1997 to 2002, Fields *et al*. (2007) find that bidding firms that acquire public targets obtain 1.07% cumulative abnormal returns over a 2-day (-1,0) event window, significant at the 0.05 level. On the other hand, bidding firms earn insignificant cumulative abnormal returns of 0.05% over a 2-day (-1,0) event window

[32] The international studies mean that the sample of bank mergers and acquisitions are collected from a number of different markets, including U.S., EU and/or the markets from the rest of the world.

[33] Biswas *et al*. (1997) document that their sample covers 14 countries, including Australia, Canada, France, Germany, Hong Kong, Ireland, Italy, Japan, Netherlands, Singapore, Spain, Switzerland, United Kingdom and United States.

while acquiring private targets.

In the cross-sectional regression analysis, the results show that stock payment is positively, but insignificantly, correlated to bidder abnormal returns. The size of the bidder is negatively, but insignificantly, related to bidder abnormal returns.

2.4.3.1 U.S. vs. EU

Examining 81 bidding banks during the period from 1990 to 2000, Scholtens and de Wit (2004) find that bidding banks in Europe (U.S.) bank mergers receive cumulative abnormal returns of 2.56% (-1.86%) over a 35-day (-3,+31) event window, neither statistically significant. The results are consistent with DeLong's (2003) findings that domestic U.S. bidders experience more losses than their non-U.S. counterparts. The difference between Europe and U.S. is significant at the 0.10 level.

Extending the period from 1997 to 2003, Valkanov and Kleimeier (2007) analysed a sample of 105 acquisitions[34] and find that acquiring banks obtain -0.99% cumulative abnormal returns over a 3-day (-1,+1) event window, significant at the 0.01 level. The results also show that U.S. acquiring banks experience -1.50% cumulative abnormal returns for a 3-day (-1,+1) event window, significant at the 0.01 level. Thus, Valkanov and Kleimeier (2007) "confirm that US bank M&As destroy value for acquiring bank shareholders." (p. 61).

In addition, their findings indicate that European acquiring banks obtain 1.04% cumulative abnormal returns for a 3-day (-1,+1) event window, significant at the 0.05 level. The results are in sharp contrast to their results for U.S. bidders.

In the cross-sectional regression analysis, the results show that the relation between bidder cumulative abnormal returns and the size of the acquiring firms is negative and significant. Valkanov and Kleimeier argue that "A possible explanation for this finding is

[34] Valkanov and Kleimeier (2007) state that the majority of the final sample is domestic mergers and acquisitions although their sample covers 10 countries, including U.S., Belgium, Denmark, France, Germany, Greece, Italy, Norway, Sweden, UK.

the existence of economies of scale in banking." (p.64). The findings imply that smaller acquirers have a higher potential to realise economies of scale from acquisitions.

In addition, their findings indicate that higher bidder cumulative abnormal returns are associated with smaller relative size of the target to bidder. Valkanov and Kleimeier suggest that "a possible explanation for this finding is that by acquiring smaller banks, which are presumably less efficient and sophisticated, acquiring banks can benefit by improving the efficiency of the target." (p. 66).

In a recent paper focusing on the 1996-2004 period, Hagendorff, Collins and Keasey (2008) examine the bidder returns associated with U.S. and European bank merger announcements. Bids are included if the bidder acquires over 50% of target shares after the transaction, and if the deal value is at least 100 million U.S. dollars. Their final sample contains 204 acquisitions.

Using the market model with parameters estimated from day -121 to day -21, their findings show that acquiring firms experience -0.50% cumulative abnormal returns over a 3-day (-1,+1) event window, significant at the 0.01 level. Further analysis shows that cumulative abnormal returns of bidding firms in European (U.S.) bank mergers are 0.09% (-0.70%). The difference between EU and U.S. mergers is also significant at the 0.01 level.

Furthermore, the level of cumulative abnormal returns for the full sample is -0.03% and -0.61% over a 3-day (-1,+1) event window in terms of diversifying and focusing acquisitions, respectively. The difference between diversifying and focusing acquisitions is significant at the 0.01 level. Thus, Hagendorff *et al*. argue that "We refer to the difference in abnormal returns between diversifying and focusing M&A as the 'value effect' of product diversification." (p. 1340).

As discussed above, prior empirical evidence from international studies similarly report mixed results to bidders. The mixed results to bidders in international studies suggest prior empirical studies cannot conclude whether bank mergers create or destroy shareholder wealth in bank mergers. This could suggest that there is a need to further

investigate shareholder wealth of bidders.

However, the results from international studies show that EU bidders obtain higher announcement returns than U.S. bidders. The direct comparison of the results between U.S. bidders and EU bidders from international studies reveals that EU bidders obtain higher announcement returns than U.S. bidders. These findings also lend support to the discussion in U.S. and EU studies, implying that EU banking takeover market is less competitive as a result of higher announcement returns.

2.5 Combined firms

So far, empirical studies with regard to targets and bidders have been discussed in section 2.3 and 2.4, respectively. However, several papers also examine wealth effects of combined firms in bank mergers. The review of these studies for combined firms can further reveal whether bank mergers overall create value to shareholders. Thus, the empirical evidence related to combined firms shareholder wealth is reviewed in the next section.

2.5.1 Empirical evidence from U.S. studies

Houston and Ryngaert (1994) used 153 acquisitions during the 1985-1991 period to measure combined firms shareholder wealth. The authors use the weighted average approach to measure combined firms abnormal returns. Combined firms abnormal returns are calculated by weighting the market capitalisation at the end of month before the announcement date to target and bidder abnormal returns. The advantage of the weighted average approach not only takes into account the abnormal returns for targets and bidders, but also considers the size effects of targets and bidders. Thus, this thesis also uses the weighted average approach to compute combined firms abnormal returns. Houston and Ryngaert find that combined firms gain 0.38% cumulative abnormal returns over a 5-day (-4,0) event window, statistically insignificant.

In the cross-sectional regression analysis, Houston and Ryngaert report that the measure of market overlap has a positive and significant relation with cumulative abnormal returns of combined firms. The results also show that the payment in stock has a negative and significant impact. However, the relative size is positively and significantly correlated to cumulative abnormal returns of combined firms.

In a paper analysing 68 bank mergers from 1991 to 1995, Toyne and Tripp (1998) report that combined firms reap cumulative abnormal returns of -0.70% over a 3-day (-1,+1) event window, significant at the 0.01 level. Their findings are in contrast to the study of Houston and Ryngaert (1994), who report marginally positive announcement returns to combined firms.

Focusing on a longer period from 1980 to 1997, Becher (2000) examined the wealth effects to combined firms based on 558 mergers. The author finds that combined firms gain 3.03% and 1.80% cumulative abnormal returns over a 36-day (-30,+5) and 11-day (-5,+5) event window, respectively, both significant at the 0.01 level.

In another paper with 443 bank mergers from 1990 to 1999, Becher and Campbell (2005) find that cumulative abnormal returns for combined firms are 0.93% over a 7-day (-5,+1) event window, significant at the 0.01 level. In the cross-sectional regression analysis, the authors find that cash payment is positively and significantly associated with combined firms' cumulative abnormal returns.

As discussed above, prior empirical evidence from U.S. studies indicates that combined firms obtain marginal positive announcement returns although Toyne and Tripp (1998) find slightly negative announcement returns. Marginal positive announcement returns to combined firms suggest that bank mergers in U.S. studies overall create value to combined firms.

2.5.2 Empirical evidence from EU and international studies

Cybo-Ottone and Murgia (2000) analysed 54 bank mergers from 1988 to 1997 and

find that cumulative abnormal returns of combined firms are 4.03% for a 3-day (-1,+1) event window, significant at the 0.01 level.

Focusing on 98 large transactions from 1985 to 2000, Beitel *et al*. (2004) report that the level of cumulative abnormal returns for combined firms is 1.40% for a 3-day (-1,+1) event window, significant at the 0.01 level.

Ismail and Davidson (2005) based their study on a sample of 76 transactions to measure combined firms announcement returns from 1987 to 1999. The authors report that combined firms earn cumulative abnormal returns of 0.49% over a 3-day (-1,+1) event window, significant at the 0.01 level.

In another paper using a longer 21-day (-20,0) event window, Ismail and Davidson (2007) investigated a sample of 89 mergers from 1987 to 2000. The authors document that cumulative abnormal returns for combined firms are 0.30%, not statistically significant.

In addition to examining combined firms shareholder wealth in EU bank mergers, two studies focus on international studies. DeLong (2003) analysed a sample of 438 mergers from 1988 to 1999 and report that combined firms earn positive cumulative abnormal returns of 0.12% over a 12-day (-10,+1) event window, statistically insignificant.[35] With respect to domestic U.S. and non-U.S. mergers, combined firms earn cumulative abnormal returns of 0.00% and 1.32% over a 12-day (-10,+1) event window, respectively. The difference between non-U.S. and U.S. domestic mergers is statistically insignificant.

Examining 129 transactions from 1997 to 2002, Fields *et al*. (2007) indicate that combined firms obtain 1.89% cumulative abnormal returns over a 2-day (-1,0) event window, significant at the 0.10 level. Their findings support the empirical evidence from

[35] DeLong (2003) measures combined firms' shareholder wealth by using the percentage change in combined value. However, it can be argued that this approach does not take into account the abnormal returns for the target and bidder. It can be argued that the level of target and bidder abnormal returns can be components to measure joint abnormal returns. Thus, DeLong's (2003) approach may not entirely value combined firms announcement returns in bank mergers.

EU bank mergers and also support the majority of empirical studies from U.S. bank mergers.

As discussed above, prior empirical evidence from EU and international studies shows that combined firms obtain positive announcement returns in bank mergers. These findings are consistent with those of U.S. studies, indicating that combined firms in EU and international studies overall gain value in bank mergers.

However, prior empirical studies do not use a large sample of bank mergers to measure shareholder wealth of combined firms. In addition, due to the limited evidence from international studies, this suggests a need to further examine shareholder wealth of combined firms in bank mergers.

2.6 Conclusion

This chapter has discussed prior empirical evidence for targets, bidders and combined firms, respectively. As can be seen from prior empirical studies, the level of cumulative abnormal returns depends on the market, the investigation period, the model and the choice of the event window.

Overall, prior empirical studies show that targets earn positive announcement returns. However, targets in general obtain higher announcement returns in the U.S. studies than those of the EU and international studies. These findings suggest that U.S. banking takeover market is more competitive than EU and the market from the rest of the world. Positive announcement returns to targets also lend support to the motives discussed in section 2.2 (e.g., Berkovitch and Narayanan (1993); Biswas *et al*. (1997); Zhang (1998)), suggesting that bank mergers create value to the shareholders.

With regard to bidder shareholder wealth, the results of prior empirical studies are inconclusive. While the empirical evidence in U.S. studies shows negative announcement returns to bidders, bidders in EU and international studies obtain either positive or negative

announcement returns. The mixed results suggest a need to further examine shareholder wealth of bank mergers.

Overall, the results of prior empirical studies show that bidders in U.S. studies obtain lower announcement returns than those in EU and international studies. This implies that U.S. banking takeover market is more competitive where bidders need to pay more to targets. While positive announcement returns to bidders support the synergy hypothesis, negative announcement returns to bidders are consistent with the expectation either the hubris or agency theory ((Roll (1986); Berkovitch and Narayanan (1993)), suggesting that bidders may overpay for targets. As targets earn positive announcement returns, negative announcement returns to bidders may also indicate wealth transfer from bidders to targets.

Furthermore, the empirical evidence shows that combined firms obtain slightly positive announcement returns in bank mergers. These findings indicate that bank mergers create overall value to shareholder wealth. Similar to the discussion above, positive announcement returns to combined firms are consistent with the synergy theory, indicating that bank mergers create value to the shareholders of combined firms.

However, several papers provide the cross-sectional regression analysis to explain the announcement returns of the firms. These papers highlight the importance of controlling for various bid characteristics and firm specific characteristics as discussed below.

With respect to target firms, Houston and Ryngaert (1994), Beitel *et al*. (2004) and Valkanov and Kleimeier (2007) find a negative relationship between target announcement returns and the relative size of the target to bidder. However, Campa and Hernando (2006) find that target announcement returns are positively and significantly related to the relative size of the target to bidder.

Grullon *et al*. (1997) and Ismail and Davidson (2007) find that target announcement returns are negatively and significantly correlated to the capital ratio. Biswas *et al*. (1997), DeLong (2003) and Kiymaz (2004) find that cash payment is positively and significantly associated with target announcement returns. Ismail and Davidson (2007) find that

profitability is positively and significantly related to target announcement returns.

Taking into account bidding firms, the results show that bidder announcement returns are negatively related to the relative size of the target to bidder (Houston and Ryngaert (1994); Grullon *et al*. (1997); Louis (2004); Valkanov and Kleimeier (2007)). Baradwaj *et al*. (1991), Biswas *et al*. (1997), Cornett *et al*. (2003) and Louis (2004) find that cash payment is positively correlated to bidder announcement returns. However, Kiymaz (2004) reports that bidder announcement returns are negatively, but insignificantly, related to cash payment.

In addition, Baradwaj *et al*. (1991) and Grullon *et al*. (1997) find that the capital ratio is positively associated with bidder announcement returns. On the contrary, Cornett *et al*. (2003) report that the capital ratio is negatively, but insignificantly, associated with bidder announcement returns. Kiymaz (2004), Fields *et al*. (2007), Valkanov and Kleimeier (2007) find that the size of the bidders is negatively related to bidder announcement returns.

To sum up, prior empirical studies report that targets earn positive announcement returns and combined firms obtain slightly positive announcement returns in bank mergers. The level of target announcement returns depends on the market, the investigation period, the model and the event window. However, prior empirical studies do not use a large international sample of bank mergers to investigate target shareholder wealth. Thus, while the average abnormal returns to targets seem to be different in studies from the U.S., the EU and other markets, few studies include targets from more than one region in their sample. There is a general lack of robust evidence as to whether target abnormal returns vary significantly between markets. In addition, due to wide variations of target announcement returns, the prior empirical evidence cannot provide a clear conclusion to determine the level of the impact of bank mergers on the shareholder wealth. This suggests a need to further investigate target shareholder wealth of bank mergers.

Furthermore, the results for bidders are inconclusive, reporting either positive or

negative announcement returns. Due to the inconclusive results for bidding firms, this is a gap to be filled in the study of bidder shareholder wealth on bank mergers. Thus, this thesis also explores the impact of bidder shareholder wealth on bank mergers.

While taking into account prior empirical evidence of international studies, the evidence is limited and these studies mainly cover the U.S. and EU market. It is not clear whether these findings will be replicated in a study that covers a variety of developing and developed countries.

Due to inconclusive results and limited evidence from international studies, this thesis further investigates shareholder wealth of bank mergers covering a large international sample of bank mergers, as will be discussed in chapter 5. It is expected that this thesis can provide more evidence, contributing to prior academic research.

On the other hand, as discussed in chapter 1, one of the aims in this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth in bank mergers. As will be discussed in chapter 3, very few prior studies have tried to explore the impact of investor protection and bank regulation on the shareholder wealth in bank mergers. Due to limited evidence, little is known about whether investor protection and bank regulation has an impact on shareholder wealth in bank mergers. Hence, prior empirical studies do not provide a clear picture to address the impact of investor protection and bank regulation on the shareholder wealth in bank mergers. This thesis further provides the cross-sectional regression analysis to explore the impact of investor protection and bank regulation on the shareholder wealth, as will be presented in chapter 6, 7 and 8.

Chapter 3 Literature review of investor protection and bank regulation

3.1 Introduction

In chapter 2, a number of prior empirical studies with respect to bank mergers are discussed. Some of these prior empirical studies provide cross-sectional regression analyses to explain the announcement returns of targets and bidders. As has been discussed in chapter 1, some prior empirical studies have explored internal corporate governance mechanisms in terms of ownership and board structure on the impact of shareholder wealth in bank mergers. These prior empirical studies only focus on the variables related to firm level corporate governance mechanisms.

Alternatively, the country level corporate governance mechanisms as the external corporate governance mechanisms may also play an important role to influence shareholder wealth of bank mergers. However, prior empirical studies do not pay much attention to explore whether the country level corporate governance mechanisms in terms of investor protection and bank regulation can affect shareholder wealth in bank mergers. Little is known about whether investor protection and bank regulation can be important determinants to explain the announcement returns of the firms in bank mergers. Thus, this thesis attempts to explore the relationship between the announcement returns of the firms and investor protection and bank regulation in a country. This chapter discusses the theoretical background of corporate governance and the linkage with mergers and acquisitions first. Then, the prior empirical studies related to investor protection and bank regulation are also discussed in this chapter.

This chapter is organised as follows. Section 3.2 discusses agency theory and corporate governance. Then, the prior empirical studies with respect to investor protection and bank regulation are discussed in section 3.3 and 3.4, respectively. Section 3.5 presents conclusion. The limitations of the prior empirical studies are discussed in section 3.6.

3.2 Agency theory vs. corporate governance

The separation of ownership and control has been widely debated in the academic research (Berle and Means (1933); Jensen and Meckling (1976); Brickley and James (1987); Brook *et al*. (2000); Weir *et al*. (2002)). Brook *et al*. (2000) argue that the widespread separation of ownership and control may result in agency conflicts. Jensen and Meckling (1976) propose the agency theory, indicating the conflicts between managers and shareholders. The conflicts occur when managers pursue their own interests at the expense of the interests of shareholders. For example, managers may increase their perquisite and compensation package regardless of corporate performance.

Weir *et al.* (2002) also argue that managers may prefer to pursue their own interests because of job security and remuneration. Thus, the conflicts between managers and shareholders result in agency problems, also known as agency costs (Jensen and Meckling (1976); Weir *et al.* (2002); Masulis *et al*. (2007); Hagendorff and Keasey (2008)). The presence of the conflicts between managers and shareholders may affect firm value and impact on shareholder wealth.

Specifically, the conflicts between managers and shareholders may be significant when the firm is making large investment decisions, such as mergers and acquisitions. Byrd and Hickman (1992) argue that acquisitions, as major investments, may alter the strategic direction of the firm. Masulis *et al*. (2007) also indicate that “acquisitions are among the largest and most readily observable forms of corporate investment.” (p. 1852). However, Harford (2003) points out that mergers or takeovers are events where managers’ interests often diverge severely from those of shareholders. Managers may have more ability to obtain private benefits at the expense of shareholders through mergers and acquisitions.

When proceeding with mergers and acquisitions, managers may increase firm size in order to secure their jobs (Amihud and Lev (1981); Ben-Amar and Andre (2006)) or increase managerial compensation and prestige (Firth (1991); Avery *et al.* (1998)). For

example, target managers may be replaced after the transactions if the firms have poor performance prior to the transactions. Hence, the increase of firm size through mergers and acquisitions increases the probability to secure their jobs.

Cox (2006) also argues that managers in large firms, on average, earn higher compensation and consume greater perquisites relative to those in small firms. Thus, managers may have incentives to pursue their own interests by engaging in mergers and acquisitions. From this perspective, the decisions to undertake mergers and acquisitions may, therefore, hurt the value of the firms and the wealth of bidding firm shareholders.

Datta *et al*. (2001) argue that "Corporate investment decisions are important to the creation of shareholder wealth." (p. 2299). Brook *et al*. (2000) argue that managers acting as the agents are hired to run their firms. When the interests of shareholders and managers diverge, the monitoring function becomes more important to shareholders (Fama and Jensen (1983); Hagendorff and Keasey (2008)).

A number of corporate governance mechanisms have been designed to mitigate agency conflicts and reduce agency costs (Jensen and Meckling (1976); Fama (1980); Fama and Jensen (1983); Weir *et al.* (2002); Cornett *et al*. (2003); Masulis *et al*. (2007)). Corporate governance mechanisms can be classified as internal and external corporate governance mechanisms (Weir *et al.* (2002); Denis and McConnell (2003)). Denis and McConnell (2003) argue that internal corporate governance mechanisms include ownership and board structure and external corporate governance mechanisms include the legal system. These mechanisms offer monitoring functions to shareholders in order to monitor and/or discipline managerial behaviour.

As was indicated in chapter 1, some prior empirical studies have examined the effectiveness of internal corporate governance mechanisms in terms of ownership and board structure on the shareholder wealth in mergers and acquisitions. However, these prior empirical studies only focus on firm level corporate governance mechanisms. Prior empirical studies are less concerned to explore the impact of the country level corporate

governance mechanisms in terms of investor protection and bank regulation on the shareholder wealth in mergers and acquisitions.

La Porta *et al*. (1998) argue that "Law and the quality of its enforcement are potentially important determinants of what rights security holders have and how well these rights are protected." (p. 1114). The strength of investor protection laws in a country can offer mechanisms to protect minority shareholders against expropriation by insiders (La Porta *et al*. (1997); Kuipers *et al*. (2003)). Anderson *et al*. (2009) also argue that strong investor protection offers greater bargaining power to targets. Thus, bidders may need to pay more to targets.

Hagendorff *et al*. (2007) also argue that investors in low protection environments may require compensation for lower governance standards and a higher risk of expropriation by insiders. They report that bidders obtain higher announcement returns when acquiring targets in a lower investor protection country.

While several prior empirical studies undertake cross-country analysis to explore the effects of the country level corporate governance mechanisms on the shareholder wealth of mergers and acquisitions, as will be discussed below, these studies mainly focus on the industrial firms. However, Hagendorff and Keasey (2008) argue that "The evidence on the valuation effects of mergers in different investor protection regimes is rather limited for banking firms." (p. 1334). The need to investigate the impact of investor protection on the shareholder wealth of bank merger is addressed in the current study.

However, investor protection in a country may sometimes not generate an effective function to protect shareholders. Caprio *et al*. (2007) argue that "investor protection laws alone may not provide a sufficiently powerful corporate governance mechanism to small shareholders." (p. 585). Managers may have more ability to expropriate minority shareholders if investor protection cannot effectively discipline managerial behaviour. Bank regulation may provide an alternative mechanism to monitor managerial behaviour in banks in reducing the expropriation by managers. The existence of bank regulation can

then be expected to protect shareholders. Hence, “effective regulation may increase investor confidence regarding expropriation and boost market valuations” (Caprio *et al*. (2007), p.585). This also suggests a need to undertake the current study in order to further explore the impact of bank regulation on shareholder wealth in bank mergers.

As will be discussed in the section on the sample selection in chapter 5, this thesis uses a large international sample of bank mergers to examine shareholder wealth around bank merger and acquisition announcements. Little is known about whether the country level corporate governance mechanisms in terms of investor protection and bank regulation can explain the cumulative abnormal returns of the firms around bank merger and acquisition announcements. This provides a good opportunity to explore cross-country differences of investor protection and bank regulation in explaining the variations of the abnormal returns in bank mergers and acquisitions as discussed in chapter 1.

However, a limitation of this study is that, given the large sample size, it has not been possible to also collect and analyse firm-specific corporate governance variables. Such data is not readily available from financial database, and would therefore have had to be hand-collected from annual reports. Given the large sample, spanning over 36 countries, this would not be possible within the time limits of a PhD.

To the extent that internal and external corporate governance mechanisms may interact, it is acknowledged that not including corporate governance variables may potentially cause some missing variable bias in the analysis in this study. However, a number of firm and bid characteristics are controlled for in the cross-sectional analysis, in order to minimise the potential for any missing variable bias. An area for future research may be to analyse the joint impact of internal and external corporate governance mechanisms, although the data requirements for such a study are considerable.

To better understand what have been found and what have been done in the existing literature, the following sections review prior empirical studies with respect to investor protection and bank regulation.

3.3 Investor protection

Several prior empirical studies have explored the impact of investor protection on corporate valuation and shareholder wealth of mergers and acquisitions as will be discussed below. To measure the level of investor protection in a country, prior empirical studies mainly rely on La Porta *et al*.'s (1998) index. While La Porta *et al*.'s (1998) index has encountered some criticism by researchers, Djankov *et al*. (2006) and Martynova and Renneboog (2008) develop their own index to measure the scale of investor protection in a country. Thus, the review of the existing literature related to investor protection is presented as below.

3.3.1 Investor protection measured from La Porta *et al*.'s (1998) index

3.3.1.1 Empirical evidence relating to investor protection to corporate valuation

La Porta, Lopez-de-Silanes, Shleifer and Vishny (LLSV) (1998) examine legal rules to protect corporate shareholders in 49 countries around the world using 1993 data. The authors argue that "Law and the quality of its enforcement are potentially important determinants of what rights security holders have and how well these rights are protected." (p. 1114). La Porta *et al.* (1998) argue that the antidirector rights index has six components. These six components include

> "(1) the country allows shareholders to mail their proxy vote to the firm, (2) shareholders are not required to deposit their shares prior to the general shareholders' meeting, (3) cumulative voting or proportional representation of minorities in the board of directors is allowed, (4) an oppressed minorities mechanism is in place, (5) the minimum percentage of share capital that entitles a shareholder to call for an extraordinary shareholders' meeting is less than or equal to 10 percent (the sample median), or (6) shareholders have pre-emptive rights than can be waived only by a shareholders' vote. The index ranges from zero to six." (p. 1123).

Among the antidirector rights index, the highest score was 5 out of 6, indicating the strongest shareholder protection in a country, such as United States and United Kingdom.

In addition, La Porta *et al.* (1998) also argue that "a strong system of legal enforcement could substitute for weak rules since active and well-functioning courts can step in and rescue investors abused by the management." (p. 1140). The authors indicate that the legal enforcement proxied as the rule of law captures the information as below.

> "Assessment of the law and order tradition in the country produced by the country risk rating agency International Country Risk (ICR). Average of the months of April and October of the monthly index between 1982 and 1995. Scale from zero to 10, with lower scores for less tradition for law and order (we changed the scale from its original range going from zero to six)." (p. 1124).

The highest score indicates the strongest legal enforcement, for example United States is scored 10. La Porta *et al.* find that English-origin and French-origin countries generally have strongest and weakest legal protections for investors, respectively.

La Porta, Lopez-De-Silanes, Shleifer and Vishny (2002) further examine the effects of investor protection on corporate valuation. Their sample includes 539 large firms from 27 countries over the 1995-1997 period. The authors find that better protection of minority shareholders is associated with higher valuation of firms, where valuation of firms is measured as Tobin's Q. Hence, La Porta *et al.*'s finding suggests that better investor protection in a country can reduce expropriation by managers and reduce agency costs. Thus, strong investor protection can be better to protect minority shareholders.

In a paper particularly looking at the banks, Caprio, Laeven and Levine (2007) investigate the impact of shareholder protection laws on bank valuations for 244 banks from 44 countries in 2001. The authors find that the valuation of banking firms measured as Tobin's Q is positively and significantly related to investor protection in a country. The results indicate that higher valuation of banks is associated with better legal protection of minority shareholders rights. Thus, Caprio *et al*. argue that "laws can play a role in

restraining this expropriation." (p. 615).

As discussed above, La Porta *et al*. (2002) and Caprio *et al*. (2007) focus on industrial firms and banks, respectively, and report that the valuation of firms is high when firms are in a country with better investor protection. If firms in a country with strong investor protection engage in mergers and acquisitions, managers may have less ability to expropriate minority shareholders, aiming at satisfying the interests of shareholders. Thus, higher valuation of the firms may be expected to generate higher value to shareholders of bidders.

However, prior empirical studies related to investor protection discussed above do not analyse shareholder wealth of mergers and acquisitions. It remains a puzzle as to whether investor protection in a country can affect the announcement returns of the firms in mergers and acquisitions. Thus, the following section reviews prior empirical studies related to shareholder wealth in mergers and acquisitions.

3.3.1.2 Empirical evidence related to shareholder wealth

Prior empirical studies pay less attention to cross-country analysis to explore the relationship between shareholder wealth in mergers and acquisitions and investor protection in a country. Due to limited evidence and to better understand academic research in this field, the review of prior empirical studies covers the empirical evidence from industrial firms and financial firms, respectively.

3.3.1.2.1 Empirical evidence from industrial firms

3.3.1.2.1.1 Target shareholder wealth

Several prior empirical studies focus on industrial firms to explore the relationship between investor protection and bid premium or the cumulative abnormal returns of the firms in cross-border mergers and acquisitions. Rossi and Volpin (2004) focus on target firms to examine the determinants of mergers and acquisitions in 49 major countries

between 1990 and 1999. Their final sample contains 4,007 observations.

Rossi and Volpin find that target takeover premium is positively and significantly related to the level of shareholder protection in a target country, where premium is the bid price as a percentage of the target closing price four weeks before the announcement of the deal and shareholder protection is measured at the target country level. Rossi and Volpin explain that "shareholder protection reduces the cost of capital and therefore increases (potential) competition among bidders and the premium paid by the winning bidder." (p. 293).

In addition, Rossi and Volpin find no statistically significant relationship between target premium and the difference between the acquirer and target shareholder protection, suggesting that "acquiring firms from countries with better shareholder protection do not need to pay more than acquiring firms from countries with weaker shareholder protection in cross-border deals." (p. 295). Based on their findings, Rossi and Volpin state that "domestic investor protection is an important determinant of the competitiveness and effectiveness of the market for mergers and acquisitions within a country." (p. 300).

Kuipers, Miller and Patel (2003) examine the legal environment and corporate governance structures in the countries of foreign bidders from 1982 to 1991 in order to explain the value creation in cross-border acquisitions. Their final sample contains 181 tender offers for U.S. target firms by 150 foreign acquirer firms covering 16 countries.

Kuipers *et al*. find that target cumulative abnormal returns are positively and significantly related to the rule of law in the bidder country, where the rule of law is measured from La Porta *et al*. (1998). The results also show that target cumulative abnormal returns are positively, but insignificantly, correlated with the antidirector rights index in the bidder country, where the antidirector rights index are measured from La Porta *et al*. (1998). Accordingly, their results indicate that higher target cumulative abnormal returns are associated with acquisitions by firms in a country with stronger legal environment.

Bris and Cabolis (2004) study the relationship between investor protection in a country and the announcement effect of the firm from 1989 to 2002. The final sample contains 506 cross-border mergers and 506 corresponding domestic mergers from 39 countries. Bris and Cabolis find that target cumulative abnormal returns are positively, but insignificantly, correlated with shareholder protection in a target country, where shareholder protection is measured by the product of the shareholder rights index and the rule of law from La Porta *et al*. (1998). Their findings also show that target cumulative abnormal returns are positively, but insignificantly, related to the difference of shareholder protection between the bidder and target countries.

In another paper with the same investigation period and sample size, Bris and Cabolis (2008) find that cumulative abnormal returns of target firms are negatively, but insignificantly, related to shareholder protection in the target country, where shareholder protection is measured as the product of the shareholder rights index and the legal system from La Porta *et al*. (1998). These findings are inconsistent with their previous study. A possible explanation may be the different construction of model specification. However, no significant impact of investor protection in either of their studies can be found.

Stark and Wei (2004) investigate whether differences in corporate governance affect firm valuation in cross-border mergers from 1980 to 1998. The targets are restricted to be U.S. firms. Bids are excluded if bidding firms do not control over 50% of target shares after the transactions. The authors argue that “inclusion of small deals adds substantial noise to the analysis without adding insight.” (p. 9). Thus, bids are included if the transaction value is larger than one million U.S. dollars. Their final sample consists of 371 cross-border mergers.

Stark and Wei find that target cumulative abnormal returns are negatively, but insignificantly, related to the antidirector rights index in a bidder country measured from La Porta *et al*. (1998).

In addition, Stark and Wei find that target cumulative abnormal returns is negatively

and significantly correlated with shareholder protection, measured as the product of antidirector rights index and the rule of law in the bidder country from La Porta *et al*. (1998). The results suggest that "target abnormal returns are decreasing in the quality of the bidders' home country governance." (p. 20). The results suggest that target firm shareholders are compensated as a result of inferior corporate governance regimes of foreign acquirers.

Anderson, Marshall and Wales (2009) examine the relationship between investor protection and target takeover returns within Europe from 1997 to 2004. Their final sample contains 534 announcements in 24 countries. The authors find that target cumulative announcement returns are positively and significantly associated with the dummy of investor protection in a target country, where the dummy of investor protection is equal to 1 if the country is from a strong investor protection country.[36] The results indicate that targets in stronger investor protection countries can extract higher announcement returns relative to those in weak investor protection countries.

As Anderson *et al*. (2009) argue that "strong investor protection environments endow targets with greater bargaining power compared to environments with weak investor protection" (p. 303), their findings indicate that targets in strong investor protection countries obtain larger takeover announcement returns. Their findings imply that "acquirers need to offer larger premiums if they want to successfully acquire target companies with greater bargaining power." (p. 303).

As discussed above, most of prior empirical studies focus on exploring target bid premium or target announcement returns in association with investor protection in a target country (Rossi and Volpin (2004); Bris and Cabolis (2004,2008); Anderson *et al*. (2009)). This suggests that target shareholder wealth can be affected by investor protection in a target country although Kuipers *et al*. (2003) and Stark and Wei (2004) analyse target

[36] Anderson *et al*. (2009) document that "we refer to English- and Scandinavian-origin countries as having strong investor protection and French-origin and Eastern European countries as having weak investor protection." (p. 293). The classification of country origin is based on La Porta *et al*.'s (1998) study.

announcement returns in relation to investor protection in a bidder country. As Rossi and Volpin (2004), Bris and Cabolis (2004,2008), Anderson *et al*. (2009) focus on investor protection in a target country, these studies indicate that the importance of investor protection in a target country may have an influence on target announcement returns. Following these studies, this thesis also examines target announcement returns in conjunction with investor protection in a target country.

In addition, Bris and Cabolis (2004,2008) also analyse target announcement returns in relation to the difference of investor protection between the bidder and target countries. This may also suggest that the difference of investor protection between the bidder and target countries may have an impact to target shareholder wealth. However, due to the lack of the empirical evidence, the current study also examines the relationship between target announcement returns and the difference of investor protection between the bidder and target countries as will be presented in the empirical section in chapter 6. This provides additional insights to reveal whether the difference of investor protection in a bidder and target country on the impact of target shareholder wealth in bank mergers.

However, without reviewing prior empirical evidence for bidder shareholder wealth, it may not be clear to understand the impact of investor protection on bidder announcement returns. As a result, the following section discusses prior empirical evidence for bidder shareholder wealth.

3.3.1.2.1.2 Bidder shareholder wealth

Turning to the analysis of bidder shareholder wealth, Kuipers *et al*. (2003) find that cumulative abnormal returns of acquiring firms are negatively, but insignificantly, correlated to the rule of law in a bidder country. In contrast, the results show that bidder cumulative abnormal returns are positively and significantly related to the antidirector rights index in the bidder country. Kuipers *et al*. argue that “When shareholders are protected, the alignment of interests between managers and shareholders is strong, and

managers pursue wealth-creating investment policies for their shareholders as a result." (p. 25).

Bris and Cabolis (2004) report that bidder cumulative abnormal returns is positively, but insignificantly, associated with shareholder protection in the bidder country. Their findings also show that bidder cumulative abnormal returns are negatively, but insignificantly, related to the difference of shareholder protection between the bidder and target countries. As a result, the authors report that the market with poorer corporate governance positively values the change of better corporate governance through cross-border mergers, but the results are not significant.

Stark and Wei (2004) find that bidder cumulative abnormal returns are positively, but insignificantly, associated with both shareholder rights and shareholder protection in the bidder country.

As discussed above, Kuipers *et al*. (2003), Bris and Cabolis (2004) and Stark and Wei (2004) analyse the relationship between bidder announcement returns and investor protection in a bidder country. While the results are often not significant, there is some evidence of a positive association between bidder announcement returns and the level of investor protection in a bidder country. Following these studies, this thesis also uses investor protection in a bidder country to examine the relationship with bidder announcement returns.

Although Bris and Cabolis (2004) also explore the relationship between bidder announcement returns and the difference of investor protection between the bidder and target countries, limited empirical evidence offers an opportunity to further look into the difference of investor protection between the bidder and target countries on the impact of bidder announcement returns. Thus, the current study can provide more evidence in academic research.

While prior empirical studies have been discussed above with respect to target and bidder shareholder wealth, it is uncertain as to whether investor protection in a country can

affect the announcement returns of combined firms. Thus, the following section reviews prior empirical evidence for shareholder wealth of combined firms in order to provide a clear picture to address the impact of investor protection on combined firms shareholder wealth.

3.3.1.2.1.3 Combined firms shareholder wealth

In addition to the analysis of target and bidder shareholder wealth, Kuipers *et al*. (2003) also analyse combined firms and find that cumulative abnormal returns of combined firms are positively, but insignificantly, associated with the rule of law in a bidder country. Additionally, there is a positive and significant relationship between combined firms' cumulative abnormal returns and the antidirector rights index in the bidder country. The results indicate that higher cumulative abnormal returns for combined firms are associated with acquisitions by bidders from a country with better legal environment. However, Stark and Wei (2004) report "no significant relation between the combined portfolio return and the corporate governance proxies." (p. 28).

As discussed above, both Kuipers *et al*. (2003) and Stark and Wei (2004) analyse combined firms announcement returns in relation to investor protection in a bidder country. This may indicate that investor protection in a bidder country may be expected to have an influence on combined firms announcement returns. However, due to the lack of prior empirical evidence, the impact of the level of investor protection in a bidder country on shareholder wealth for combined firms is not clear. This suggests a need to further investigate the impact of investor protection in a bidder country on combined firms shareholder wealth.

Overall, several prior empirical studies discussed above have explored the relationship between the cumulative abnormal returns of the firms and investor protection in a country. The results suggest investor protection in a country can be expected to affect

the announcement returns of the firms. However, these prior empirical studies only focus on industrial firms in mergers and acquisitions. Prior empirical evidence from industrial firms may not be applicable to financial firms. It is not clear as to whether investor protection in a country can affect the announcement returns of the firms in bank mergers and acquisitions. As a result, the following section reviews the prior empirical evidence from financial firms.

3.3.1.2.2 Empirical evidence from financial firms

Boubakri, Dionne and Triki (2008) examine the potential determinants of the long run performance of acquirers in association with the level of investor protection in a target country. Bidders are restricted to be U.S. insurance companies. Their final sample contains 177 transactions from 1995 to 2000.

Boubakri *et al*. find that bidder buy and hold abnormal returns are negatively and significantly associated with investor protection in the target country, where investor protection is measured from La Porta *et al*.'s (1998) index. The results indicate that poorer investor protection in the target country results in higher bidder buy and hold abnormal returns. Thus, Boubakri *et al*. argue that "shareholders seem to receive a positive premium for this additional risk." (p. 67).

In addition, Boubakri *et al*. also document that bidder buy and hold abnormal returns are negatively correlated to the difference of investor protection between the bidder and target countries. However, their study focuses on the long run performance of the acquirer instead of looking at short term announcement effects. In addition, the focus in the study of Boubakri *et al*. is insurance firms instead of banking firms.

Hagendorff, Collins and Keasey (2007) similarly use La Porta *et al*'s (1998) index to explore the relationship between the level of investor protection in the target country and bidder abnormal returns around bank merger announcements from 1996 to 2004. Investor protection is measured as the product of the antidirector rights index and the rule of law

from La Porta *et al*.'s (1998) study. As discussed in chapter 2, their final sample comprises 204 bank mergers.

Applying univariate analysis, Hagendorff *et al*. report that bidders earn higher returns when targets are located in a country with a low protection environment. The authors argue that "In low protection environments, investors may demand compensation for lower governance standards and a higher risk of expropriation by insiders." (p. 1339).

Furthermore, using regression analysis, Hagendorff *et al*. find that bidder cumulative abnormal returns are negatively and significantly related to investor protection in the target country. However, the authors do not analyse the relationship between target cumulative abnormal returns and investor protection in a country.

In addition, both studies discussed above restrict their analysis to bidder announcement returns. Boubakri *et al*. (2008) look at long run announcement returns in the insurance firms rather than short term announcement returns in the banking firms. Although Hagendorff *et al*. (2007) focus on short term announcement returns for the banks, their study only covers a sample from the U.S. and EU markets. Their findings may not be applicable to other developed or developing countries.

As discussed earlier, prior empirical studies focused on industrial firms have suggested the importance of investor protection in a home country in association with bidder announcement returns. However, both Hagendorff *et al*. (2007) and Boubakri *et al*. (2008) analyse bidder announcement returns in association with investor protection in a target country. Their studies do not analyse bidder announcement returns in relation to investor protection in a host country. It remains an open question as to whether bidder announcement returns in bank mergers and acquisitions can be affected by the level of investor protection in a bidder's home country.

In addition, prior studies do not examine the impact of investor protection in a country on either target and combined firms announcement returns in bank mergers and acquisitions. This suggests a need to further explore the relationship between the

announcement returns of the firms in bank mergers and acquisitions and investor protection in a host country.

The prior empirical studies discussed above with respect to investor protection in a country rely on La Porta *et al*.'s (1998) index to measure the level of investor protection in a country. La Porta *et al*.'s (1998) index is based on historic data to construct the index, possibly raising questions as to whether the index is still valid. However, La Porta *et al*.'s (1998) index is still applied in empirical studies, suggesting the importance of La Porta *et al*.'s (1998) index continue to be recognised in the empirical research. Following prior empirical studies, the current study also uses La Porta *et al*.'s (1998) index to carry out the empirical test as will be presented in chapter 6, 7 and 8.

In addition, this thesis uses the antidirector rights index and the rule of law from La Porta *et al*.'s (1998) index to measure the level of investor protection in a country separately. This allows the current study to provide additional insights to the importance of each variable regarding to investor protection in a country. Using La Porta *et al*.'s (1998) index also enables this thesis to make a comparison with prior empirical studies. However, La Porta *et al*.'s (1998) index has also encountered some criticism by researchers, as will be discussed below. The following section reviews prior empirical studies with respect to an alternative measurement of investor protection in a country.

3.3.2 Investor protection measured from alternative index

La Porta *et al*.'s (1998) antidirector rights index has received some criticism by researchers (Pagano and Volpin (2005); Spamann (2005); Djankov *et al*. (2006, 2008)). Djankov *et al*. (2006, 2008) argue that La Porta *et al*.'s (1998) antidirector rights index has its limitation due to conceptual ambiguity in the definitions of some of its components. Thus, Djankov *et al*. (2006, 2008) develop their revised antidirector rights index to deal with these concerns. Djankov *et al*. (2008) present that "….a revised index of anti-director rights for 72 countries based on laws and regulations applicable to publicly

traded firms in May 2003. The revised index relies on the same basic dimensions of corporate law, but defines them with more precision." (p. 453).[37]

Freund, Nguyen and Vasudevan (2008) use the revised antidirector rights index to study the effects of target country shareholder protection on acquirer returns. Their study focuses on cross-border transactions during the 1984-2005 period. Acquiring firms are restricted to be U.S. industrial firms and target firms are limited to be non-U.S. firms. Their final sample contains 1,525 takeovers.

The authors find that firms acquiring public targets in high shareholder protection countries earn -0.76% cumulative abnormal returns over a 3-day (-1,+1) event window compared to 0.94% cumulative abnormal returns for firms that acquire public targets in low shareholder protection countries, both statistically significant. The difference between high and low shareholder protection in the target country is statistically significant at the 0.05 level. Freund *et al.* argue that "The shareholders of the public-target company receive more of the value created by these takeovers because of the high-level of protection offered to these investors and acquirer shareholders realize less of the benefits." (p. 17).

Freund *et al*. find that bidder cumulative abnormal returns are negatively and significantly related to shareholder protection in the target country, where shareholder protection is measured as the revised antidirector rights index from Djankov *et al*. (2006). The results imply that bidder cumulative abnormal returns are lower when the target is located in a country with better shareholder protection, which lend support to their findings in the univariate analysis. However, the results depend on definition of investor protection used. Although Freund *et al*. (2008) use Djankov *et al*.'s (2006) revised antidirector rights

[37] The revised antidirector right index in Djankov *et al.* (2006) is formed by summing six component variables, each of which can increment the antidirector rights index by one if: (1) the law of the country explicitly mandates proxy vote; (2) shareholders are not required to deposit their shares prior to a general shareholders' meeting; (3) the law explicitly mandates cumulative voting; (4) an oppressed minority mechanism is in place; (5) listing rules explicitly mandate pre-emptive rights for shareholders; and (6) when the minimum percentage of share capital that entitles a shareholder to call for an extraordinary meeting is less than 10 percentage." (p. 28). Djankov *et al*. (2008) point out that "The general principle behind the construction of the revised anti-director rights index is to associate better investor protection with laws that explicitly mandate, or set as a default rule, provisions that are favorable to minority shareholders." (p. 454).

index to measure investor protection, limited evidence based on this index may suggest a need for further research applying this index. Thus, this thesis also uses Djankov *et al.*'s (2006) revised antidirector rights index as a robustness check. This can also test the sensitivity of the results to alternative definition of investor protection.

In another paper, Martynova and Renneboog (2008) construct their own index to measure the quality of corporate governance standards. The authors argue that "these indices overcome some of the limitations of the LLSV indices. First, our indices are based on a broader definition of corporate governance regulation than that used by LLSV. Second, our indices are dynamic: they capture the many regulatory reforms on a yearly basis since 1990." (p. 205). However, Martynova and Renneboog's (2008) index only covers EU countries instead of a number of developing and developed countries.

Martynova and Renneboog employ their index to study whether the value creation can be explained by differences in the quality of corporate governance standards between the bidder and target countries in cross-border takeovers between 1993 and 2001. Their final sample contains 2,419 domestic and cross-border deals, where 737 deals are cross-border transactions.

The authors find that target cumulative abnormal returns are positively and significantly related to the target shareholder rights index, suggesting that "target companies from countries with better shareholder protection are able to extract higher premiums from the bidding firms." (p. 214).

Further analysis shows that target cumulative abnormal returns are positively and significantly associated with the difference between the bidder and target shareholder rights index. Martynova and Renneboog explain that bidder corporate governance standards will be imposed on the target firm as a result of higher target announcement returns when a bidding firm comes from a country with higher shareholder protection than the target.

In addition, the results show that bidder cumulative abnormal returns are positively,

but insignificantly, related to the shareholder rights index in the bidder country. The results also show that bidder cumulative abnormal returns are positively, but insignificantly, correlated to the difference between the bidder and target shareholder rights index. However, the authors do not provide their indices in their study and their indices only cover European countries. Due to limited data availability, this thesis cannot apply Martynova and Renneboog's index in the analysis. On the other hand, Martynova and Renneboog's findings are in general consistent with prior empirical studies discussed from industrial firms although the results are not statistically significant.

Prior empirical studies have used alternative indices to measure the level of investor protection in a country, as discussed above. However, these two studies only look at industrial firms instead of financial firms. This suggests a need to apply these indices in the study of financial firms as a robustness check.

On the other hand, due to the unavailability of Martynova and Renneboog's (2008) index, this thesis only relies on Djankov *et al.*'s (2006) revised antidirector rights index as an alternative measurement of investor protection as a robustness check in the empirical test in chapter 6, 7 and 8.

3.4 Bank regulation

Caprio *et al*. (2007) argue that "One standard rationale for heavy government regulation on banks is that shareholders and creditors lack sufficient mechanisms for exerting sound governance over extraordinarily complex, opaque banks." (p. 585). Caprio *et al.* argue that effective regulation may exert a positive influence on bank valuations in that it may reduce the expropriation. Managers may reduce the risk-taking behaviour that may affect bank valuation. Specifically, when banks engage in mergers and acquisitions, bank regulation might effectively impede expropriation and reduce the conflicts between managers and shareholders. As a result, the strength of bank regulation in a country may have an influence on the outcome of mergers and acquisitions in increasing bank valuation

and shareholder wealth.

To measure the strength of bank regulation in a country, Barth *et al*. (2001, 2003) conduct a survey of national regulatory agencies to obtain information for bank regulation and supervisory practices in 107 countries published by the World Bank. Barth *et al*. (2004) argue that "The data, primarily from 1999, used to assess which regulations and supervisory practices are associated with greater bank development, better performance, and increased stability as well as those that are not." (p. 206). A number of prior empirical studies apply Barth *et al*.'s (2001, 2003) database to examine the effects of bank regulation in relation to bank risk-taking, bank performance and mergers and acquisitions. These studies are discussed below.

3.4.1 Empirical evidence related to bank risk taking

Some prior empirical studies argue that regulations can have an impact on the risk taking behaviour of banks (Besanko and Kanatas (1996); Demirguc-Kunt and Kane (2002); Fernandez and Gonzalez (2005); Gonzalez (2005); Pennacchi (2006); Pasiouras *et al*. (2008)). Pasiouras *et al*. (2008) argue that "the regulatory environment can play a role in the M&As activity." (p. 137). Amihud, DeLong and Saunders (2002) analyse bank risk to investigate the effects of cross-border bank mergers on the risk and returns of acquiring banks between 1985 and 1998. Bids are included if bidders acquire more than 50% of target shares after the transactions. Their final sample consists of 214 mergers.

The results show that cumulative abnormal returns of bidders are positively, but insignificantly, related to the total risk as measured by the variance of a bank's stock returns relative to the home bank index. Thus, Amihud *et al*. argue that "even if significant risk shifting opportunities exists, via cross-border mergers, stockholders do not expect acquiring banks to exploit them, or that such risk shifting opportunities are limited." (p. 876).

Buch and DeLong (2008) study whether supervisory systems influence changes in

the riskiness of banks. Their final sample contains 81 cross-border bank mergers from 1998 to 2002. The authors find that bank risk after a cross-border bank merger is negatively and significantly related to deposit insurance in the bidder country, indicating that lower risk after cross-border bank merger is associated with the existence of deposit insurance in the bidder country. Buch and DeLong argue that banks realise that "a strong supervisory system implies they will receive greater scrutiny when they engage in cross-border merger." (p. 35). The authors report that "Acquirers from countries with strong supervisory systems tend to reduce risk-taking while banks from countries with weaker supervisory systems tend to increase risk-taking after a cross-border merger." (p. 35).

Furthermore, Buch and DeLong conduct additional analysis in order to examine the market reaction in relation to bank supervision. The authors do not find evidence to support the relationship between cumulative abnormal returns of bidding bank and bank supervision, implying that investors do not value potential risk-shifting in cross-border bank mergers.

Although both Amihud *et al*. (2002) and Buch and DeLong (2008) analyse bank risk in relation to the announcement returns of the firms in mergers and acquisitions, these two papers do not analyse the link between bank regulation and bank performance. Bank performance can be expected to have an impact on the announcement returns of the firms in bank mergers. Thus, the following section reviews some papers in this respect.

3.4.2 Empirical evidence related to bank performance

Barth, Dopico, Nolle and Wilcox (2002) examine the relationship between banking performance and bank supervision and regulation in 1999, covering 70 countries. The authors find that bank regulation, measured as restrictions on securities activities from Barth *et al*. (2001), is positively and significantly related to bank performance as measured by ROA. The results indicate that stronger bank regulation results in higher bank

performance.

Caprio, Laeven and Levine (2007) used 244 banks in 44 countries in 2001 to investigate the relationship between bank valuations and bank regulations. Caprio *et al*. find that the valuation of the banks is negatively, but insignificantly, correlated to regulatory restrictions on bank activities from Barth *et al*. (2004, 2006)[38], showing that higher bank valuation is associated with weaker bank regulation. In addition, the results also show that the valuation of the banks is positively, but insignificantly, correlated to bank regulations, as measured by official supervisory power[39], the stringency of capital requirements, and independence of the supervisory authority[40], denoting that higher bank valuation is associated with stronger bank regulation.

However, as Caprio *et al*. (2007) report an insignificant relationship between bank performance and bank supervision, the authors state that "we do not find robust evidence that the stringency of capital requirements or official supervisory power influences bank regulations, nor do we find the regulatory restrictions on bank activities affect the market's valuation of banks." (p. 32). Caprio *et al*. conclude that they find no evidence that bank valuation can be influenced by bank regulation.

Barth, Nolle, Phumiwasana and Yago (2008) investigate the relationship between the structure, scope and independence of bank supervision and bank performance from 1996 to 1999. The final sample includes 2,300 individual banks in 55 countries. The results show that bank profitability, measured as profit before tax to total assets, is in general positively, but insignificantly, associated with restrictions on bank activities. Thus, the authors argue that "tighter restrictions on bank activities are not related to bank profitability." (p. 112).

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[38] Caprio *et al*. (2007) document that regulatory restrictions on bank activities are "index of regulatory restrictions on banks ability to engage in securities market activities, the insurance business, conduct real estate activities, or own non-financial firms." (p. 592).

[39] Caprio *et al*. (2007) document that "Index of official supervisory power. Adds one for an affirmative response to each for the following 14 questions. 1. Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank?..." (p.592).

[40] Caprio *et al*. (2007) document that independence of the supervisory authority is "the degree to which the supervisory authority is independent from the government and legally protected from the banking system. (p.592).

In addition, the results also show that independence of the supervisory authority is negatively, but insignificantly, correlated to bank profitability. With regard to their findings, Barth *et al*. argue that "Our results indicate, at most, a weak influence for the structure of supervision on bank performance." (p. 115).

As discussed above, these studies have reported empirical evidence with respect to the relationship between bank performance/valuation and bank regulation. However, these studies do not particularly focus on mergers and acquisitions to investigate the relationship between shareholder wealth of bank mergers and bank regulation. As banks with better performance may obtain higher value of the transactions that may also affect shareholder wealth of bank mergers, it is not clear whether the level of bank regulation has an impact on shareholder wealth of bank mergers. Consequently, the following section discusses prior empirical studies related to shareholder wealth of bank mergers.

3.4.3 Empirical evidence relating to shareholder wealth in bank mergers

In a paper analysing shareholder wealth of bank mergers, Ongena and Penas (2008) examine the effects of bank supervisory regime on both bondholder and shareholder wealth in bank mergers between 1998 and 2002. Bids are included if the transaction involves a change of corporate control after the transaction and the deal value is larger than 100 U.S. million dollars. Their final sample includes 127 bidders and 71 targets.

The authors explore the relationship between the bank supervisory regime and the difference of cumulative abnormal returns for domestic and cross-border bank mergers in terms of bondholders' wealth. The results show that the difference in cumulative abnormal returns between domestic and cross-border bank mergers is positively and significantly correlated to bank supervision measured as prudential forbearance[41]. Thus, the results indicate that higher bondholder returns are obtained if "the acquirer bank engages a target

[41] Ongena and Penas (2008) indicate that prudential forbearance relies on Barth *et al.*'s (2006) dataset in the World Bank survey. The data evaluates whether "bank restructuring and reorganization, the supervisory agency or any other government agency [can] forbear certain prudential regulations?" (p. 8).

bank located in a country with fewer institutions that can forbear prudential regulations (compared to the acquirer's country)." (p. 14).[42]

On the other hand, Ongena and Penas also explore the association between bank supervisory regime and the difference in cumulative abnormal returns for domestic and cross-border bank mergers in terms of shareholders' wealth. The results show that the difference in cumulative abnormal returns is negatively and significantly associated with bank supervision measured as prudential forbearance. The results suggest that equityholders earn lower returns if "a bank engages a partner bank located in a country with fewer institutions that can forbear prudential regulations (compared to the own country)." (p. 15).

With respect to their findings, Ongena and Penas argue that "while a lower likelihood of prudential forbearance benefits bondholders, it hurts equityholders." (p. 16). However, the authors do not analyse the impact of bank regulation on the shareholder wealth for targets and bidders separately. In addition, their study only looks at bank mergers in Europe.

Due to limited prior evidence, it is not clear whether bank regulation in a country can have an influence to shareholder wealth of the firms in bank mergers and acquisitions. This suggests a need to further examine the impact of bank regulation on the shareholder wealth of the firms in bank mergers and acquisitions.

Overall, as discussed above, several prior empirical studies have explored the effects of bank regulation on bank risk taking and bank performance. However, only one prior empirical study investigates bank regulation on the impact of shareholder wealth of bank mergers. Due to limited empirical evidence, this suggests a need to further investigate the impact of bank regulation on the announcement returns of the firms in bank mergers.

On the other hand, it can be seen that prior empirical studies use different aspects of

[42] Due to data availability, this thesis does not analyse bondholder wealth.

bank regulation from Barth *et al*. (2001, 2003) to carry out their research. While focusing on cross-country analysis in this thesis, I do not cover all aspect of bank regulation from Barth *et al*.'s (2003) dataset due to data availability issues. Thus, the variables employed to the current study include overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall. This allows the current study to obtain sufficient observations to carry out the regression analysis in the empirical section in chapter 6, 7 and 8. The variables of bank regulation used in the current study will be specified in chapter 4.

In additional, this thesis only relies on the data of bank regulation from Barth *et al*. (2003) as can be argued that this is an update data relative to that from Barth *et al*. (2001). While bank regulation published by the World Bank may be revised in 2007, it should be taken into account the investigation period from 1995 to 2005 in this thesis. Thus, an update data after the year of 2007 may not be suitable to be applied in the current study.

3.5 Conclusion

This chapter discusses the theoretical background of corporate governance, the theoretical linkage of investor protection and bank regulation on the impact of the announcement returns of the firms in bank mergers, and the empirical evidence with respect to investor protection and bank regulation. According to agency theory, there are conflicts between managers and shareholders. When the firms engage in mergers and acquisitions, managers may pursue their own interests at the expense of shareholders through mergers and acquisitions. Hence, the existence of agency costs may affect the wealth of shareholders.

The presence of corporate governance mechanisms is to mitigate the conflicts between managers and shareholders and to align interests of managers and shareholders. From this perspective, the existence of corporate governance mechanisms can provide a function to monitor managerial behaviour and protect minority shareholders. If corporate

governance mechanisms are effective to monitor managers, these mechanisms can be expected to enhance the value of the firms and the wealth of shareholders.

As has been discussed previously, prior empirical studies pay little attention to the country level corporate governance mechanisms in terms of investor protection and bank regulation in relation to mergers and acquisitions. This suggests a need to provide more evidence in this area. Thus, this thesis looks at the country level corporate governance mechanisms in terms of investor protection and bank regulation to explore the impact of shareholder wealth in bank mergers.

While a small number of prior empirical studies analyse target (bidder) announcement returns in relation to investor protection in a target (bidder) country, these studies would suggest that investor protection in a home country can be important to influence the announcement returns of the firms. However, the majority of prior empirical studies focus on industrial firms, and the empirical evidence for financial firms is limited.

Furthermore, prior empirical studies do not use a large international sample of bank mergers, covering a variety of developing and developed countries to investigate the relationship between investor protection in a country and the announcement returns of the firms. This thesis aims to fill this gap.

In addition, there is a lack of prior empirical evidence to explore the relationship between bank regulation and the announcement returns of the firms as bank regulation can be an alternative corporate governance mechanisms to reduce agency conflicts and protect shareholders. Although Ongena and Penas (2008) study the impact of bank regulation on the announcement returns of bidding firms in bank mergers, their study does not include an analysis of targets or combined firms.

Due to the lack of empirical evidence to study the relationship between the announcement returns of the firms and bank regulation, no direct empirical evidence to reveal the impact of bank regulation on the shareholder wealth of bank mergers. This is also a gap to be filled in this thesis.

On the other hand, as bidders may exert more control power to target firms after the transactions, the level of bank regulation in a bidder country may be expected to have more influence on bid premium. Moreover, bank regulation is more important to have an influence on banks instead of the financial firms. As will be discussed in chapter 5, bidding firms are restricted to be banks in the current study. This thesis uses bank regulation in a bidder country to study the impact of shareholder wealth of bank mergers for targets, bidders and combined firms.

Finally, this thesis uses a large international sample of bank mergers to study the impact of investor protection and bank regulation on the shareholder wealth of bank mergers. Due to the financial crisis recently, a number of countries attempt to reform their financial system by imposing more bank regulation to monitor managers. This may allow the financial firms to reduce their risk and maintain their stability.

Furthermore, due to the competitiveness of the financial market globally, some banking firms intend to enhance their competitive advantage in generating higher profitability through mergers and acquisitions. Thus, the number of merger and acquisition activities in the banking industry significantly increases. However, there is limited evidence to explore the effects of the country level corporate governance mechanisms in terms of bank regulation on the shareholder wealth of bank mergers. It remains a puzzle to illustrate the importance of bank regulation on the impact of the announcement returns of the firms.

On the other hand, a number of countries also attempt to strength their investor protection law in order to protect minority shareholders. This can further enlarge their financial market in that foreign firms may want to invest their funding in a country with strong investor protection. Accordingly, this may also increase merger and acquisition activities. Due to limited evidence, it remains an open question as to whether investor protection can have an influence on the announcement returns of the firms.

Prior empirical studies largely focus on the industrial firms instead of the financial

firms. However, the results from the industrial firms may not be applicable to the financial firms. This further illustrates the need to explore the relationship between the announcement returns of the firms and investor protection and bank regulation in the banking industry. Using a historical data from 1995 to 2005 to undertake the current study, my results can explain the influence of investor protection and bank regulation on the shareholder wealth of bank mergers. The results in the current study can provide the empirical evidence to reveal the importance of the legal system to affect shareholder wealth of bank mergers. The empirical findings in the current study can also benefit investors, managers and regulators/policymakers when making their investment or supervising decisions.

3.6 Limitations of existing empirical studies

The aim of this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. As has been discussed in chapter 2 and 3, a number of prior empirical studies have been reviewed with respect to shareholder wealth of bank mergers and the relationship between the cumulative abnormal returns of the firm and investor protection and bank regulation in a country. However, prior empirical studies appear to suffer from various limitations that enable the current study to make a contribution to this area of research.

With respect to shareholder wealth in bank mergers discussed in chapter 2, it is not possible to draw a clear conclusion regarding the level of target announcement returns in that targets generally obtain a wide variation of the abnormal returns. Bidder announcement returns are inconclusive, suggesting a need to further explore bidder shareholder wealth. In addition, there are few prior international empirical studies and these do not cover a large international sample of bank mergers from a number of developing and developed countries. This is a gap to be filled in the current study, where I

will explicitly test whether abnormal returns, to targets, bidders and to targets and bidders combined, vary systematically between the U.S., the EU and other markets.

Furthermore, prior empirical studies to explore the relationship between the cumulative abnormal returns of the firms and investor protection and bank regulation in a country are limited. This drawback is particularly apparent in the study of financial firms. Although Hagendorff *et al*. (2007) have presented the empirical evidence to explore the relationship between bidder cumulative abnormal returns and investor protection in a target country, their study does not cover a wide range of developing and developed countries.

In addition, their study does not analyse targets and combined firms as well. So, there is no direct evidence to explore whether investor protection can be important determinants to explain the announcement returns of the firms in bank mergers and acquisitions. Thus, this thesis also intends to fill this gap to explore the relationship between investor protection in a country and the cumulative abnormal returns of the firms around bank merger and acquisition announcements for targets, bidders and combined firms.

Turning to the analysis of bank regulation, Ongena and Penas (2008) explore the relationship between bank regulation and shareholder wealth in bank mergers. However, Ongena and Penas's study only looks at the difference of the cumulative abnormal returns in domestic and cross-border bank mergers. Their study does not analyse the impact of bank regulation on shareholder wealth of bank mergers for targets, bidders and combined firms, respectively.

Due to the lack of the empirical evidence, it is not clear as to whether bank regulation can affect the cumulative abnormal returns of the firms during bank merger and acquisition announcements. It remains an open question as to whether bank regulation can be important determinants to explain shareholder wealth in bank mergers. Hence, this thesis also attempts to fill up this gap in the academic research. As a result, this thesis investigates the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements for targets, bidders and combined firms.

Chapter 4 Research Questions and Hypotheses

4.1 Introduction

The aim of this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements during the 1995-2005 period. Limitations of the existing empirical studies have been pointed out in chapters 2 and 3. This chapter aims to address the research questions and develop the hypotheses in the current study. This allows the current study to carry out the empirical tests in chapters 6, 7 and 8.

This chapter is organised as follows. Section 4.2 addresses the research questions. The development of hypotheses is presented in section 4.3. Finally, conclusions are provided in section 4.4.

4.2 Research questions

Several prior empirical studies related to bank mergers and acquisitions have been discussed in chapter 2. The existing literature involving investor protection and bank regulation has also been reviewed in chapter 3. However, the existing empirical literature discussed in chapters 2 and 3 in general contains limitations to carry out the empirical research.

As can be seen in chapter 2, these prior empirical studies report a wide variation of positive announcement returns to targets. The degree of positive announcement returns depends on the market, the investigation period and the choice of the event window. In addition, the existing empirical evidence shows inconclusive results to bidders. Thus, prior literature is unable to draw a clear conclusion regarding the impact on shareholder wealth of bank mergers.

Furthermore, while prior empirical studies mainly focus on the U.S. and EU market, the existing empirical evidence in international studies is thin. Besides, these international

studies do not use a large international sample of bank mergers to carry out their research. So, the empirical findings from existing international studies may not be applicable to a study covering a wide range of developed and developing countries. Hence, prior empirical studies do not provide a clear picture to address the impact of shareholder wealth in bank mergers. Covering a large sample from a number of both developing and developed countries allows the current study to analyse the impact of the country level corporate governance mechanisms in terms of investor protection and bank regulation on the cumulative abnormal returns of the firms in bank mergers. Thus, it may remain an empirical question as to whether bank mergers create or destroy value to shareholders. As a result, I impose the first research question with three parts:

"Do bank mergers create or destroy value to targets, bidders and combined firms?"

This research question enables the current study to undertake the empirical test and also to compare the empirical results to prior empirical evidence reported in chapter 2. This thesis can provide more empirical evidence to address the impact on shareholder wealth using a large international sample of bank mergers.

In addition to examine shareholder wealth in bank mergers, a number of prior empirical studies provide cross-sectional regression analyses to determine the factors that can explain the cumulative abnormal returns of the firms in bank mergers. As demonstrated by prior empirical studies in chapter 2, the cumulative abnormal returns of the firms can be affected by the deal and firm specific characteristics. This suggests the importance of the deal and firm specific characteristics in explaining shareholder wealth of bank mergers.

However, prior studies largely neglect to explore the effectiveness of the country level corporate governance mechanisms on the impact of shareholder wealth in bank mergers. While some prior empirical studies focus on internal corporate governance mechanisms to explore the relationship with the cumulative abnormal returns of the firms (e.g., Subrahmanyam *et al*. (1997); Cornett *et al*. (2003); Becher and Campbell (2005)), these studies only look at the firm level corporate governance mechanisms instead of the

country level corporate governance mechanisms.

Thus, little is known about whether the legal and regulation system as external corporate governance mechanisms can be important determinants to explain shareholder wealth in bank mergers. The legal and regulation system in the current study particularly focuses on investor protection and bank regulation in a country, also known as the country level corporate governance mechanisms. As a result, I further raise the second research question:

> "Are investor protection and bank regulation in a country important determinants of shareholder wealth in bank mergers?"

This research question further allows the current study to reveal how the country level corporate governance mechanisms in terms of investor protection and bank regulation affect shareholder wealth in bank mergers. This also assists the current study to understand how the country level corporate governance mechanisms can generate an influence to protect shareholders in bank mergers.

Overall, this thesis imposes two research questions. While this thesis includes a large international sample of bank mergers, the analysis will go beyond this by controlling for other factors as will be discussed below. This not only provides additional insights to analyse the impact of shareholder wealth of bank mergers, but also allows the current study to additionally determine factors that can affect shareholder wealth. In this aspect, this thesis controls for factors, such as the country level specific characteristics and the deal and firm specific characteristics, when undertaking the regression analysis.

In other words, when controlling for other factors, the regression analysis can be expected to accurately capture the relationship between investor protection and bank regulation and the announcement returns of the firms as will be presented in chapters 6, 7 and 8. To undertake the empirical tests, the following section develops the specific hypotheses related to these research questions and the variables in the regression analysis.

4.3 Hypotheses

This section aims to develop hypotheses to test the empirical results in this thesis. Hypotheses related to the announcement returns of the firms and the variables in the regression analysis are discussed separately. First, I establish hypotheses related to the announcement returns of the firms in order to answer the first research question. This enables the current study to carry out the empirical test to reveal the impact of shareholder wealth in bank mergers. Then, the second research question can be dealt with when setting out the hypotheses regarding the variables in the regression analysis. Furthermore, the construction of the variables is also discussed in the following section.

4.3.1 Hypotheses relating to the abnormal returns

4.3.1.1 Target shareholder wealth

As discussed in chapter 2, prior empirical studies have found that targets obtain significant positive announcement returns around bank merger and acquisition announcements. According to the discussion of the motive of takeovers in chapter 2, targets can be expected to obtain gains regardless of whether the motive of the bidder was synergies, or whether the bidder suffered from agency or hubris. If so, it can therefore be expected that targets obtain positive abnormal returns around bank merger and acquisition announcements.

Hypothesis 1: Target shareholder wealth

H_0: Targets do not obtain positive abnormal returns around bank merger and acquisition announcements.

H_1: Targets obtain positive abnormal returns around bank merger and acquisition announcements

Prior empirical studies with respect to the U.S., EU studies and international studies

were discussed in chapter 2. The existing evidence has shown that U.S. targets in general earn higher announcement returns than EU targets. This view can be supported by the empirical evidence from international studies (e.g., Scholtens and de Wit (2004); Valkanov and Kleimeier (2007)). Conn and Connell (1990) and Aybar and Ficici (2009) argue that U.S. targets can obtain high bid premia due to a highly competitive U.S. takeover market. A competitive takeover market may contain lots of bidders and targets that may have lots of transactions. If targets are in a more competitive takeover market with many transactions, targets may have more ability to abstract higher premium from bidders. Thus, bidders need to pay more to targets. It can therefore be expected that U.S. targets earn higher abnormal returns than EU targets and targets from outside the U.S. and EU market.[43]

Hypothesis 2: Target shareholder wealth with respect to the market

H_0: U.S. targets do not obtain higher abnormal returns than EU targets and targets from outside the U.S. and EU market.

H_1: U.S. targets earn higher abnormal returns than EU targets and targets from outside the U.S. and EU market.

Prior empirical studies have examined target shareholder wealth with respect to diversifying and focusing deals, as discussed in chapter 2. The existing empirical evidence shows that targets in focusing deals earn higher cumulative abnormal returns than those in diversifying deals (DeLong (2001); Ismail and Davidson (2005)).[44] One argument put

[43] The term of the competitive market in this thesis focuses on the perspective of the transactions from takeovers. If the takeover market is more competitive, targets may have more bargaining power to negotiate higher premium. Thus, bidders may need to pay more to targets. However, it can also be argued that higher premium may also derive from the aspect of the competitive banking market. A competitive banking market may reduce the profitability to targets and bidders. Bidders may want to pay higher premium to complete the transactions. However, this is beyond the scope of this study. It should bear in mind that the term of the competitiveness in this study focuses on the aspect of takeover market only.

[44] Focusing deals mean that bidding banks acquire other banks in terms of bank to bank deals. Diversifying deals denote that the transactions take place in the form of bank to other financial firm deals, also known as cross-product deals. However, it should be acknowledged that this is the definition of focusing and

forward to explain the difference of target cumulative abnormal returns in diversifying and focusing deals relates to risk diversification. If bidding banks acquire other financial firms to engage in a larger variety of activities through mergers and acquisitions, bidding banks may need to manage relatively more types of interest risks after the transactions (DeLong (2001); Lensink and Maslennikova (2008)). Hence, bidding banks may not want to pay higher premium in diversifying deals to targets.

However, not all prior empirical studies report higher cumulative abnormal returns to targets in focusing deals. Instead, Cybo-Ottone and Murgia (2000) find that targets in cross-product deals obtain higher cumulative abnormal returns than those in bank to bank deals.

On the contrary, managers of bidding banks may find it relatively easy to manage similar bank risks after the transactions when engaging in bank to bank deals. Thus, bidding banks may be likely to pay more to targets in focusing deals. Thus, it can be predicted that targets in focusing deals obtain higher cumulative abnormal returns than those in diversifying deals.

Hypothesis 3: Target shareholder wealth in diversifying and focusing deals

H_0: There are no differences in target abnormal returns in activity focusing and diversifying deals.

H_1: There are differences in target abnormal returns in activity focusing and diversifying deals.

4.3.1.2 Bidder shareholder wealth

Prior empirical studies discussed in chapter 2 have reported that targets obtain significant positive cumulative abnormal returns around bank merger and acquisition announcements. However, the empirical findings for bidders are inconclusive. Bidders in

diversifying deals in this study instead of a general definition applied to prior empirical studies.

general experience negative cumulative abnormal returns although some prior EU based empirical studies find slightly positive cumulative abnormal returns to bidders. Negative cumulative abnormal returns to bidders may be an indication of wealth transfer from bidders to targets.

According to the hubris and agency theory discussed in chapter 2 (e.g., Roll (1986); Berkovitch and Narayanan (1993)), managers may overpay to targets. This may attribute to the fact that managers may not precisely evaluate the synergies after the transactions. Due to evaluation errors, managers of bidding firms may therefore hurt firm value and shareholder wealth in the process of mergers and acquisitions. If so, it can therefore be predicted that bidders experience negative cumulative abnormal returns around bank merger and acquisition announcements.

Hypothesis 4: Bidder shareholder wealth

H_0: Bidder abnormal returns around bank merger and acquisition announcements are not statistically significantly negative.

H_1: Bidder abnormal returns around bank merger and acquisition announcements are statistically significantly negative.

Due to the highly competitive U.S. takeover market, U.S. targets have been found to earn high bid premia in that bidders need to pay more to U.S. targets (Conn and Connell (1990); Aybar and Ficici (2009)). However, bidders may obtain lower cumulative abnormal returns if bank mergers take place in a more competitive banking takeover market. On the other hand, if there are lots of bidders in a more competitive banking takeover market, the competitive bidding activities may cause potential bidders to leave the transactions. This may allow successful bidders to pay lower premium when completing the transactions. This can be a good news to the market. Thus, this may allow bidders to obtain higher announcement returns in mergers and acquisitions.

As discussed in chapter 2, prior empirical studies have demonstrated that U.S. bidders experience negative cumulative abnormal returns (e.g., Neely (1987); Baradwaj *et al*. (1990); Houston and Ryngaert (1994); Becher (2000); Cornett *et al*. (2003); DeLong and DeYoung (2007)) and EU bidders obtain slightly positive cumulative abnormal returns (e.g., Cybo-Ottone and Murgia (2000); Beitel *et al*. (2004); Ismail and Davidson (2007)). This can be an indication of U.S. bidders performing worse due to a competitive banking takeover market.

With regard to bidders from the market outside the U.S. and EU market, it may not be clear as to whether bidders from other markets obtain higher or lower cumulative abnormal returns than U.S. and EU bidders. This is because other markets also include highly developed countries, such as Canada, Japan, etc. These countries may also be regarded as more competitive banking markets. If so, bidders in these markets may need to pay more to targets. Thus, I expect that there are differences of bidder abnormal returns between the market.

Hypothesis 5: Bidder shareholder wealth with regard to the market

H_0: There are no differences in bidder abnormal returns between bidders from different markets.

H_1: There are differences in bidder abnormal returns between bidders from different markets.

Prior empirical studies have examined bidder shareholder wealth for diversifying and focusing deals, as discussed in chapter 2. Several empirical studies find that bidders in diversifying deals obtain lower cumulative abnormal returns than those in focusing deals (DeLong (2001); Cornett *et al.* (2003); Ismail and Davidson (2005); Ekkayokkaya *et al.* (2007); Lensink and Maslennikova (2008)). As mentioned earlier, bidding banks in diversifying deals may have more ability to achieve risk diversification. In contrast,

bidders in focusing deals cannot diversify their risk through mergers and acquisitions. If so, the market may be more favourable to diversifying deals for bidders.

However, not all prior empirical studies report similarly results. Akhigbe and Madura (2004) report that bidding banks obtain higher cumulative abnormal returns when acquiring security firms relative to when they acquire commercial banks. Due to the mixed prior evidence, it can therefore be predicted that there are differences of bidder abnormal returns between activity focusing and diversifying deals.

Hypothesis 6: Bidder shareholder wealth in diversifying and focusing deals

H_0: There are no differences in bidder abnormal returns between activity focusing and diversifying deals.

H_1: There are differences in bidder abnormal returns between activity focusing and diversifying deals.

4.3.1.3 Combined firms shareholder wealth

Prior empirical studies have reported that combined firms earn slightly positive cumulative abnormal returns around bank merger and acquisition announcements (Cornett and Tehranian (1992); Houston and Ryngaert (1994); Toyne and Tripp (1998); Beitel *et al.* (2004); Becher and Campbell (2005); Ismail and Davidson (2005, 2007)). Slightly positive cumulative abnormal returns to combined firms indicate that bank mergers overall create value to shareholders. Thus, it can therefore be expected that combined firms obtain positive abnormal returns around bank merger and acquisition announcements.

Hypothesis 7: Combined firms shareholder wealth

H_0: Combined firms do not obtain positive abnormal returns around bank merger and acquisition announcements.

H_1: Combined firms obtain positive abnormal returns around bank merger and

acquisition announcements.

As discussed previously, bidding banks may achieve risk diversification through diversification acquisitions. Bidders may obtain higher gains after the transactions. Thus, bidders may want to pay higher premiums to targets. On the other hand, bidding banks may not obtain higher gains in focusing deals in that they cannot achieve risk diversification after the transactions. So, bidders may not want to pay higher premium to targets.

Alternatively, combined firms may obtain higher gains in focusing deals in that focusing deals can be expected to generate more cost savings. If so, bidders may need to pay more to targets. Thus, I expect that there are differences in the abnormal returns for combined firms between activity focusing and diversifying deals.

Hypothesis 8: Combined firms shareholder wealth in diversifying and focusing deals

H_0: There are no differences in the abnormal returns of combined firms between activity focusing and diversifying deals.

H_1: There are differences in the abnormal returns of combined firms between activity focusing and diversifying deals.

4.3.2 Hypotheses relating to the variables in the cross-sectional regression analyses

As indicated in chapter 1, the overall objective of this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. To determine as to whether investor protection and bank regulation in a country can be important determinants to influence the cumulative abnormal returns of the firms in bank mergers, cross-sectional regression analyses are applied in the current study, as will be presented in the empirical section of chapters 6, 7 and 8.

Prior empirical studies have demonstrated the importance of the deal and firm specific characteristics in explaining the cumulative abnormal returns of the firms. Thus, this thesis also controls for the deal and firm specific characteristics in the regression analyses. The variables include the method of payment, cross-border vs. domestic deals, the relative size of the target to bidder, performance, growth potential, the capital ratio, and firm size.

While focusing on the country level corporate governance mechanisms in terms of investor protection and bank regulation to explain shareholder wealth of bank mergers, this thesis also controls for the country level specific characteristics in the regression analysis, including the competitiveness of the banking market and the size of the banking market. Controlling for the country level specific characteristics, the analysis in the current study can reduce the omitted variable bias. Additionally, controlling for these factors also allows the current study to look at different facets that can affect the announcement returns of the firms in bank mergers. Thus, the following section develops the hypotheses of the variables in the regression analysis.

4.3.2.1 Investor protection

Several prior empirical studies have examined the importance of investor protection in a country on the influence of bid premium or the cumulative abnormal returns of the firms in mergers and acquisitions. Countries with strong investor protection legislation tend to have more effective enforcement mechanisms (La Porta *et al*. (1998); Anderson *et al*. (2009)). La Porta *et al*. (1998) argue that a strong system of legal enforcement can protect investors from being expropriated by the managements. Thus, “regulation increasing investor protection of target shareholders results in an improvement in bargaining power for targets.” (Marshall and Anderson (2008); Anderson *et al*. (2009)). In the study of bidding firms, Hagendorff *et al*. (2008) similarly argue that strong investor protection can reduce private benefits of control enjoyed by insiders. Thus, managers can

be expected to be more inclined to make good merger and acquisition decisions resulting in higher value of the firms and shareholder wealth.

A number of prior empirical studies have explored the linkage between the cumulative abnormal returns of the firms and investor protection in a country. Rossi and Volpin (2004) find that higher target premium is related to stronger investor protection in a target country. Bris and Cabolis (2004), Martynova and Renneboog (2008) and Anderson *et al.* (2009) similarly find that target cumulative abnormal returns are positively associated with shareholder protection in a target country.

Anderson *et al.* (2009) argue that targets in strong investor protection environments have greater bargaining power relative to those in weak investor protection environments. Target managers can be expected to aim at shareholders' interests in negotiating the deals. This may be due to the existence of strong enforcement mechanisms. Thus, bidders need to offer higher premiums when they acquire targets in strong investor protection countries with greater bargaining power. If so, it can therefore be expected that targets in a strong investor protection country earn higher cumulative abnormal returns than those in a weak investor protection country.

In addition to analyse target cumulative abnormal returns, several prior empirical studies also examine bidder cumulative abnormal returns in relation to investor protection in a country. Bris and Cabolis (2004), Stark and Wei (2004) and Martynova and Renneboog (2008) find that investor protection in a bidder country has a positive impact to bidder cumulative abnormal returns. Kuipers *et al.* (2003) argue that the legal environment provides an incentive mechanism to managers aimed at shareholders' interests. Thus, strong investor protection in a bidder country can reduce the expropriation by managers.

When managers in a country with strong investor protection make investment decisions of mergers and acquisitions, they may tend to aim at the interests of shareholders, pursuing value maximisation to the firm and shareholders. Thus, bidders in a country with strong investor protection can be expected to have higher cumulative abnormal returns. If

so, it can therefore be predicted that there is a positive relationship between bidder cumulative abnormal returns and investor protection in a bidder country.

However, not all prior empirical studies report a positive relationship between bidder cumulative abnormal returns and investor protection in a bidder country. In contrast, Kuipers *et al.* (2003) report that bidder cumulative abnormal returns are negatively associated with the rule of law in a bidder country. Freund *et al.* (2008) also find a negative relationship between bidder cumulative abnormal returns and the revised antidirector rights index in a target country.

Furthermore, both Kuipers *et al.* (2003) and Stark and Wei (2004) find that combined firms' cumulative abnormal returns are positively correlated to the rule of law and shareholder protection in a bidder country respectively. The results suggest that shareholders of combined firms gain more if bidders are in a country with strong investor protection. Similarly, when targets are in a country with strong investor protection, targets earn higher announcement returns in that targets may have more bargaining power. When aggregating the level of investor protection in a bidder and target country, combined firms can be expected to obtain higher cumulative abnormal returns. Thus, it can be expected that higher cumulative abnormal returns to combined firms are associated with higher level of combination of investor protection in a target and bidder country.

To measure investor protection in a country, the current study uses La Porta *et al.*'s (1998) index to explore the relationship between investor protection in a country and the cumulative abnormal returns of the firms. The variables of investor protection from La Porta *et al*'s (1998) index include the antidirector rights index and the rule of law as discussed in chapter 3. In order to test the sensitivity of the results, the antidirector rights index is also replaced as Djankov *et al*. (2006) revised antidirector rights index as a robustness check.

To clearly determine the importance of investor protection in a country on the impact of shareholder wealth, target cumulative abnormal returns are analysed by looking at

investor protection in a target country. Bidder cumulative abnormal returns are examined in relation to investor protection in a bidder country. This indicates the importance of domestic investor protection in a country in explaining shareholder wealth of the firms. Combined firms' cumulative abnormal returns are investigated in association with the combination of the level of investor protection between the target and bidder country.[45] This measurement simultaneously takes into account investor protection in the both target and bidder country.

Hypothesis 9: Investor protection

Target shareholder wealth

H_0: There is not a positive relationship between target cumulative abnormal returns and investor protection in a target country.

H_1: There is a positive relationship between target cumulative abnormal returns and investor protection in a target country.

Bidder shareholder wealth

H_0: There is not a positive relationship between bidder cumulative abnormal returns and investor protection in a bidder country.

H_1: There is a positive relationship between bidder cumulative abnormal returns and investor protection in a bidder country.

Combined firms shareholder wealth

H_0: There is not a positive relationship between combined firms' cumulative abnormal returns and the combination of the level of investor protection between the target and bidder country.

[45] The combination of the level of investor protection between the target and bidder country means that the level of investor protection in a target country plus the level of investor protection in a bidder country.

H_1: There is a positive relationship between combined firms' cumulative abnormal returns and the combination of the level of investor protection between the target and bidder country.

4.3.2.2 Bank regulation

A growing number of prior empirical studies use indicators of bank regulation from Barth *et al.* (2001, 2003) to examine the impact of bank supervision on corporate finance and bank performance (e.g., Barth *et al.* (2002); Caprio *et al.* (2007); Barth *et al.* (2008)). Barth *et al.* (2002) and Barth *et al.* (2008) report that bank performance and profitability are positively related to bank regulation measured as restriction of bank activities, although Caprio *et al.* (2007) find a negative relationship between bank valuation and restriction of bank activities. In addition, Caprio *et al.* (2007) also find that higher bank valuation is associated with stronger bank regulation, measured as official supervisory power and independence of the supervisory authority.

Caprio *et al.* (2007) argue that bank regulation restricts bank managers' ability to expropriate or misallocate bank resources. "Thus, effective regulation may increate investor confidence regarding expropriation and boost market valuations." (p. 585). From this perspective, strong bank regulation can reduce the expropriation by managers. It can be expected that effective bank regulation can closely monitor managers to aim at the interests of shareholders. In other words, the effective bank regulation can align the interests of managers and shareholders. Accordingly, this can reduce the conflicts between managers and shareholders when making the decisions to the firm.

Specifically, when managers make investment decisions of mergers and acquisitions, strong bank regulation may generate a better monitoring system to discipline managerial behaviour. Their decisions incline to increase firm value and shareholder wealth in the presence of strong bank regulation.

The sample of bidders in this study is all banks as will be discussed in chapter 5. To

measure the effectiveness of bank regulation on the shareholder wealth in bank mergers, this thesis uses bank regulation in a bidder country. If bidding banks in a country with strong bank regulation engage in mergers and acquisitions, bidder managers may be expected to carefully evaluate the transactions. Thus, targets may obtain higher announcement returns in that higher synergy effects may be generated in association with strong bank regulation in a bidder country. It can therefore be expected that higher target cumulative abnormal returns are related to strong bank regulation in a bidder country. However, it should be acknowledged that there is no direct empirical evidence from prior empirical studies. This analysis can be a major contribution in the academic research.

On the other hand, strong bank regulation in a bidder country may reduce the expropriation by managers when engaging in mergers and acquisitions. Bidder managers may then be more likely to aim at maximising firm value and shareholder wealth. When announcing bank mergers and acquisitions, the market may respond favourably generating higher bidder cumulative abnormal returns.

However, strong bank regulation in a bidder country may limit bidder managers' ability to pursue higher growth potential through bank mergers and acquisitions. From this viewpoint, strong bank regulation in a bidder country may impede managers' ability to create future gains by increasing firm value and shareholder wealth. Thus, the market may respond unfavourably showing lower bidder cumulative abnormal returns. Due to contradictory expectations, no clear prediction can be made regarding the relationship between bidder cumulative abnormal returns and bank regulation in a bidder country.

While bank regulation in a bidder country may be expected to have a positive impact on target cumulative abnormal returns but an unclear effect on bidder cumulative abnormal returns, it is similarly not clear what effect bank regulation in a bidder country can be expected to have on combined firm's cumulative abnormal returns. As a result, I test for whether there is a relationship between combined firm's cumulative abnormal returns and bank regulation in a bidder country, without a clear expectation regarding the direction of

the effect.

To measure bank regulation, the current study follows prior empirical studies to use Barth *et al.*'s (2003) dataset. The variables of bank regulation include overall activity restrictions, official supervisory power, prompt corrective power and overall independence of supervisory authority. This thesis analyses these four variables separately in that it reduces the correlation among these variables.

The variable of overall activity restriction includes three components: "(1) security activities: the ability of banks to engage in the business of securities underwriting, brokering, dealing, and all aspects of the mutual fund industry; (2) insurance activities: the ability of banks to engage in insurance underwriting and selling; (3) real estate activities, the ability of banks to engage in real estate investment, development, management." (Barth *et al.*'s (2004), p. 215). The variable is measured by adding the level of regulatory restrictiveness for each component. The scale ranges from 3 to 12. Higher values indicate greater restrictiveness of bank activities.

The variable of official supervisory power measures "the extent to which official supervisory authorities have the authority to take specific actions to prevent and correct problems." (Barth *et al.*'s (2004), p. 216). The variable is measured by adding the assigned values, where the scale ranges from 4 to 14. Higher values indicate greater supervisory power.

The variable of prompt corrective power measures "the extent to which the law establishes pre-determined levels of bank solvency deterioration that force automatic enforcement actions, such as intervention, and the extent to which supervisors have the requisite, suitable powers to do so." (Barth *et al.*'s (2004), p. 216). The variable is measured by summing the assigned values for the items multiplied by 1 if there is a legally predetermined level of solvency deterioration forcing automatic actions and by 0 if not. The scale ranges from 0 to 6. Higher values indicate greater power.

The variable of overall independence of supervisory authority includes three

components: “(1) independence of supervisory authority-political: the degree to which the supervisory authority is independent within the government from political influence; (2) independence of supervisory authority-banks: the degree to which the supervisory authority is protected by the legal system from the banking industry; (3) independence of supervisory authority-fixed term: the degree to which the supervisory authority is able to make decisions independently of political considerations.” (Barth *et al.*’s (2004), p. 216). The variable is measured by adding the value of each question. The scale ranges from 0 to 3. Higher values signify greater independence.

Hypothesis 10: Bank regulation

Target shareholder wealth

H_0: Higher target cumulative abnormal returns are not associated with strong bank regulation in a bidder country.

H_1: Higher target cumulative abnormal returns are associated with strong bank regulation in a bidder country.

Bidder shareholder wealth

H_0: There is no relationship between bidder cumulative abnormal returns and bank regulation in a bidder country.

H_1: There is a relationship between bidder cumulative abnormal returns and bank regulation in a bidder country.

Combined firms shareholder wealth

H_0: There is no relationship between combined firm’s cumulative abnormal returns and bank regulation in a bidder country.

H_1: There is a relationship between combined firm’s cumulative abnormal returns and bank regulation in a bidder country.

4.3.2.3 Deal characteristics

Prior empirical studies discussed in chapter 2 have shown the importance of the deal characteristics in explaining shareholder wealth of the firms in bank mergers. To determine as to whether investor protection and bank regulation can be important determinants to explain shareholder wealth of bank mergers, this thesis also controls for the deal characteristics in the regression analysis, including the variables of cross-border vs. domestic deals, the method of payment and the relative size of the target to bidder. These variables and hypotheses are discussed below.

4.3.2.3.1 Cross-border vs. domestic deals

Ismail and Davidson (2005) argue that "diversification outside the national borders offers an opportunity to smooth earnings volatility, diversify the existing risk and generate more revenues from new markets." (p. 24). In addition, cross-border deals can spread risk and achieve risk reduction (Biswas *et al.* (1997); Ismail and Davidson (2005)). In the study of bank acquisitions, Hudgins and Seifert (1996) find that targets earn higher cumulative abnormal returns in cross-border deals than those in domestic deals. Similar results are reported in the studies of Cybo-Ottone and Murgia (2000), Ismail and Davidson (2005) and Campa and Hernando (2006). It can therefore be predicted that there is a statistically significant positive relationship between target abnormal returns and cross-border deals. However, not all prior studies report such findings. Kiymaz (2004) find that targets in domestic deals earn higher cumulative abnormal returns than those in cross-border deals.

With regard to bidder shareholder wealth, Hudgins and Seifert (1996) find that bidder shareholders experience few losses in their wealth when foreign firms acquire U.S. financial firms. Instead, bidder shareholders experience more losses in their wealth when U.S. financial firms acquire U.S. firms. In the study of EU bank mergers, Cybo-Ottone and Murgia (2000) and Ekkayokkaya *et al.* (2007) find that bidders in cross-border deals earn higher cumulative abnormal returns than those in domestic deals. Similarly, Campa and

Hernando (2006) find that bidders in domestic deals experience more losses in their wealth. It can thus be expected that there is a statistical significant positive relationship between bidder abnormal returns and cross-border deals.

However, not all prior studies report such findings. Rad and Beek (1999) find that bidders in domestic deals obtain higher cumulative abnormal returns than those in cross-border deals, while Ismail and Davidson (2005) find that bidders in both domestic and cross-border deals obtain 0.06% cumulative abnormal return in EU bank mergers. Furthermore, Ismail and Davidson (2005) report that combined firms in domestic deals earn higher cumulative abnormal returns than those in cross-border deals. I can therefore expect that the level of the abnormal returns for combined firms is statistically positively related to cross-border deals.

To measure the impact of cross-border vs. domestic deals on the shareholder wealth of the firms, this thesis follows Hagendorff *et al.*'s (2008) study and uses a dummy variable of cross-border deals in the cross-sectional regression analyses. The dummy variable equals to 1 if the deal is classified as cross-border, and 0 in domestic transactions.

Hypothesis 11: cross-border vs. domestic deals

Target shareholder wealth

H_0: There is no positive relationship between the cumulative abnormal returns of targets and cross-border deals.

H_1: There is a positive relationship between the cumulative abnormal returns of targets and cross-border deals.

Bidder shareholder wealth

H_0: There is no positive relationship between the cumulative abnormal returns of bidders and cross-border deals.

H_1: There is a positive relationship between the cumulative abnormal returns of

bidders and cross-border deals.

Combined firms shareholder wealth

H_0: There is no positive relationship between the cumulative abnormal returns of combined firms and cross-border deals.

H_1: There is a positive relationship between the cumulative abnormal returns of combined firms and cross-border deals.

4.3.2.3.2 The method of payment

Prior empirical studies have demonstrated that the method of payment is an important determinant to explain the cumulative abnormal returns of the firms around bank merger and acquisition announcements. According to the tax implication hypothesis, this theory suggests that cash payment may be taxable immediately ((Hansen (1987); Travlos (1987); Shawky *et al.* (1996); Cornett *et al.* (2003)). If cash is used to pay the transactions of mergers and acquisitions, this may suggest that targets may require higher premium to compensate for their tax liability.

Alternatively, several prior studies argue that the management of bidding firms may have private information with regard to the performance of their firms. The managers tend to offer stock payment when the stock is overvalued (Myers and Majluf (1984); Cornett and De (1991); Houston and Ryngaert (1994); Toyne and Tripp (1998)). If the stock is overvalued, bidders may use smaller volume of stocks in exchange for target shares during the transactions. Thus, if bidders offer stock payment in the transactions, this may signal to the market that bidder's stock is overvalued. So, the market may drive down bidders' stock price.

Empirically, several prior studies report that targets receiving cash payment earn higher cumulative abnormal returns than those receiving other forms of payment (Cornett and De (1991b); Grullon *et al.* (1997)). Similarly, Ismail and Davidson (2005) find that

targets in cash payment earn higher cumulative abnormal returns than those in stock payment. In addition, Biswas *et al.* (1997) and DeLong (2003) report that target cumulative abnormal returns are positively related to cash payment. It can thus be expected that targets in cash payment earn higher abnormal returns than those in stock payment or mixed payment.

With respect to bidder shareholder wealth, several studies, such as Baradwaj *et al.* (1991), Cornett *et al.* (2003), Louis (2004), find that bidder cumulative abnormal returns are positively and significantly related to cash payment. It can therefore be predicted that bidders in cash payment obtain higher abnormal returns than those in stock payment or mixed payment. However, Kiymaz (2004) finds that payment in cash is negatively associated with bidder cumulative abnormal returns.

Furthermore, Houston and Ryngaert (1994) report that combined firm's cumulative abnormal returns are negatively and significantly associated with stock payment. Becher and Campbell (2005) look at payment in cash and find that payment in cash is positively and significantly related to combined firm's cumulative abnormal returns. Thus, I expect that combined firms in cash payment obtain higher abnormal returns than those in stock payment or mixed payment.

To measure the method of payment, the current study follows Cornett *et al.*'s (2003) study and uses a dummy variable for cash payment in the cross-sectional regression analyses. A dummy variable equals to 1 if the payment is cash only, and 0 for other forms of payment.

Hypothesis 12: The method of payment

Target shareholder wealth

H_0: Targets receiving cash payment do not earn higher cumulative abnormal returns than those receiving stock payment or mixed payment.

H_1: Targets receiving cash payment earn higher cumulative abnormal returns than

those receiving stock payment or mixed payment.

Bidder shareholder wealth

H_0: Bidders offering cash payment do not obtain higher cumulative abnormal returns relative to those in stock payment or mixed payment.

H_1: Bidders offering cash payment obtain higher cumulative abnormal returns relative to those in stock payment or mixed payment.

Combined firms shareholder wealth

H_0: Combined firms in acquisitions with cash payment do not obtain higher cumulative abnormal returns than those in stock payment or mixed payment transactions.

H_1: Combined firms in acquisitions with cash payment obtain higher cumulative abnormal returns than those in stock payment or mixed payment transactions.

4.3.2.3.3 The relative size of the target to bidder

Asquith *et al.* (1983) argue that large target firms may have greater impact on small bidding firms. This may be because the large target firms may create higher synergy effects after the transactions. On the other hand, small bidding firms may have difficulties in transferring their technology and business culture to large target firms. Thus, small bidding firms may have difficulties to integrate their new companies (Akhigbe and Madura (2004); Ismail and Davidson (2007)).

Studies such as Houston and Ryngaert (1994), Grullon *et al.* (1997), DeLong (2003), Beitel *et al.* (2004), Valkanov and Kleimeier (2007) have found that target cumulative abnormal returns have a negative relationship with the relative size of the target to bidder. The results suggest that targets obtain higher announcement returns when targets are smaller than bidders. It can therefore be expected that the level of target abnormal returns is statistically negatively associated with the relative size of the target to bidder.

Turning to bidder shareholder wealth, several prior empirical studies report a negative relationship between bidder cumulative abnormal returns and the relative size of the target to bidder (Houston and Ryngaert (1994); Grullon *et al.* (1997); Louis (2004); Valkanov and Kleimeier (2007)). Subrahmanyam *et al.* (1997) find that bidder cumulative abnormal returns are negatively and significantly related to the relative size of the bid to the bidder's value. Thus, I predict that there is a statistical negative relationship between bidder abnormal returns and the relative size of the target to bidder.

Furthermore, Houston and Ryngaert (1994) find that combined firm's cumulative abnormal returns are positively associated with the relative size of the target to bidder. Becher and Campbell (2005) report that combined firm's cumulative abnormal returns are positively associated with the relative size measured as target assets divided by the sum of target and bidder assets. It can thus be predicted that the level of the abnormal returns for combined firms is statistically positively association with the relative size of the target to bidder.

Following Grullon *et al.*'s (1997) study, the relative size of the target to bidder is measured as the relative size of target assets to bidder assets. Due to an unmatched sample as will be discussed in chapter 5, this thesis uses a proxy of the deal value to bidder assets as the relative size of the target to bidder in bidder regression analysis in order to avoid significantly reducing the number of observations.

Hypothesis 13: The relative size of the target to bidder

Target shareholder wealth

H_0: The level of target abnormal returns is not statistically negatively associated with the relative size of the target to bidder.

H_1: The level of target abnormal returns is statistically negatively associated with the relative size of the target to bidder.

Bidder shareholder wealth

H_0: There is no statistical negative relationship between bidder abnormal returns and the relative size of the target to bidder.

H_1: There is a statistical negative relationship between bidder abnormal returns and the relative size of the target to bidder.

Combined firms shareholder wealth

H_0: The level of the abnormal returns for combined firms is not statistically positively association with the relative size of the target to bidder.

H_1: The level of the abnormal returns for combined firms is statistically positively association with the relative size of the target to bidder.

4.3.2.4 Firm specific characteristics

A number of empirical studies, as discussed in chapter 2, have showed that the cumulative abnormal returns of the firms can be influenced by firm specific characteristics such as company performance, growth potential, capital ratio and firm size. To reduce the omitted variable bias, this thesis also controls for these aspects in the cross-sectional regression analyses. This can provide additional insights to explore the determinants that can affect the announcement returns of the firms. Thus, hypotheses related to these aspects are discussed in the following section.

4.3.2.4.1 Performance

Targets with better performance are more attractive to bidders. Akhigbe and Madura (2004) and Beitel *et al.* (2004) argue that bidders may have good management if they have better performance and higher profitability. Beitel *et al.* (2004) also indicate that bidders may be good at managing target's assets if they have better management skills. In the study of bank mergers, Ismail and Davidson (2007) find that target cumulative abnormal returns are positively related to target profitability. Akhigbe *et al.* (2004) also find that target

announcement returns are positively related to return on assets (ROA). It can thus be expected that target abnormal returns are statistically positively related to target's prior performance. However, Beitel *et al.* (2004) report that target cumulative abnormal returns are negatively related to target's performance.

With regard to bidder shareholder wealth, Hagendorff *et al.* (2008) find that bids made by profitable banks are associated with higher bidder cumulative abnormal returns. It can therefore be predicted that higher abnormal returns to bidders are associated with bidder's prior performance.

While prior performance can be expected to have a positive impact on target and bidder abnormal returns, it can thus be predicted that the abnormal returns of combined firms are statistically positively related to bidder's prior performance.

To measure the performance, this thesis follows Akhigbe *et al.*'s (2004) study and uses return on assets (ROA) in the cross-sectional regression analyses. Return on assets (ROA) is calculated as net income to total assets at the year end prior to the acquisition.

Hypothesis 14: Performance

Target shareholder wealth

H_0: Target cumulative abnormal returns are not statistically positively associated with target's prior performance (ROA)

H_1: Target cumulative abnormal returns are statistically positively associated with target's prior performance (ROA).

Bidder shareholder wealth

H_0: Higher abnormal returns to bidders are not associated with bidder's prior performance (ROA).

H_1: Higher abnormal returns to bidders are associated with bidder's prior performance (ROA).

Combined firms shareholder wealth

H_0: The abnormal returns of combined firms are not statistically positively related to bidder's prior performance (ROA).

H_1: The abnormal returns of combined firms are statistically positively related to bidder's prior performance (ROA).

4.3.2.4.2 Capital ratio

Akhigbe *et al.* (2004) and Valkanov and Kleimeier (2007) argue that higher level of the capital ratio can serve as a cushion against unexpected losses for the bank. Akhigbe and Madura (2004) similarly argue that bidding banks with a higher level of capital ratio are more capable of supporting the integration of new services. Empirically, Cornett and Tehranian (1992) find that there is a positive relationship between the capital ratio and target cumulative abnormal returns. Akhigbe *et al.* (2004) also find that target announcement returns are positively associated with the capital ratio. It can thus be expected that target abnormal returns are statistically positively related to the capital ratio. However, Grullon *et al.* (1997) and Ismail and Davidson (2007) report that target cumulative abnormal returns are negatively associated with the capital ratio.

Turning to bidder shareholder wealth, Baradwaj *et al.* (1991) and Grullon *et al.* (1997) find that bidder cumulative abnormal returns are positively related to the capital ratio. It can be expected that higher abnormal returns of bidders are related to higher capital ratio. However, Cornett *et al.* (2003) find that bidder cumulative abnormal returns are negatively associated with the primary capital ratio.

As the abnormal returns of targets and bidders are expected to be positively related to the capital ratio, it can therefore be expected that combined firms obtain higher cumulative abnormal returns in relation to higher capital ratio of bidders.

Following Akhigbe *et al.* (2004) to measure the capital ratio, this thesis uses the ratio of total capital to total assets at the year end prior to the transactions in the regression

analysis.

Hypothesis 15: Capital ratio

Target shareholder wealth

H_0: Target abnormal returns are not statistically positively related to the capital ratio of targets.

H_1: Target abnormal returns are statistically positively related to the capital ratio of targets.

Bidder shareholder wealth

H_0: Higher abnormal returns of bidders are not related to higher capital ratio of bidders.

H_1: Higher abnormal returns of bidders are related to higher capital ratio of bidders.

Combined firms shareholder wealth

H_0: Combined firms do not obtain higher cumulative abnormal returns in relation to higher capital ratio of bidders.

H_1: Combined firms obtain higher cumulative abnormal returns in relation to higher capital ratio of bidders.

4.3.2.4.3 Growth potential

Campa and Hernando (2004) argue that positive returns can be generated when engaging in "value" investments. "Value" investments occur when bidders buy apparently cheap firms (firms with low market to book ratios). However, Akhigbe *et al.* (2004) argue that banks with high growth potential may be more attractive targets to bidders. If targets with higher growth potential are more attractive, they may demand higher premium. In the study of bank mergers, Akhigbe *et al.* (2004) find that target announcement returns are

positively related to the market to book ratio. In the study of M&As for industrial firms, Goergen and Renneboog (2004) also report that target cumulative abnormal returns are positively related to target market to book ratio. It can therefore be expected that higher abnormal returns of targets are related to higher market to book ratio.

Turning to bidder shareholder wealth, Moeller and Schlingemann (2005) find that bidder cumulative abnormal returns are positively correlated to bidder's market to book value. Lang *et al.* (1991) and Servaes (1991) similarly find that bidder returns are positively associated with bidder's market to book value. It can thus be predicted that the level of bidder abnormal returns is positively associated with market to book ratio.

As the market to book ratio can be expected to have a positive impact on the abnormal returns of targets and bidders, it can thus be expected that the level of the abnormal returns for combined firms is statistically positively associated with the market to book ratio of bidders.

To measure the growth potential, the current study follows Beitel *et al.*'s (2004) study and uses the market to book ratio at the year end prior to the transactions as the growth potential in the cross-sectional regression analyses.

Hypothesis 16: Growth potential

Target shareholder wealth

H_0: Target abnormal returns are not statistically positively related to the market to book ratio of targets.

H_1: Target abnormal returns are statistically positively related to the market to book ratio of targets.

Bidder shareholder wealth

H_0: The level of bidder abnormal returns is not statistically positively associated with the market to book ratio of bidders.

H_1: The level of bidder abnormal returns is statistically positively associated with the market to book ratio of bidders.

Combined firms shareholder wealth

H_0: The level of the abnormal returns for combined firms is not statistically positively associated with the market to book ratio of bidders.

H_1: The level of the abnormal returns for combined firms is statistically positively associated with the market to book ratio of bidders.

4.3.2.4.4 Size

Moeller *et al.* (2004) argue that managers in larger firms may be overconfident to manage new firms as a result of managerial hubris. Masulis *et al.* (2007) also argue that a larger firm size serves as a rather effective takeover defence in that bidders need to pay more to acquire a larger target. Thus, targets with large firm size may obtain higher premium. In addition, large targets may cause bidders to spend more time integrating firm resources. In the study of bank mergers, Valkanov and Kleimeier (2007) find that target cumulative abnormal returns are negatively related to the size of the target. It can be expected that the level of target abnormal returns is statistically negatively associated with target size.

With regard to bidder shareholder wealth, prior studies report that bidder cumulative abnormal returns are negatively associated with the size of the bidder (Subrahmanyam *et al.* (1997); Kiymaz (2004); Fields *et al.* (2007); Valkanov and Kleimeier (2007)). It can therefore be expected that the level of bidder abnormal returns is statistically negatively related to bidder size.

As firm size can be expected to have a negative impact on the level of target and bidder abnormal returns, it can thus be predicted that the abnormal returns of combined firms are statistically negatively related to the size of bidders.

To measure the size of the firm, this thesis follows Valkanov and Kleimeier's (2007) study and applies the natural log of total assets of the firm at the year end prior to the transactions in the regression analysis.

Hypothesis 17: Size

Target shareholder wealth

H_0: The level of target abnormal returns is not statistically negatively associated with target size.

H_1: The level of target abnormal returns is statistically negatively associated with target size.

Bidder shareholder wealth

H_0: The level of bidder abnormal returns is not statistically negatively related to bidder size.

H_1: The level of bidder abnormal returns is statistically negatively related to bidder size.

Combined firms shareholder wealth

H_0: The abnormal returns of combined firms are not statistically negatively related to the size of bidders.

H_1: The abnormal returns of combined firms are statistically negatively related to the size of bidders.

4.3.2.5 Country level specific characteristics

The main focus in the regression analyses is to determine as to whether investor protection and bank regulation are important determinants influencing shareholder wealth in bank mergers. While focusing on the country level corporate governance mechanisms in

terms of the legal and regulatory system in a country, it can be argued that country level specific characteristics can also influence the announcement returns of the firms. Thus, this thesis also controls for various country level specific characteristics in terms of the competitiveness of the banking market and the size of the banking market in the regression analyses. These variables are discussed below.

4.3.2.5.1 The competitiveness of the banking market

The degree of competition in the financial sector is an important factor to influence the efficiency of the production of financial services, the quality of financial products and the degree of innovation in the sector (Claessens and Laeven (2003)). Demirguc-Kunt *et al.* (2003) argue that the competitive nature of the banking market is reflected by the net interest margin. If the banking market is more competitive, banking firms may cut down bank's niche in lending in order to compete with other financial firms.

However, no prior empirical studies look at the influence of the competitiveness of the banking market on shareholder wealth in bank mergers. Waheed and Mathur (1995) indicate that bidders obtain higher wealth gains when expanding into developing countries. The lack of competition in the market allows bidders to take opportunities to generate revenues through their expertise (Kiymaz (2004)). If so, it can therefore be expected that bidders can obtain higher cumulative abnormal returns if bidders are in a country with a less competitive banking market.

When bidders acquire targets in a country with a less competitive banking market, bidders may enlarge their market shares and increase their competitive advantages through mergers and acquisitions. Bidders may have more ability to generate higher profitability. Thus, bidders may want to pay more to targets located in a country with a less competitive banking market. If so, it can therefore be expected that targets in a country with a less competitive banking market obtain higher cumulative abnormal returns. While both targets and bidders in a country with a less competitive banking market obtain higher cumulative

abnormal returns, it can then be expected that combined firms also obtain higher cumulative abnormal returns in relation to bidders in a country with a less competitive banking market.

To measure the competitiveness of the banking market, this thesis uses a proxy of net interest margin from Demirguc-Kunt *et al.* (2003) collected from the World Bank.

Hypothesis 18: The competitiveness of the banking market

Target shareholder wealth

H_0: Targets in a country with a less competitive banking market do not obtain higher cumulative abnormal returns.

H_1: Targets in a country with a less competitive banking market obtain higher cumulative abnormal returns.

Bidder shareholder wealth

H_0: Bidders do not obtain higher cumulative abnormal returns when bidders are in a country with a less competitive banking market.

H_1: Bidders obtain higher cumulative abnormal returns when bidders are in a country with a less competitive banking market.

Combined firms shareholder wealth

H_0: Combined firms do not obtain higher cumulative abnormal returns in relation to bidders in a country with a less competitive banking market.

H_1: Combined firms obtain higher cumulative abnormal returns in relation to bidders in a country with a less competitive banking market.

4.3.2.5.2 The size of the banking market

Well-functioning financial institutions prompt economic growth (Levine (1997);

Beck *et al.* (2003)). The increase of the economic growth creates an opportunity to enlarge the financial market. Waheed and Mathur (1995) and Kiymaz (2004) similarly argue that the level of economic development in the home country is an important factor to impact the wealth effects from mergers. Kiymaz (2004) argues that a firm has an economic incentive to expand internationally, such as to seek new opportunity, if the home market is maturing. Thus, the size of the banking market can be a component to create the opportunity to the firms through mergers and acquisitions.

Waheed and Mathur (1995) report that negative abnormal returns are generated when U.S. banks expand into developed countries. When expanding into risky developing countries, U.S. banks obtain positive abnormal returns. Kiymaz (2004) finds that U.S. bidders obtain greater wealth gains when acquisitions take place in developing countries.

It can be argued that the size of the banking market in the developing countries is in general smaller than that of the developed countries. While bidders are in a country with small size of the banking market engaged in mergers and acquisitions, bidders may not have opportunities to create higher synergy effects after the transactions. This may be because a small size of the banking market cannot offer a sufficient market shares to bidders after the transactions. It can therefore be expected that the level of bidder abnormal returns is lower in relation to a small size of the banking market in a bidder country. As bidders may not obtain higher synergy effects in small developing countries, bidders may not want to pay more to targets. Thus, it can be predicted that targets earn lower abnormal returns when the size of the banking market is small. When target and bidder abnormal returns are lower in a small size of the banking market, it can thus be predicted that lower abnormal returns of combined firms are statistically related to a small size of the banking market.

As no prior empirical studies look at the size of the banking market to explain the variations in abnormal returns, this thesis incorporates this aspect in the cross-sectional regression analysis. To measure the size of the banking market, this thesis uses a proxy of

deposit money bank assets to GDP from the World Bank. As large size of the banking markets can be expected to have higher deposit money bank assets, this measurement also standardises GDP in order to control for the size effect of the market.

Hypothesis 19: The size of the banking market

Target shareholder wealth

H_0: Targets do not earn lower abnormal returns when the size of the banking market is small.

H_1: Targets earn lower abnormal returns when the size of the banking market is small.

Bidder shareholder wealth

H_0: The level of bidder abnormal returns is not lower in relation to a small size of the banking market.

H_1: The level of bidder abnormal returns is lower in relation to a small size of the banking market.

Combined firms shareholder wealth

H_0: Lower abnormal returns of combined firms are not statistically related to a small size of the banking market in a bidder country.

H_1: Lower abnormal returns of combined firms are statistically related to a small size of the banking market in a bidder country.

4.4 Conclusion

The objective of this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. This chapter aims to address the research questions and to develop

hypotheses for the empirical test in this thesis. As prior empirical evidence for bank mergers and acquisitions is limit in international studies and the results are inconclusive, this thesis thus further explores the impact of shareholder wealth around bank merger and acquisition announcements for targets, bidders and combined firms.

Furthermore, prior empirical studies as discussed in chapter 3 pay little attention to examine the effectiveness of the country level corporate governance mechanisms in terms of the legal and regulation system on the shareholder wealth in bank mergers. Thus, little is known as to whether investor protection and bank regulation can be important determinants to influence shareholder wealth in bank mergers. As a consequent, this thesis further addresses the second research question as to whether investor protection and bank regulation can be important determinants to influence shareholder wealth in bank mergers.

In order to explain the impact of investor protection and bank regulation on the shareholder wealth in bank mergers accurately, this thesis also controls for the deal and firm specific characteristics and the country level specific characteristics in the cross-sectional regression analysis. The variables related to these characteristics include the method of payment, cross-border or domestic deals, the relative size of the target to bidder, firm performance, the capital ratio, the growth potential, firm size, the competitiveness of the banking market and the size of the banking market.

To carry out the empirical test in this thesis, this chapter discusses the hypotheses related to the abnormal returns of the firms and the variables in the regression analysis. The construction of the variables is also specified in this chapter. It can be expected that the discussion of hypotheses enables this thesis to clearly establish the proposition and to conduct the empirical test in chapter 6, 7 and 8. Thus, the next chapter will discuss the sample selection and methodology in this thesis.

Chapter 5 Sample Selection and Methodology

5.1 Introduction

The aim of this thesis is to investigate the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. This chapter discusses the sample selection and methodology used in this thesis.

The sample selection consists of several criteria that assist the current study to construct the final sample. The event study methodology is used to measure the impact of shareholder wealth around bank merger and acquisition announcements. Finally, cross-sectional regression analyses are also employed to investigate as to whether investor protection and bank regulation are important determinants of shareholder wealth around bank merger and acquisition announcements.

This chapter is organised as follows. The sample selection is presented in section 5.2. Sections 5.3 and 5.4 provide the distribution of the sample and the descriptive statistics of the financial data, respectively. The event study methodology is discussed in section 5.5. Section 5.5 also discusses the model specification and the test of the significance level. The cross-sectional regression analysis is discussed in section 5.6. Conclusion is provided in section 5.7.

5.2 Sample selection and Data sources

This section describes the sample selection and data sources in this thesis. As discussed in chapter 2, there is limited evidence from international studies of bank mergers. Thus, this thesis contains an international study of bank mergers and their effects on the shareholder wealth. From this perspective, the current study aims to collect a sufficient international sample of bank mergers to measure the impact of shareholder wealth on bank mergers from a number of countries.

To obtain a sufficient international sample of bank mergers, the sample is collected from the Securities Data Company (SDC) Thomson One Banker Database. The SDC database covers the transactions of mergers and acquisitions internationally. This database also contains a wide range of the deal information, including the name and nationality of the target and bidder, the type of deal, the method of payment, the deal value, the announcement date, etc. Hence, this database has been applied in the existing literature and demonstrated its importance in the study of mergers and acquisitions. This thesis relies on the SDC database to collect the sample of bank mergers.

To construct the effective and representative sample of bank mergers, several criteria are imposed in the current study. As can be seen from prior empirical studies discussed in chapter 2, the sample of bank mergers is relatively small before the year of 1995. Due to data availability, the investigation period does not cover the period prior to the year of 1995.

Furthermore, the analysis of shareholder wealth from bank mergers may be affected by a shorter investigation period in that the market may exhibit higher volatility in a shorter period relative to a longer period. If the market generates higher volatility in a shorter period, it may not be able to draw a fair and strong conclusion to address the impact of shareholder wealth in bank mergers.

In addition, as this thesis focuses on international studies of bank mergers, the sample size may be small if using a short sample period in that bank mergers may not take place in a particular year or a shorter period. Thus, this thesis uses a longer period of time to carry out this research. The investigation period is determined to cover 11 years from 1995 to 2005. This long investigation period allows me to obtain sufficient samples of bank mergers and to also capture a bank merger wave during this period.

Bidders and targets are restricted to be banks and financial firms, respectively. As bank mergers can take place in the form of different types of deals due to risk diversification, this criterion allows this thesis to further examine shareholder wealth of

consolidation across different financial product markets in terms of bank to bank (focusing) deals and bank to another financial firm (diversifying) deals. When the bidding firm is limited to be the bank, I obtain 16,310 transactions from the SDC database. These bidding banks share the 2-digit Standard Industrial Classification (SIC) code 60XX.[46]

While the bidding firm is limited to be a bank, the target firm is restricted to be a financial firm, imposing this criterion yields 14,114 out of 16,310 transactions. These target financial firms share a 1-digit Standard Industrial Classification (SIC) code 6XXX.[47]

Another restriction is that either the target or bidder is required to be listed on the stock market. The share price is the element to analyse the wealth effect of bank mergers. As some target firms in general may be small and may not be listed on the stock exchange, their share price may be unavailable. Similarly, some acquisitions may be undertaken by non-listed bidders. On the other hand, if both the target and bidder are restricted to be listed firms, this restriction would further reduce the sample size. Requiring only that either the target or bidder be listed on the stock exchange in this thesis, I obtain a relatively large sample of targets and bidders to carry out this research. However, it should be noted that this requirement will yield an unmatched sample of targets and bidders. Adding this restriction, I obtain 10,098 out of 14,114 transactions from the SDC database.

An additional requirement is that the transactions are eventually complete. Houston and Ryngaert (1994) argue that the market may not be able to determine which mergers will ultimately be completed. This thesis only includes complete transactions. When further analysing the impact of investor protection and bank regulation on the shareholder wealth, the results can be expected to reinforce the importance of the legal system in bank mergers. Restricting the transactions to be complete, there are 6,144 out of 10,098 transactions remaining.

[46] Taking into account the international sample of bank mergers, a broad classification shared with the 2-digit SIC code 60XX is categorised as the banks in this thesis. This classification can be expected to reduce the errors to classify the bidding firms as the banks from the international sample of bank mergers.

[47] According to the definition of the SIC code, the financial firm is defined as the firm with a 1-digit SIC code 6XXX. If the target and bidder share the same 2-SIC code, the deals are categorised as bank to bank (focusing) deals. Otherwise, the deals are regarded as a bank to another financial firm (diversifying) deal.

Furthermore, the sample of bank mergers only includes exchange offer[48], merger[49] and acquisition of majority interest[50], but excludes, for example, acquisition of minority interest. These transactions allow the current study to focus on the change of corporate control after the transactions. Under this requirement, 2,796 out of 6,144 transactions remain in the sample.

The value of the transaction would be an important determinant to investigate the impact of shareholder wealth in that larger deals of bank mergers may draw much attention to the market. Several studies confine their analysis to the deals that are larger than 100 million U.S. dollars (e.g., Houston and Ryngaert (1994); Cybo-Ottone and Murgia (2000); Beitel *et al*. (2004); Moeller (2005)). However, restricting the deals that are larger than 100 million U.S. dollars may eliminate smaller transactions. This may reduce the validity to analyse shareholder wealth of bank mergers.

On the other hand, including relative small deals may contain too much noise to analyse shareholder wealth. To reduce this potential disadvantage, this thesis follows the study of Amihud *et al*. (1990) where they exclude the deals below 10 million U.S. dollars in their sample. Imposing this criterion, there are 2,073 transactions remaining. As firm size can be a factor to influence the deal value and the analysis of shareholder wealth, firm size is controlled for in the cross-sectional regression analysis to specify the size effects.

Next, the sample is also restricted to where the bidder obtains over 50% of target shares after the transaction, thus resulting in a change of corporate control. This criterion reduces the sample from 2,073 to 2,052 transactions.

However, these 2,052 transactions may still contain deals where the bidder owned over 50% of the target shares prior to the transaction. In this case, the bidder would already

[48] "Exchange offer: deals in which a company offers to exchange new securities for its equity securities outstanding or its securities convertible into equity." (Sources: SDC Thomson One Banker Database)

[49] "Acquisition of majority interest: the acquiror must have held less than 50% and be seeking to acquire 50% or more, but less than100% of the target company's stock." (Sources: SDC Thomson One Banker Database)

[50] "Merger: a combination of business takes place or 100% of the stock of a public or private company is required." (Sources: SDC Thomson One Banker Database)

have control powers prior to the acquisition. Thus, this may reduce the validity to analyse the effectiveness of investor protection and bank regulation on the shareholder wealth in bank mergers. Hence, I further remove 5 transactions in which the bidder controlled over 50% of target shares prior to the transaction. Thus, there are 2,047 transactions remaining.

Moreover, this thesis further takes into account whether the transactions are categorised as hostile or friendly deals. Hadlock *et al*. (1999) argue that "hostile acquisition attempts in banking are rare." (p. 230). Similarly, Becher (2000) also argues that "due to regulatory constraints, hostile takeovers are a rarity in the banking industry". (p. 194).

Baradwaj *et al*. (1990) find that nonhostile targets earn significantly lower abnormal returns than targets in hostile bank mergers, although the negative abnormal returns for hostile bidders are insignificantly different than for bidders involved in nonhostile bank mergers. This suggests that it is important to control for whether the deals is hostile or friendly transactions when examining shareholder wealth of bank mergers. Thus, three hostile transactions are deleted from the sample. Only three hostile transactions in bank mergers also lend support to the argument of Hadlock *et al*. (1999) and Becher (2000) that hostile takeovers are rare in the banking industry.[51] As a result, the sample in this thesis only contains friendly deals. There are 2,044 transactions remaining.

Companies with more than one takeover bid during the estimation period need to be taken into account in that repeated bidding activity for a firm may affect the share price during the estimation period. Thus, the analysis of shareholder wealth may not accurately reflect the impact of bank mergers due to biased model parameters applied. Lensink and Maslennikova (2008) argue that repeated bidder activity introduces noise to affect the true effect over a short period of time.[52] If bidders have repeated bidding activity during the

[51] Given the small number of hostile bids, it is more appropriate to delete these from the sample rather than controlling for bid hostility in the cross-sectional analysis.

[52] Lensink and Maslennikova (2008) argue that "If one assumes that the usually constant variance of stock returns should change in response to such a shock only, the effect of earlier shocks will dampen any other effects." (p. 190).

estimation period, their share price may appear to have higher fluctuation. The model parameters may be affected by other bids and the model parameters cannot accurately measure the normal relationship between share and market returns. This causes a bias to the measure of the effects on shareholder wealth for the subsequent bid.

However, Lensink and Maslennikova (2008) also argue that "Firms that have mastered the science of successful growth through acquisitions are the ones likely to do it very often." (p. 190). This suggests that bidders may engage in several different transactions if they have past good acquisition experience. This may introduce a bias to the analysis if frequent bidders are excluded from the sample. In addition, excluding frequent bidders can also further reduce the sample size.

As will be discussed in the section of the event study methodology later, the estimation period in this thesis covers 256 trading days. If bidders have frequent bidding activities during the estimation period in this thesis, a longer estimation period can also be expected to reduce any bias introduced into the estimate of the model parameters. This is due to the fact that a longer estimation period can smooth the variation of the share price and obtain less biased model parameters. As a result, this thesis does not eliminate the bidders with multiple bidding activities from the sample.

The current study further controls for whether the firm announces other corporate events in terms of the confounding effects around bank merger and acquisition announcements.[53] When the firm announces other corporate events accompanied with the announcement of bank mergers, it may not be clear to distinguish the impact of shareholder wealth. Thus, this thesis separates the sample in terms of the clean and non-clean sample in the later analysis to account for the influence of the confounding effects.[54] This can also assist the current study to illustrate the confounding effects on the

[53] Other corporate events may include the announcement of earnings, dividends, corporate investment projects or the release of the interim report, annual reports, etc.

[54] The clean sample means that no other corporate events are announced during the 3-day (-1,+1) event window, where day 0 is the announcement day. Instead, if any corporate event is announced during the 3-day (-1,+1) event window, the sample is classified as the non-clean sample.

impact of shareholder wealth. Consequently, this thesis utilises a 3-day (-1,+1) event window to control for the confounding events, where day 0 is the announcement date as will be presented in the following chapters.

To construct the final sample in this thesis, transactions are further removed from this analysis if the Datastream database does not incorporate the share price of the firm. In addition, another problem is encountered where a market index is not available to measure the market returns for a country. As the Datastream Total Market Return Index (TRI) is applied in this thesis as the benchmark of the market, acquisitions are removed from the sample where the Datastream TRI is not available for the market. Furthermore, the financial data for each firm is also collected from Datastream database, where the financial data is gathered at the year end prior merger and acquisition announcements.

Table 5.1 Summary the sample selection criteria

Database	Include	All Mergers & Acquisitions	Transactions
Date Announced	Between	01/01/1995 to 12/31/2005	n/a
Bidding firm	Include	Banks	16,310
Target firm	Include	Financials	14,114
Target or Bidder Public Status	Include	Public	10,098
Dear Status	Include	Completed	6,144
Form of the deal	Include	Exchange Offer, Merger, Acquisition of Majority Interest	2,796
Deal Value ($ Mil)	At least	10 million U.S. dollars	2,073
Percent of Shares Owned after Transaction (%)	At least	50 %	2,052
Percent of Shares Owned before Transaction (%)	Exclude	At least 50 % prior to announcement date	2,047
Final sample		Targets	508
		Bidders	1,424
		Combined firms	388

Data source: SDC Thomson One Banker Database

As mentioned above, the sample of bank mergers is collected from the SDC database. The SDC database provides useful information, especially the announcement date. If the announcement date can be exactly identified, the analysis of shareholder wealth in bank mergers can be more accurate. Ismail and Davidson (2005) check the announcement date from the Financial Times and Reuters database in order to verify the announcement date reported in the SDC database. They document that "we are confident that the announcement date reported by SDC Platinum is the exact date when the information about the deal was first announced to the public." (p. 16). Thus, this thesis relies on the announcement date reported in the SDC database to measure the impact of shareholder wealth on bank mergers.[55]

In addition to the SDC and Datastream database, two alternative databases are selected in order to control for the confounding events during a 3-day (-1,+1) event window. These two databases are Perfect Information (PI) and SEC filings. The Perfect Information (PI) database covers companies globally and the SEC filings cover firms in the U.S. market. If the sample firms cannot be identified from the Perfect Information (PI) or the SEC filings, the Financial Times database is used as an alternative source to verify any confounding event over a 3-day (-1,+1) event window as will be presented in the empirical section in chapter 6, 7 and 8.

Table 5.1 shows the summary of the sample criteria, as discussed above. The final sample consists of 508 targets and 1,424 bidders. To construct the sample for combined firms, both the target and bidder are required to have share price information available. Thus, this thesis only obtains 388 combined firms in the final sample.

5.3 Sample distribution

In section 5.2, the sample criteria and data sources have been discussed. Eventually,

[55] According to the empirical results in this thesis, significant abnormal returns are detected on the announcement date, day 0. The results lend support to the argument that the SDC database offers the exact announcement date.

the final sample contains 508 targets, 1,424 bidders and 388 combined firms. This section presents the sample distribution of targets and bidders by country and by year. This enables the current study to better appreciate the intensity of merger activities in each country. In addition, the sample distribution also allows this thesis to perceive the waves of bank merger activities during 11 years investigation period.

Table 5.2 displays the sample distribution of targets. As table 5.2 shows, it can be observed that a high number of targets involved in bank mergers centre on the developed countries. Within the developed countries, targets are largely dominated by the U.S. sample. This indicates that the banking takeover market is more active in the U.S. market.

On the other hand, there are only few targets in the developing countries as showed in table 5.2. Within the entire sample of targets, U.S. targets account for some 70% of target firms. The sample of targets in the developed and developing countries is 460 and 48, respectively. These targets cover 36 countries.

Taking into account target distribution by year, the figure shows that there is a wave of bank mergers after the year of 1997. The bank merger wave may reflect that banking firms may respond the consequence caused by the financial crisis in 1997, such as the decrease of the profitability. In addition, the figure can also reveal the transactions taken place in a country during a particular year.

Furthermore, table 5.3 exhibits the sample distribution of bidding firms. Similar to the discussion for targets above, bidding firms also largely concentrate on the developed countries. Within the developed countries, bidding firms are mainly dominated by the U.S. sample. This also denotes that banking takeover market is more active in the U.S. market. In contrast, there are relatively few samples of bidding firms in the developing countries. The figure shows 1,351 and 73 bidding firms in the developed and developing countries, respectively. Overall, U.S. bidders account for about 75% of the bidding firms. Bidding firms cover 39 countries for the full sample. Considering the distribution of bidding firms by year, the trend of bank mergers is consistent with the distribution of target firms.

Table 5.2 The distribution of target nation

Target nation 1995-2005

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
Australia		1	1			1						3
Belgium										1		1
Canada			1		2	1						4
Denmark						2	2					4
Finland					1						1	2
France		1			4	2		2	1		1	11
Germany			1		1		1				3	6
Greece					3		1	1	1	1		7
Ireland-Rep			1	1		1						3
Italy	2	1	1	2	2	3	2	3			1	17
Japan	1				5	6	3	2		3	1	21
Netherlands							1					1
Norway			1		1				1	1		4
Portugal					2	2						4
Spain				1	1	1			2			5
Sweden		1						1				2
United Kingdom	2	1	2		1	2	1			1		10
United States	14	4	28	35	31	47	39	25	51	52	29	355
Total	19	9	36	39	54	68	50	34	56	59	36	460
Argentina								1				1
Brazil	1							1	1			3
Chile	1				2		1					4
Colombia											1	1
Hong Kong				1		2	1					4
India							1				1	2
Indonesia			1									1
Malaysia					1							1
Mexico		1					1	1				3
Philippines			1		1						1	3
Poland							1					1
Reunion				1								1
Singapore				2			2			1		5
South Africa				1				2				3
South Korea								1	1	1		3
Taiwan							2	2			1	5
Thailand			1	2	1					2		6
Venezuela						1						1
Total	2	1	3	7	5	3	9	8	2	4	4	48
Total	21	10	39	46	59	71	59	42	58	63	40	508

Table 5.3 The distribution of bidder nation

Bidder nation 1995-2005

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
Australia	2	3	2			3		1				11
Austria					1	1		2	1		1	6
Belgium				2	2	4	3			1		12
Canada		2	3		3	2	4	1	1	2	1	19
Denmark	1		1	2	1	1						6
Finland					1						1	2
France	1		2	2	2		6	6	1	4	2	26
Germany	3		1	1	2	3	2			1	2	15
Greece				2	3	1	3	1	2		2	14
Ireland-Rep		1	1	1							1	4
Italy	5	2	4	7	6	10	5	10	3	3	7	62
Japan	1				3	8	2	2	1	1	5	23
Luxembourg			1			1	1					3
Netherlands		3		2		2						7
Norway	2		1		1				1		1	6
Portugal		2				3						5
Spain		2	1	5	8	4	1	2	2	2	1	28
Sweden		1	2		3	1	1		1		1	10
Switzerland			1									1
United Kingdom	3	2	3		3	3	2		1	2	1	20
United States	99	107	153	148	108	87	72	47	86	91	73	1071
Total	117	125	176	172	147	134	102	72	100	107	99	1351
Argentina				1						1		2
Brazil				1								1
Chile				1								1
Colombia		1								1		2
Hong Kong						1	1		2	1	1	6
India							1		1		1	3
Indonesia										1		1
Malaysia			1		2	3	1					7
Mexico	1		2			2	1			1		7
Peru								1				1
Philippines		1			3	2	1				1	8
Poland				1						1		2
Singapore				1	1		2					4
South Africa				2				1				3
South Korea						1		2	1			4
Taiwan	1				1		2	2	1	2	4	13
Thailand				2				1		3	1	7
Venezuela						1						1
Total	2	2	3	9	7	10	9	7	5	11	8	73
Total	119	127	179	181	154	144	111	79	105	118	107	1424

Table 5.4 The distribution of combined firm nation 1995-2005

	AUS	BEL	CAN	DEN	FIN	FRA	GER	GRE	IRL	ITA	JPN	LUX	NED	NOR	POR	SPN	SWE	GBR	USA	ARG	BRA	CHI	COL	HK	IND	INA	MAS	MEX	PHI	POL	Reunion	SIN	RSA	KOR	TW	THA	VEN	Total
Australia	3																																					3
Belgium		1																																				1
Canada			2																																			2
Denmark				1													1																					2
Finland					1																																	1
France		1				4						1																										6
Germany							3			1																												4
Greece						1		5																														6
Ireland-									2									1																				3
Italy										11																												11
Japan											12																											12
Netherlands		1																																				1
Norway					1									2																								3
Portugal															2	2																						4
Spain																3																						3
Sweden																	1																					1
United Kingdom							1									1		7																				9
United States		1	3			1	2			1									276																			284
Argentina																				1																		1
Brazil																																						0
Chile			1													1																						2
Colombia																																						0
Hong																								1								1						2
India																									2													2
Indonesia																																						0
Malaysia																											1											1
Peru			1																																			1
Mexico																3																						3
Philippine																											1		1									2
Poland		1																																				1
Reunion																																						0
Singapore																															2							2
South Africa																																2						2
South Korea																			1														2					3
Taiwan																																		4				4
Thailand						1							1																						3			5
Venezuela																																				1		1
Total	3	5	7	1	2	7	6	5	2	13	12	1	1	2	2	10	2	8	277	1	0	0	0	1	2	0	2	0	1	0	0	3	2	2	4	3	1	388

As can be seen in table 5.3, there is a bank merger wave after the year of 1997. The figure indicates that the sample of bidding firms reaches the highest levels, at 179 and 181, in 1997 and 1998,respectively. A possible explanation is that bidding firms may want to take advantage of this opportunity to acquire other target firms during this period if bidding firms do not suffer from a significant impact of the financial crisis. Consequently, bidding firms may be able to enlarge their market shares and expand their services through mergers and acquisitions.

Furthermore, table 5.4 shows the distribution of combined firm nation. As can be seen in table 5.4, the majority of the transactions are domestic deals, where 358 transactions are domestic deals and 30 transactions are classified as cross-border deals. Within domestic bank mergers, U.S. domestic deals account for 276 transactions, indicating that U.S. samples similarly form a large number of combined firms. With a relative small number of cross-border deals, there are 388 combined firms in the final sample to be analysed in the empirical chapter 8.

5.4 Descriptive statistics of the data and financial characteristics

The analysis of the shareholder wealth in bank mergers is based on 508 targets, 1,424 bidders and 388 combined firms in this thesis. This section summarises descriptive statistics of the financial characteristics for targets and bidders.[56] The descriptive statistics of the data and financial characteristics can uncover the level of investor protection and bank regulation in the analysis and also reveal the financial situation of targets and bidders, respectively. In addition, I also compare the descriptive statistics of the financial characteristics for targets to those for bidders.

[56] The financial characteristics for each firm are collected from the year end prior to the transactions as has indicated in chapter 4. Total assets are measured by the scale of million U.S. dollars.

Table 5.5 The scale of investor protection and bank regulation for each country

	Investor protection by La Porta *et al*. (1998)		Bank regulation by Barth *et al*. (2003)			
	Antidirector	Law	Activities	Supervisory	Corrective	Independence
Australia	4	10	9	10	0	3
Austria	2	10	5	13	5	2
Belgium	0	10	7	10	0	2
Canada	5	10	5	10	0	2
Denmark	2	10	7	9	2	0
Finland	3	10	6	6	1	2
France	3	8.98	4	7	0	1
Germany	1	9.23	5	9	0	1
Greece	2	6.18	8	12	0	2
Ireland-Rep	4	7.8	5	11	0	3
Italy	1	8.33	8	7	0	0
Japan	4	8.98	8	12	6	1
Luxembourg	N/A	N/A	3	13	0	2
Netherlands	2	10	5	5	0	2
Norway	4	10	5	9	1	2
Portugal	3	8.68	7	14	0	3
Spain	4	7.8	5	9	3	1
Sweden	3	10	7	8	0	2
Switzerland	2	10	5	14	0	3
United Kingdom	5	8.57	4	11	0	1
United States	5	10	8	13	5	2
Argentina	4	5.35	8	8	0	1
Brazil	3	6.32	7	13	0	1
Chile	5	7.02	9	11	3	0
Colombia	3	2.08	10	13	4	0
Hong Kong	5	8.22	4	11	0	1
India	5	4.17	9	10	0	2
Indonesia	2	3.98	9	10	0	2
Malaysia	4	6.78	8	11	0	2

Mexico	1	5.35	7	N/A	6	0
Peru	3	2.5	5	12	4	2
Philippines	3	2.73	5	11	6	1
Poland	N/A	N/A	6	8	3	0
Singapore	4	8.57	6	13	0	1
South Africa	5	4.42	6	6	0	2
South Korea	2	5.35	9	12	5	1
Taiwan	3	8.52	10	14	6	1
Thailand	2	6.25	9	10	0	0
Venezuela	1	6.37	6	11	3	1
Average	3.08	7.53	6.68	10.43	1.66	1.39

Table 5.5 presents the scale of investor protection and bank regulation for each nation collected from La Porta *et al*. (1998) and Barth *et al*. (2003), respectively. The variables of investor protection include the antidirector rights index and the rule of law. As table 5.5 shows, the scale of the antidirector rights index ranges from 0 to 5. In addition, the level of the rule of law ranges from 2.08 to 10. Higher score of the antidirector rights index and the rule of law indicates stronger investor protection in a country. The average of the antidirector rights index and the rule of law is 3.08 and 7.53, respectively. Furthermore, table 5.5 also reveals that the law and regulation system in U.S. is generally stronger than that in EU and the market from outside the U.S. and EU. This can also illustrate that a more competitive U.S. market exists a strong law and legal system in protecting shareholders. A possible reason is that a strong law and regulation system in U.S. market can attract investors to invest in this market.

Turning to the data of bank regulation, the variables include overall activities restrictiveness, official supervisory power, prompt corrective power and overall independence of supervisory authority. The level of the variable of overall activities restrictiveness ranges from 3 to 10, with the average score at 6.68. The scale of the variable

for official supervisory power ranges from 5 to 14, where the average score is 10.43.

Similarly, the level of the variable of prompt corrective power ranges from 0 to 6, where the average score is 1.66. The scale of the variable of overall independence of supervisory authority ranges from 0 to 3, with the average score at 1.39. It is obvious that the average score of the variable for prompt corrective power and overall independence of supervisory authority is lower than that of overall activities restrictiveness and official supervisory power. It should be noted that a lower average score derives from the construction of the components for each variable.

Furthermore, this section also presents the descriptive statistics of the financial characteristics for targets and bidders. As table 5.6 shows, mean value of ROA for targets is 3.48 and mean value of ROA for bidders is 1.50. The figure suggests that the performance of targets is on average better than that of bidders prior to the transactions. Better performance of targets implies that targets may be more attractive to bidders. However, it should be noted that the standard deviation of ROA for targets is much higher than that for bidders. A much higher mean ROA for targets may be attributable to the occasion of a relatively large mean value of target ROA. Thus, it should be necessary to exercise care to claim that targets on average perform better than that of bidders.

Table 5.6 also shows that mean value of the capital ratio for targets is higher than that for bidders, at 22.19 and 15.67, respectively. The figure indicates that targets hold higher capital ratios to support their operations, which might imply that targets use their capital inefficiently. On the contrary, bidders hold lower capital ratio relative to targets, indicating that bidders use more external funding to support their operation. However, it should be acknowledged that the standard deviation of the capital ratio for targets is much higher than that of bidders. Thus, it may need to exercise care to compare the capital ratio for targets and bidders.

Table 5.6 Descriptive statistics of the financial characteristics

	Targets				Bidders			
Financial characteristics	Mean	SD	Minimum	Maximum	Mean	SD	Minimum	Maximum
ROA (%)	3.48	4.70	-2.73	28.56	1.50	0.78	-7.21	5.08
Capital ratio (%)	22.19	17.70	0.82	1.05	15.67	8.78	0.00	1.00
Market to book ratio (%)	1.82	1.99	-1.18	27.43	2.14	1.09	0.00	12.47
In(Total assets)	15.13	2.90	10.76	25.11	16.18	2.46	11.14	25.39

With regard to the market to book ratio in terms of the growth potential, mean value for targets and bidders is 1.82 and 2.14, respectively. This suggests that bidders appear to have higher growth potential relative to targets. Higher growth potential to bidders also indicates that mergers and acquisitions can be a way to support bidder's growth opportunities. On the other hand, as the market to book ratio for bidders is higher than that for targets, this may also indicate that bidders may be overvalued and targets may be undervalued.

While looking at the figures of ROA and the market to book ratio simultaneously, it is interesting to find that bidders on average have higher growth potential but lower performance. The findings may imply that bidders may engage in mergers and acquisitions to support their high growth potential and improve their low performance.

Taking into account the firm size measured as the natural log of total assets, the mean value for targets and bidders is 15.13 and 16.18, respectively. The figure suggests that targets on average are smaller than bidders. However, the difference of firm size between targets and bidders does not show any significant difference.

5.5 Methodology

The aim of this thesis is to investigate the impact of investor protection and bank regulation on the shareholder wealth for targets, bidders and combined firms around bank

merger and acquisition announcements during the 1995-2005 period. To measure the impact on shareholder wealth, event study methodology is applied to compute the abnormal returns. Furthermore, cross-sectional regression analysis is carried out to explore as to whether investor protection and bank regulation can be important determinants to explain the cross-sectional variation in the announcement returns.

As discussed in chapter 2, prior empirical studies have demonstrated that the deal and firm specific characteristics have its importance to explain the cumulative abnormal returns. This thesis also controls for deal characteristics and firm specific characteristics in the cross-sectional regression analysis. In addition, the regression analysis also controls for the country level specific characteristics as better legal and regulatory systems may be a result of advanced development of the economy and financial markets. It may be expected that country level characteristics may affect the legal and regulation system in a country. Thus, while controlling for these characteristics, the empirical results in this thesis can be expected to explain the impact of investor protection and bank regulation on the shareholder wealth in bank mergers more precisely. As a result, the following sections discuss the methodology applied in this thesis.

5.5.1 Event study methodology

The event study methodology is broadly applied to accounting and finance research. Fama *et al*. (1969) develop the event study methodology to examine the financial market efficiency and the speed with which the market adjusts to new information. The authors suggest that the firm should have a nonzero stock price reaction on the event date if an event has an information effects. Mackinlay (1997) similarly argues that an event study measures the impact of a specific event on the value of the firm by using financial market data.

Specifically, the event study is explained as an empirical investigation of the relationship between share prices and firm-specific or economic events (Strong (1992)).

For example, firm-specific events can be the announcements of mergers and acquisitions, issues of new debt or equity and the announcement of earnings (Mackinlay (1997)). However, this thesis focuses on the event of merger and acquisition announcements.

The rationale behind event study methodology is that the effects of an event are reflected in security prices immediately (Brown and Warner (1980); Mackinlay (1997)). If the share price adjusts to the release of the new information efficiently, nonzero abnormal security returns should not persist after a particular type of event. On the other hand, the impact of the event can be perceived if nonzero abnormal returns and the cumulative abnormal returns exist after the release of the information for the event.

The degree of the abnormal returns and cumulative abnormal returns is also a measure of the impact on the shareholder wealth associated with a particular event, such as mergers and acquisitions. The positive (zero) abnormal return indicates that shareholders appreciate (are neutral to) the benefit to their own wealth when the event occurs. On the contrary, the shareholders experience losses in their own wealth if negative abnormal return is generated.

To reveal the effects on shareholder wealth, the abnormal return for targets and bidders are computed by subtracting the expected return from the actual return for each share. The expected return is estimated from the estimation period using various event study models as will be discussed in sections 5.5.4 and 5.5.5. Thus, the following formula is used to generate the abnormal return for targets and bidders while the calculation of the joint returns for combined firms will be discussed in section 5.5.8.

$$\text{Abnormal return} = \text{Actual return} - \text{Expected return}$$

In order to calculate the return, the price of each share is collected from the Datastream total return index (RI). Rad and Beek (1999) argue that applying the Datastream total return index (RI) has its advantage in the calculation of the return for each

share. Firstly, the composition of RI is constructed by selecting the same component for each country. In turn the estimated coefficients will not be affected by the differences of the index composition.

Secondly, the Datastream total return index (RI) has adjusted prices for dividends (Antoniou *et al*. (2007)). RI incorporates an annualised dividend yield to adjust the index as a dividend payment that could exert an influence to measure the abnormal return. In light of the effect of dividend payments, using RI is believed to ensure that no significant bias will be introduced to the analysis in this thesis.

In addition, Datastream total market index for each country is employed as the market index to calculate the market return. The logarithmic process is used to calculate the return of the share and the market. Strong (1992) argues that logarithmic returns are more likely to be normally distributed, thus allowing the use of standard statistical techniques. Thus, the return generation of each share and the market with respect to the logarithmic process will be discussed in section 5.5.3.2.

When the return of each share and the market is obtained, the expected return can be measured. The expected return is defined as the normal return without conditioning on the event taking place. Hence, each share can be measured the expected return if no event is expected to be occurred (Mackinlay (1997)). When the event, such as mergers and acquisitions, occurs, the market should respond to the release of new information efficiently. As a result, the difference between the actual return and the expected return can be measured, known as the abnormal return. By identifying the abnormal return, the impact on shareholder wealth around bank merger and acquisition announcements can be quantified.

Specifically, the expected return can be estimated by using a number of applicable models based on event study methodology. While each model has its own assumption and its own merit with the degree of sophistication and complexity to calculate the expected return, the choice of the model should be carefully considered. Hence, I briefly discuss

event study models applied in this thesis here, but the formula of the models will be specified in section 5.5.5.

Mackinlay (1997) argues that there are two common choices for modelling the expected return. These two models are the market model and the mean adjusted returns model. However, Brown and Warner (1985) use three event study methods in terms of the market model, the market adjusted returns model and the mean adjusted returns model in their study to compute the expected return. Dyckman *et al*. (1984) undertake similar situation analysis to evaluate the merit of the market model, the mean adjusted return model and the market adjusted return model. The authors state that these three models have similar abilities in detecting abnormal returns. Thus, the use of different event study models appears to have no significant influence on the analysis of shareholder wealth.

However, it should be noted that each model has its assumption to measure the expected returns of the share. The market model assumes that there is a linear relationship between the security return and the market return. The market adjusted returns model assumes that the expected return of the share is equal to the return of the market. The mean adjusted returns model assumes that the mean return of a given security is constant through time. Due to different assumptions, it may not be expected that the analysis based on different models can obtain similar results. As a consequence, using different event study models to measure the abnormal returns is useful to offer additional insights and provide a robustness check.

Besides, alternative approaches can be applied to generate the expected return, for example the CAPM model and the Fama-French three-factor model. These two models involve additional risk factors, such as the risk free rate, the size and the market to book ratio. However, Brown and Warner (1980) document that "…. In fact, we have presented evidence that more complicated methodologies can actually make the researcher worse off, both compared to the market model and to even simpler methods, like the mean adjusted return model, which make no explicit risk adjustment." (p. 249).

In addition, data availability is another reason to limit the use of applicable event study models in this thesis. As mentioned in the sample selection, the sample is composed of 508 target firms and 1,424 bidding firms, covering 36 and 39 countries, respectively. As a consequence, there is a potential limitation to apply some event study methods in this thesis, for instance the CAPM model or the Fama-French three-factor model. This derives from the fact that the factors related to these two models are not easily available.

In addition, Brown and Warner (1980) also argue that under a wide variety of conditions, a simple methodology based on the market model performs well. As Strong (1992) and Bessler and Murtagh (2002) report that the most popular model is the market model to employ in the event studies as a benchmark to estimate the expected return, this thesis employs the market model as a core model to investigate the impact on the shareholder wealth around bank merger and acquisition announcements.

Mackinlay (1997) argues that the benefit to use the market model will depend upon the coefficient of determination, R^2, from the market model regression.[57] If the R^2 is high, the greater variation of the abnormal return will derive from a higher volatility of the slope coefficient, β. In light of this argument, this thesis also employs alternative event study methods in terms of the market adjusted returns model and the mean adjusted returns model to measure the abnormal returns as a robustness check.

The advantage to use the market adjusted returns model is that it does not require computing the expected return. The market adjusted returns model assumes that the expected return is equal to the market return. In addition, the merit of the use of the mean adjusted returns model is that it generally requires less data availability. The expected return based on the mean adjusted return model can be obtained by estimating its historical price of the share. Due to a less data limitation, this allows the mean adjusted returns model to be performed conveniently. Thus, this thesis also applies these two models to examine the sensitivity of the results.

[57] The coefficient of determination, R^2, measures the strength of the linear relationship.

With respect to the event study method, prior empirical studies, however, suggest that the coefficients of the market model can be biased when applying short term intervals, for instance using daily data (e.g., Scholes and Williams (1977); Dimson (1979); Fowler and Rorke (1983); Cohen *et al*. (1983)). This raises a question that the market model parameters may be biased due to the presence of the problem of nonsynchronous trading.

Eckbo (1983) argues that when returns are not measured over a fixed time interval, which is identical for all securities, the OLS estimates may be biased and inconsistent due to the presence of nonsynchronous trading. To adjust the market model parameters for the problem of nonsynchronous trading, this thesis employs three methods in terms of Scholes and Williams' (1977) method, Dimson's (1979) method and Fowler and Rorke's (1983) method to yield unbiased beta estimates as will be discussed in section 5.5.7.

5.5.2 The choice of market index

This thesis investigates the impact of investor protection and bank regulation on the shareholder wealth effects around bank merger and acquisition announcements from 1995 to 2005 based on 36 and 39 countries for target firms and bidding firms, respectively. As argued by Brown and Warner (1980), considerable problems may occur when improper use of the index is employed and has not been recognised in event studies. Consequently, the null hypothesis may be frequently rejected at some degree of significance level.

However, due to the limitation of data accessibility, the benchmark is collected from the Datastream database as the market performance for the respective country. Cybo-Ottone and Murgia (2000) use the Datastream general market index and the Datastream bank sector index as a benchmark for the market index. Valkanov and Kleimeier (2007) argue that using Datastream's own index provides the advantage in which the index is constructed in the same way for each country. The difference of the composition will not influence the estimated coefficients for the index. In addition, Valkanov and Kleimeier also argue that the use of the bank sector index provides better

estimates for the abnormal return compared with the total market index. Hence, the use of the bank sector index can reduce the industry-specific developments, which impact one sector more than the market as a whole.

On the contrary, the use of the bank sector index may have a potential disadvantage. When the banking sector reacts to an unexpected economic shock, for example the financial crisis in 1997, the bank sector index may overreact to the impact of the shock compared with the overall market performance. In turn the volatility of the bank sector index may cause an overestimate (under-estimate) of the coefficients, which drive down (push up) the abnormal return from the market performance.

In addition, the bank sector index may overreact to favourable news such as the release of the Federal Reserve's rate compared with the market as a whole. The generation of the abnormal return from the bank sector index may not be detected precisely taking into account the potential disadvantage. Another limitation is that a bank sector index is not available for all markets while international samples of bank mergers are involved into this thesis. The sample size would be reduced as a result of the lack of the bank sector index in particular. Thus, bank sector indices are not applied in this thesis.

Considering the discussion above, this thesis applies the Datastream total market index as the proxy for the market index of each country. The advantage of the Datastream total market index is that this index has taken into account the size of the market capitalisation, and the changes to reflect current market conditions. (Source: Datastream database). Thus, it is believed that Datastream total return index as a market index gives a fair indication to measure the market performance.

5.5.3 The choice of data and the process of return generation

This section aims to discuss the choice of the data and the process of return generation for this thesis. This enables an understanding of the merit and weakness of these elements that can affect the analysis of the abnormal returns.

5.5.3.1 The choice of data

The determination of the data is a critical ingredient for conducting this research. As empirical studies suggested (Scholes and Williams (1977); Brown and Warner (1980, 1985)), the format of the data type to measure the return of the firm could be gathered at any interval, but studies normally use monthly, weekly or daily data. For example, monthly data is used in a number of empirical studies (Dodd and Ruback (1977); Kummer and Hoffmeister (1978); Brown and Warner (1980); Malatesta (1983); Schipper and Thompson (1983)). Weekly data has also been employed in the empirical studies (Neely (1987); Trifts and Scanlon (1987)).

However, daily data is applied in a large number of empirical studies to investigate the shareholder wealth when applying the event study methodology (e.g., Asquith (1983); Asquith *et al*. (1983); Eckbo (1983); Brown and Warner (1985); Zhang (1998); Cybo-Ottone and Murgia (2000); Akhigbe *at al*. (2004); Gleason *et al*. (2006)). Brown and Warner (1985) argue that daily data is generally available in the database. If the event day is known, using daily data is more precise and efficient to detect the abnormal performance compared with monthly data and weekly data.

However, using daily data has potential limitations compared with using monthly or weekly data. These problems include the issue of non-normality of returns and excess returns and the bias in estimating market model parameters. For example, Brown and Warner (1985) argue that the daily stock return shows significant departures from normality for an individual security compared to monthly data. This may reduce the explanatory power when testing the significance level. On the other hand, Scholes and Williams (1977) argue that using daily data to estimate the model parameters may encounter the problem of non-synchronous trading, where the model parameters may result in a bias of the results.

Empirical studies argue that using daily data results in a potential problem in estimating the market model parameters when non-synchronous trading exists (Scholes and

Williams (1977); Dimson (1979); Fowler and Rorke (1983); Cohen *et al* (1983); Cohen *et al*. (1986)). When securities suffer from relatively infrequent trading, the market model parameters, β, generate a downward bias. In contrast, β estimates exhibit an upward bias if securities are traded relatively frequently.

However, Brown and Warner (1985) argue that a bias in the estimate of β is compensated by a bias in α in that OLS residuals for a security sum to zero in the estimation period. The higher (lower) β estimates are, the lower (higher) α estimates are. The discussion of the market model parameters in this thesis will be presented in the empirical section (chapter 6 and 7).

In order to cope with the issue of non-synchronous trading, this thesis utilises three procedures to adjust for the market model parameters in terms of Scholes and Williams' (1977), Dimson's (1979) and Fowler and Rorke's (1983) methods, respectively. The specification of these three approaches will be discussed in section 5.5.7. In spite of the problem that can be caused by nonsynchronous trading, Brown and Warner (1985) state that "the results from simulations with daily data generally reinforce the conclusions of our previous work with monthly data". (p. 25). A similar view is addressed in the study of Dyckman *et al*. (1984), where their study documents that using daily data results in more powerful test statistics compared with using monthly data.

As a result, using daily data generally presents few difficulties in the content of event study methodology (Brown and Warner (1985)). The merit of using daily data could also assist this thesis to capture the impact on the shareholder wealth precisely and efficiently when the announcement date is identified. Thus, this thesis applies the daily data to measure the abnormal return.

5.5.3.2 The purpose of return generation

While the return of the firm and market is the key component to measure the abnormal return, this section focuses on discussing the return-generation process for each

stock and each market. In general, there are two ways to calculate the returns of the share and the market in terms of the discrete (arithmetic) process and the logarithmic process (Strong (1992)). These two processes are calculated as follows[58]:

$$\text{Discrete:} \qquad R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}}$$

$$\text{Logarithmic:} \qquad R_{it} = \log(\frac{P_{it}}{P_{it-1}})$$

Where R_{it} is the return of stock i on day t,

P_{it} is the share price of stock i on day t,

P_{t-1} is the share price of stock i on day $t-1$,

However, Strong (1992) argues that "There are both theoretical and empirical reasons for preferring logarithmic returns. Theoretically, logarithmic returns are analytically more tractable when linking together sub-period returns to form returns over longer intervals (simply add up the sub-period returns). Empirically, logarithmic returns are more likely to be normally distributed and so conform to the assumptions of standard statistical techniques." (p. 535).

Following Strong's (1992) argument, this thesis employs the logarithmic process to generate the return for each stock and the market, respectively. The return of stock i and the return of the market index in each country are calculated as follows[59]:

The return of stock i:

[58] The share price in these two formulas is assumed to have been adjusted for any capitalisations and incorporates dividend payments.

[59] As discussed previously, the share price of each stock and the market index for each country is collected from the Datastream database using the Total Return Index (RI). RI has been adjusted for dividend payments. As a result, the calculation of the share return and the market return does not need to make separated adjustments for dividend payments.

$$R_{it} = \log(\frac{RI_{it}}{RI_{it-1}})$$

Where R_{it} is the return of stock i on day t,

RI_{it} is the return index of stock i as the share price on day t,

RI_{it-1} is the return index of stock i as the share price on day $t-1$, and

log denotes the natural logarithm, using the logarithm to the base e.

e is a certain constant approximately equal to 2.718.

The return of the market portfolio for each country is estimated as follows:

$$R_{mt} = \log(\frac{RI_{mt}}{RI_{mt-1}})$$

Where R_{mt} is the return of the market performance (RI) on day t,

RI_{mt} is the Datastream total market index for each country on day t,

RI_{mt-1} is the Datastream total market index for each country on day $t-1$, and

log denotes the natural logarithm, where is the logarithm to the base e.

In turn, this thesis discusses the event study method in the following sections related to the selection of the event window, the estimation of the model parameters, model

specifications and statistical test for the null hypothesis, respectively.

5.5.4 The selection of the event window and the estimation of model parameters

To conduct the event study, Mackinlay (1997) argues that the first step is to select the event window and to identify the period for the model parameter estimation. The selection of the event window allows this thesis to examine the abnormal return for each stock during the test period. Besides, the market model parameters are estimated from the estimation period prior to the test period to calculate the expected return for each stock. The following sections discuss these two perspectives.

5.5.4.1 The selection of the event window

To examine the impact on shareholder wealth around bank merger and acquisition announcements, the determination of the event window in this thesis is important. The event window allows this study to capture the abnormal performance of a stock during a certain period of time. Empirically, researchers choose different event periods, and either shorter or longer event windows, to address the impact on the shareholder wealth around the event. Goergen and Renneboog (2004) argue that “the measurement error may be substantial when using narrow event windows especially if there was a leakage of information before the first mention in the financial press.” (p. 16).

Houston and Ryngaert (1994) argue that “the primary drawback with the shorter window was that it appeared to miss some run-up in the target’s abnormal return”. (p. 1161). As the information leakage has been documented in the prior empirical studies, this indicates that the choice of the event window should cover the pre-announcement period prior to bank merger and acquisition announcements.

However, Caves (1989) argues that it is complicated to capture longer-run returns following the transaction. On the other hand, Cheng and Chan (1995) argue that target firms are often delisted in a short period after the initial announcement. This implies that

the choice of the post-announcement period should not cover a fairly long window. If the post-event window covers a fairly long period, this may significantly reduce the sample size for target firms as a result of the limited stock price availability. The loss of target firms may result in reducing the validity to test the significance level.

Thus, this thesis follows the study of Peterson and Peterson (1991) and Kiymaz and Mukherjee (2001) using a longer 61-day (-30,+30) event window, where day 0 is the announcement date. Using a longer 61-day (-30,+30) event window offers valuable benefits to this thesis. First, this event window allows this thesis to capture the information leakage prior to bid announcement date and the information lag after the announcement date. Secondly, the sample size of target firms does not significantly reduce in that the share price of target firms can be obtained within a short period of time after the transaction.

Within a 61-day (-30,+30) event window, this thesis utilises various event windows to measure the impact of the shareholder wealth around bank merger and acquisition announcements. Various event windows allow this study to capture the wealth effects of bank mergers during a certain period of time. However, it should be noted that this thesis mainly focuses on a narrow 3-day (-1,+1) event window. It is believed that the significant impact of shareholder wealth can be captured surrounding a 3-day (-1,+1) event window if the market efficiently reflects the information of bank merger and acquisition announcements.

On the other hand, pre-event windows are provided in order to capture the information leakage of bid announcements, for example a 30-day (-30,-1) event window. Similarly, post-event windows are reported in order to capture the drift of the abnormal return during the post-announcement period, which can also detect the information lag, such as a 30-day (+1,+30) event window.

5.5.4.2 The estimation of model parameters

Based on the semi-strong market efficiency hypothesis, the share price should respond to the newly released information quickly (Brown and Warner (1980); Fama (1991); Mackinlay (1997)). An estimation period to estimate the model parameters applied in the market model is normally selected prior to the event window so that the model parameters cannot be affected by the event period. To estimate the model parameters, Aktas *et al*. (2007) argue that "it is most often defined as a period preceding the event, which is sufficiently long to enable the parameters of the chosen return-generating process to be properly estimated." (p. 130).

As discussed in chapter 2, prior empirical studies apply a variety of estimation periods to estimate the model parameters. A shorter estimation period may not truly capture the relationship between the share return and the market return resulting in a bias of the model parameters. If there is any unexpected shock for the stock during a short estimation period, this can significantly affect the estimation of the model parameters. For example, the financial firms could be more sensitive to respond the change of the interest rate. Thus, using a longer estimation period can be expected to obtain a true relationship between the share return and the market return.

However, Bartholdy *et al*. (2007) argue that "the standard estimation period is between 200 and 250 observations." (p. 228). Taking into account the nature of this thesis[60], the estimation period in the current study is determined by using 256 days from day -286 to day -31 prior to the event window, where day 0 is the announcement date. As the estimation period from day -286 to day -31 ends up the day prior to the event period, the model parameters will not be correlated with the return from the event period. Accordingly, the model parameters can be obtained by regressing the market return on the stock return

[60] As specified in the sample selection, the final sample in this thesis spans over 36 and 39 countries for target and bidding firms, respectively. There is a potential difficulty to adjust for the trading day in order to set out the estimation period for each market. Accordingly, the estimation period of the current study is set to 256 days as a proxy for one year to estimate the model parameters. The estimation period of 256 days is constructed by subtracting the weekend from a year, where 256 days are equal to 360 days minus 104 days.

during the estimation period of 256 days from day -286 to day -31 prior to the announcement date, day 0.

5.5.5 The benchmark in the event study

The event study methodology is applied to calculate the abnormal return and the cumulative abnormal return in order to specify the effects of bank mergers. As discussed previously, the expected return is calculated by using daily data from three benchmarks in terms of the market model, the market adjusted returns model and the mean adjusted returns model, respectively. Accordingly, model specifications of event study methods are discussed in the following sections.

5.5.5.1 The market model

The market model is a statistical model, where the return of any given security is related to the return of the market portfolio. Strong (1992) argues that “the market model makes no explicit assumption about how equilibrium security prices are established.” (p. 537). Hart and Apilado (2002) point out that “the standard market model assumes linearity, homoscedasticity, and independence in stock returns.” (p. 314). In addition, Eckbo (1983) similarly argues that “the regression coefficients of the market model reflect systematic co-movements of the share return with the return on the market portfolio, while the serially uncorrelated, zero mean error term picks up the impact of non-market factors (such as firm- or industry-specific) information events and random price fluctuations.” (p. 251).

Linn and McConnell (1983) also argue that “according to this model each security’s period t return is expressed as a linear function of the contemporaneous return on the market portfolio plus a stochastic error term which reflects security specific effects.” (p. 375). Due to the simplistic assumption, the market model is the most popular event study model to be applied in the empirical studies (Strong (1992).

Thus, the market model is shown as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

Where R_{it} is the return of stock i on day t,

α_i, β_i are the market model parameters for stock i[61],

R_{mt} is the return of the market index on day t[62],

ε_{it} is the disturbance term with zero mean and $Var(\varepsilon_{it}) = \sigma^2_{\varepsilon_i}$,

As the expected return is obtained by using the market model, the abnormal return can be calculated as follows:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

Where AR_{it} is the abnormal return for stock i on day t,

However, using the market model with daily data to estimate the expected return incurs a criticism in that the model parameters may be biased due to the problem of nonsynchronous trading. When computing the abnormal return for each share, the results may not reflect the true value of the impact on the shareholder wealth as a result of the problem of nonsynchronous trading. As a consequence, this thesis also applies different methods to take into account the problem of nonsynchronous trading as will be discussed in section 5.5.7.

[61] The market model parameters, α_i and β_i, are estimated by using daily data from day -286 to day -31, where day 0 is the announcement date.

[62] The market index employs the Datastream total market index collected from Datastream database.

Furthermore, a number of prior empirical studies provide evidence that the market model is misspecified (MacDonald and Lee (1988); Coutts *et al*. (1995); Mills *et al*. (1996)). Coutts *et al*. (1995) argue that the market model is misspecified if the assumption that the error term is identically and independently distributed with constant variance is violated. The authors report that there is evidence of heteroscedasticity, non-normality, serial correlation and non-linearity for the error term in their data set. When the market model is misspecified, it can be incorrect to compute the abnormal return. Thus, the results cannot truly reflect the market reaction to the events.

In spite of the critics, the market model has been applied in a number of prior empirical studies (e.g., Cornett and De (1991); Hudgins and Seifert (1996); Black *et al*. (2005); Gleason *et al*. (2005)). This may indicate that the market model has its own strength to be recognised in the empirical research. Thus, this thesis employs the market model as a core model to estimate the expected return.

To examine the sensitivity of the results calculated from the market model, this thesis also utilises alternative event study methods in terms of the market adjusted returns model and the mean adjusted returns model to estimate the expected return. These two models can not only provide additional insights on the impact on shareholder wealth but also assist to check the robustness of the results. Thus, the model specifications of these two models are discussed in the following sections.

5.5.5.2 The market adjusted returns model

An alternative event study model to estimate the expected returns in this thesis is the market adjusted returns model. Brown and Warner (1980) argue that the market adjusted returns model "takes into account marketwide movements which occurred at the same time that the sample firms experienced events." (p. 213). Strong (1992) similarly argues that the market adjusted returns model assumes that *ex ante* expected returns are the same for all securities within the same market. Accordingly, the expected return of the stock is equal to

the expected market return in any period. Thus,

$$E(\tilde{R}_{it}) = E(\tilde{R}_{mt}) = K_t \text{ , for all stock } i$$

Where $E(\tilde{R}_{it})$ is the expected return for stock i on day t,

$E(\tilde{R}_{mt})$ is the expected return for the market on day t,

K_t denotes a constant on day t,

Accordingly, the return for stock i on day t is given by:

$$R_{it} = R_{mt} + \varepsilon_{it}$$

Where R_{it} is the return for stock i on day t,

R_{mt} is the return of the market on day t,

ε_{it} is the disturbance term for stock i on day t with a mean to be zero

The market adjusted returns model can be regarded as restricting the market model α_i to be zero and β_i to be one (Maynes and Rumsey (1993); Mackinlay (1997)). The abnormal return measures the difference between the return of each share and the return of the market index. Thus, the formula is presented as follows:

$$AR_{it} = R_{it} - R_{mt}$$

Where AR_{it} is the abnormal return for stock i on day t,

However, a potential problem may occur when applying the market adjusted returns model. The magnitude of the abnormal return may vary depending on the choice of the

market index. The constitution of the market index may result in a marginal difference in computing the abnormal return. In addition, the assumption of the market adjusted returns model may be unrealistic in that the risk of each share could vary across securities. Thus, this may be a limitation of estimating the expected return for each share applying the market adjusted returns model.

However, there are a number of advantages to applying the market adjusted returns model in this thesis. The market adjusted returns model simply assumes that the expected return is equal to the return of the market index. Thus, it is relatively convenient to calculate the abnormal return. An alternative strength is that the less restriction of data availability does not result in reducing the sample size, as would have been the case with e.g., the CAPM model and the Fama-French three-factor model.

Furthermore, using the market adjusted returns model eliminates biases of market model parameters when using daily data. The biased model parameters can derive from the presence of the problem of thin trading estimated from daily data. Without computing the model parameters, the use of the market adjusted returns model can exclude the potential bias from the market model.

As the market adjusted returns model has been employed in a number of prior empirical studies (Dennis and McConnell (1986); Rosenstein and Wyatt (1997); Brook *et al*. (2000) and Conn *et al*. (2005)), this also suggests that the market adjusted returns model has its own merit to be recognised in the prior empirical research. Thus, this thesis also applies the market adjusted returns model to measure the abnormal returns as a robustness check.

5.5.5.3 The mean adjusted returns model

The mean adjusted returns model assumes that the ex ante expected return is equal to a constant K_i for a given security i that can differ across securities. Thus,

$$E(\tilde{R}_{it}) = K_i, \text{ for all stock } i,$$

Where $E(\tilde{R}_{it})$ is the expected return for stock i on day t,

K_i denotes a constant for stock i,

Strong (1992) argues that the *ex post* expected return for stock i on day t is given by K_i if risk premiums, interest rates and the risk of the security are constant over time with the absence of any new information disclosure. Accordingly, the abnormal return is computed as the difference between the actual return on stock i and the expected return, K_i. Thus,

$$AR_{it} = R_{it} - K_i$$

Where AR_{it} is the abnormal return for stock i on day t,

R_{it} is the return for stock i on day t

Based on the mean adjusted returns model, the expected return (K_i) is calculated by averaging the return of the share during the estimation period.[63] Thus, the expected return of each share calculated from the mean adjusted returns model is computed as follows:

$$K_i = \frac{1}{256}\sum_{-31}^{-286} R_{it}$$

However, researchers also criticise the use of the mean adjusted returns model. Dyckman *et al*. (1984) argue that the mean adjusted returns model "is labelled the naive model insofar as market-wide factors and risk are not accounted from explicitly." (p. 4).

[63] As discussed before, the estimation period starts from day -286 to day -31.

This implies that the assumption of the mean adjusted returns model may not be realistic.

Although the assumption of the mean adjusted returns model can be unrealistic, the mean adjusted returns model has been employed in a number of prior empirical studies (e.g., Brown and Warner (1980, 1985); Lahey and Conn (1990)). Brown and Warner (1980) document that the mean adjusted returns model is simple to estimate and has the same power to detect abnormal performance compared with the market model. In addition, Lahey and Conn (1990) also document that it is important to contrast various models in order to make comparisons with previous market model based merger studies. This may imply that the mean adjusted returns model has its own merit to be taken into account in the prior empirical studies.

Alternatively, there are several advantages to apply the mean adjusted returns model in this thesis. First, the calculation of the expected return from the mean adjusted returns model does not rely on the market index. Accordingly, there is less restriction of data requirement to employ the mean adjusted returns model when computing the abnormal return. Secondly, unlike the market model, the use of the mean adjusted returns model does not require to compute the model parameters, which may suffer from the problem of thin trading.

Furthermore, with the sample size being large in this thesis, the computation of the abnormal returns based on the mean adjusted returns model only depends on historical share price data of each security. There is no extra information to be required and the expected return can be relatively conveniently estimated for each stock. Due to these advantages, this thesis also applies the mean adjusted returns model as the third model to check the robustness of the results in association with the market model and the market adjusted returns model.

5.5.5.4 Summary of the benchmark of event study methodology

As discussed above, three event study models are applied in this thesis in terms of the

market model, the market adjusted returns model and the mean adjusted returns model to investigate the impact of shareholder wealth around bank merger and acquisition announcements. As event study methodology is widely used to measure the effect of the event, a number of applicable event study methods may also be used to measure the expected returns in this thesis. For example, the capital asset pricing (CAPM) model and the Fama-French three-factor model could potentially also have been employed in the study of the shareholder wealth effects related to merger and acquisition announcements.

One of the components for the CAPM model relates to determine the risk free rate when calculating the expected return of each stock. Empirically, the rate of Treasury Bills is normally used to be the return on a risk free security (Strong (1992); Eckbo and Thorburn (2000)). However, the risk free rate in terms of the Treasury Bills cannot be collected for all countries from the Datastream database as the sample of bank mergers covers a large number of countries in this thesis.

On the other hand, the risk free rate may be substituted by using the short term interest rate. As the current study focuses on the banking industry, the short term interest rate may have potential influences in the banking industry. However, alternative short term interest rate cannot be collected for all countries. Thus, the sample size may be reduced as a result of the data availability of the risk free rate when applying the CAPM model. As a result, the CAPM model is not suitable to be applied in the current study.

With regard to the Fama-French three-factor model, the variables related to this model include an overall market risk factor and risk factors related to size and book-to-market-equity. Risk factors related to size and book-to-market-equity include SMB (small minus big) and HML (high minus low), respectively (Fama and French (1993, 1996)). However, it may be difficult to define each factor for the three-factor model when the sample involves a number of countries. In addition, the data availability is also an issue to limit the choice of the Fama-French three-factor model. As a consequence, due to these limitations, the three-factor model may be inappropriate to be applied in this thesis.

With regard to the use of the event study model, Brown and Warner (1980) argue that "more complicated methodologies can actually make the researcher worse off, both compared to the market model and to even simpler methods, like Mean Adjusted Returns, which make no explicit risk adjustment." (p. 249). Thus, the use of the simplistic event study model can be viewed as a better way to measure the impact of shareholder wealth in bank mergers.

Overall, as discussed above, this thesis applies three different event study models to measure the impact on shareholder wealth around bank merger and acquisition announcements. These models include the market model, the market adjusted returns model and the mean adjusted returns model. The use of these different models also allows this thesis to overcome the sensitivity of the results due to different assumptions of each model. As a result, it can be expected that this thesis can generate powerful conclusions to address the impact of shareholder wealth in bank mergers.

5.5.6 The calculation of the cumulative abnormal return

As discussed in section 5.5.5, the abnormal return is calculated to reveal the impact on the shareholder wealth around bank merger and acquisition announcements. However, Mackinlay (1997) argues that "the abnormal return observations must be aggregated in order to draw overall inferences for the event of interest." (p. 21). To draw overall inferences for the impact of shareholder wealth, it is common to accumulate the abnormal return over the selected event window. This assists this thesis to capture the changes of shareholder wealth during a certain period of time. Thus, the cumulative abnormal return is computed as follows:

$$CAR_{(t1,t2)} = \sum_{t=t_1}^{t_2} \overline{AR_t}$$

$CAR_{(t1,t2)}$ is the cumulative abnormal return in the (t_1, t_2) event window during the test period

$\overline{AR_t}$ is the mean abnormal return on day t

In order to capture the impact of shareholder wealth during a certain period, this thesis uses various event windows to calculate the cumulative abnormal returns of the firms, including the pre-announcement and post-announcement event window. Thus, the following chapters will present the cumulative abnormal returns of the firms based on different event windows.

5.5.7 The adjustment of nonsynchronous trading

As discussed in section 5.5.3.1, three measurement intervals in terms of monthly, weekly and daily data can be used to conduct event study methodology. While this thesis uses daily data to measure the return of the stock, the calculation of the abnormal return based on the market model may not precisely detect the abnormal performance. This may derive from the fact that the returns computed from the market model may deviate from the true value.

Prior empirical studies suggest that the model parameters may be biased as a result of the problem of nonsynchronous trading when daily data is used (Scholes and Williams (1977); Dimson (1979); Cohen *et al*. (1983); Fowler and Rorke (1983); Strong (1992); Clare *et al*. (2002); Brooks *et al*. (2005)). Maynes and Rumsey (1993) argue that "the bias arises because the recorded closing prices of stock returns and the market index correspond to transactions which occurred earlier in the day." (p. 147). In order to overcome the problem of nonsynchronous trading, this thesis applies three thin trading adjustment approaches in terms of Scholes and Williams (1977) method, Dimson aggregated coefficients (1979) method and Fowler and Rorke (1983) method to estimate unbiased

estimates for the market model. These approaches are discussed in the following sections.

5.5.7.1 Scholes and Williams (1977) method

Scholes and Williams (1977) argue that a potentially serious econometric problem is incorporated into the market model when daily data is employed. As ordinary least square (OLS) regression method is used to estimate the model parameters, the econometric problem of errors in variables can be introduced into the market model. This could be due to the problem of nonsynchronous trading in that share prices are reported only at distinct, random intervals for most securities. Thus, it is not possible to yield completely accurate calculation of returns over any fixed sequence of periods.

In order to avoid the problem caused by nonsynchronous trading, Scholes and Williams (1977) develop a method and demonstrate that their method can obtain consistent estimators of the model coefficients. Scholes and Williams' method simply assumes that the share does not trade for any day and for the following day. Thus, the consistent estimators of alpha and beta can be calculated as follows:

$$\hat{\beta}_i^{'} = \frac{\hat{\beta}_i^{-} + \hat{\beta}_i + \hat{\beta}_i^{+}}{1 + 2\hat{\rho}_m}$$

$$\hat{\alpha}_i^{'} = \frac{1}{T-2}\sum_{T=2}^{T-1} r_{it} - \hat{\beta}_i^{'}\frac{1}{T-2}\sum_{T=2}^{T-1} r_{mt}$$

Where $\hat{\beta}_i^{'}$, $\hat{\alpha}_i^{'}$ are the market model parameters based on the SW method to adjust for the problem of non-synchronous trading,

$\hat{\beta}_i^{-}$, $\hat{\beta}_i$, $\hat{\beta}_i^{+}$ are estimators of the slope coefficients in a simple regression by a lag, synchronous and a lead of the market return on the return of stock i,

$\hat{\rho}_m$	is an estimate of the first order serial correlation coefficient for the market return,
r_{it}	is the return of stock i on day t,
r_{mt}	is the return of the market on day t,
T	denotes the number of days in the estimation period

As noted above, unbiased beta estimates are computed by regressing the return on the security against a lagged, synchronous and a leading return on the market. After summing up the beta estimates, the figure is divided by one plus twice the estimated autocorrelation coefficient for the market index in order to obtain unbiased beta estimates. When unbiased beta estimates are determined, alpha estimates are calculated from day -285 to day -32 during the estimation period, giving 254 observations. The loss of two observations during the estimation period derives from a lagged and a leading market returns. As a consequence, the unbiased estimates of alpha and beta can be applied to the market model to measure the abnormal performance for each stock.

As Scholes and Williams' method is applied in a number of empirical studies (Dodd and Warner (1983); Baradwaj *et al*. (1991); Hudgins and Seifert (1996); Gleason *et al*. (2005)), this may suggest that this method has its own strength to be recognised in the prior empirical studies. Specifically, Scholes and Williams' method provides an advantage to this study. As the sample size being large and the estimation period covering 256 days, it is not possible to examine the problem of nonsynchronous trading for the stock price data of each share literally. Thus, this thesis utilises this method to deal with the problem of nonsynchronous trading.

Thus, unbiased estimates of the coefficients from Scholes and Williams' method are calculated as follows:

$$\hat{\beta}_i^{'} = \frac{\hat{\beta}_i^{-} + \hat{\beta}_i + \hat{\beta}_i^{+}}{1 + 2\hat{\rho}_m}$$

$$\hat{\alpha}_i^{'} = \frac{1}{254}\sum_{t=-285}^{t=-32} R_{it} - \hat{\beta}_i^{'}\frac{1}{254}\sum_{t=-285}^{t=-32} R_{mt}$$

$$AR_{it} = R_{it} - (\hat{\alpha}_i^{'} + \hat{\beta}_i^{'} R_{mt})$$

However, Scholes and Williams' method similarly faces some critics. Fowler *et al*. (1989) argue that Scholes and Williams' method has a shortcoming in that the variance of the estimator produced by Scholes and Williams' method is large. This would cause the beta estimates to be imprecise. In addition, Brooks *et al*. (2005) also argue that it is inappropriate to apply Scholes and Williams' method in extreme cases of thin trading for beta estimation. Scholes and Williams' method may not be sufficient to generate unbiased estimates of the model parameters if the shares are subject to extreme nonsynchronous trading or no trading. As a result, unbiased beta estimates adjusted for Scholes and Williams' method do not cope well in such circumstances.

Taking into account this drawback, this thesis also applies an alternative method in terms of Dimson's (1979) method to deal with the problem of non-synchronous trading. The results from Dimson's (1979) method can also be used as the robustness check.

5.5.7.2 Dimson aggregated coefficients (1979) method

As discussed above, Scholes and Williams (1977) demonstrate that their procedure can obtain unbiased estimates by using one lagged and leading structure of the market returns. However, Dimson (1979) argues that Scholes and Williams' method cannot obtain unbiased beta estimates if the share is traded in only every fourth periods. Thus, Dimson (1979) develops a method to overcome this drawback. As demonstrated by Dimson (1979), a consistent estimate of beta is obtained by aggregating the slope coefficients from the multiple of security returns against lagged, matching and leading market returns. The number of leads and lags of market returns should increase if the share is more thinly

traded. As a result, a consistent estimate of beta based on Dimson's method is constructed as follows:

$$\hat{\beta} = \sum_{k=-n}^{n} \hat{\beta}_k$$

Where $\hat{\beta}$ is the unbiased beta estimate based on Dimson aggregated coefficients method. The unbiased beta estimate is the sum of the coefficients in a multiple regression of the return for stock i on day t against the return of the market from day $t-n$ to day $t+n$, where day 0 is the match of the stock return and the market return. n denotes that the share trades in every n period.

$\hat{\beta}_k$ is the estimate of the slope coefficients in a multiple regression

Empirically, a number of prior studies has been applied Dimson's method to adjust for the risk measurement in order to deal with the problem of nonsynchronous trading (Brown and Warner (1985); Goergen and Renneboog (2004); Semih *et al*. (2006)). As in the study of McInish and Wood (1986), the authors conclude that the Dimson's method is the best technique to reduce the amount of bias in beta estimation. This suggests a merit to employ Dimson's method in the current study.

Following Brown and Warner (1985), this thesis utilises Dimson's method by using three lagged and three leading structure. Using Dimson's method with three lagged and three leading structure can be expected to yield more accurate beta estimates when the share trades more than every three consecutive time.

In addition, the results based on Dimson's method can provide an additional insight

into whether the results are different from those of Scholes and Williams' method. This can also assist this thesis to perceive whether the problem of nonsynchronous trading is a case, which impacts the analysis in this thesis. Thus, the formula of Dimson's method in this thesis is presented as follows:

$$\hat{\beta}_i'' = \sum_{k=-3}^{+3} \hat{\beta}_{ik}$$

$$\hat{\alpha}_i'' = \frac{1}{250} \sum_{t=-283}^{t=-34} R_{it} - \hat{\beta}_i'' \frac{1}{250} \sum_{t=-283}^{t=-34} R_{mt}$$

$$AR_{it} = R_{it} - (\hat{\alpha}_i'' + \hat{\beta}_i'' R_{mt})$$

When using Dimson's method to compute the alpha estimate, there are six missing observations during the estimation period. The missing observations are due to three leads and lags market returns in the estimation period. Thus, the alpha estimate is calculated from day –283 to day -34 during the estimation period, giving 250 observations.

However, Dimson's method cannot avoid incurring criticism by scholars. Fowler and Rorke (1983) argue that Dimson's method is incorrect and cannot generate consistent beta estimates in accordance with Scholes and William's method. Fowler and Rorke (1983) further present a procedure to correct Dimson's estimator. In order to reinforce the results from Dimson's method in association with Scholes and William's method, this thesis also employs Fowler and Rorke's (1983) approach as a third method to deal with the problem of nonsynchronous trading.

5.5.7.3 Fowler and Rorke (1983) method

Scholes and Williams (1977) and Dimson (1979) have introduced methods to obtain unbiased estimates of the model parameters due to the presence of the problem of thin

trading. As Scholes and Williams have demonstrated that their procedure can yield unbiased estimates of the model parameters, Fowler and Rorke (1983) argue that Dimson's method cannot generate unbiased beta estimates in line with Scholes and Williams' method.

As a result, Fowler and Rorke (1983) present a corrected version for the Dimson's approach in accordance with Scholes and Williams' method. As demonstrated by Fowler and Rorke (1983), a consistent beta estimate based on the Dimson's method should be weighted by functions of the observable serial correlation coefficients for the index. Thus, a corrected version of Dimson's method provided by Fowler and Rorke (1983) is shown as follows:

$$\begin{aligned}\widehat{\beta}_i &= \frac{(1+\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)}\beta_i^{-2} + \frac{(1+2\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)}\beta_i^{-1} + \beta_0 \\ &+ \frac{(1+2\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)}\beta_i^{+1} + \frac{(1+\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)}\beta_i^{+2}\end{aligned}$$

Where $\widehat{\beta}_i$ is the unbiased beta estimate,

$\beta_i^{-2}, \beta_i^{-1}, \beta_i^{0}, \beta_i^{+1}, \beta_i^{+2}$ indicate the parameter estimates obtained from the simple regression of a security return against lag 2, lag 1, synchronous, lead 1 and lead 2 of the market return, respectively

ρ_1, ρ_2 are the first and second order serial correlation coefficients of the market return, respectively.

According to Fowler and Rorke's procedure, this approach assumes that the first order serial correlation coefficients and the second order serial correlation coefficients are not zero and all other serial correlation coefficients are zero. Thus, a consistent beta estimate can be obtained when a weighted sum of the slope coefficients is calculated.

When employing Fowler and Rorke's procedure to calculate the alpha estimate, there are four missing observations during the estimation period. The missing observations in the estimation period are because of two lags and two leads market returns. As a result, the alpha estimate is calculated from day -284 to day -33 during the estimation period, in which 252 observations are remaining. Thus, Fowler and Rorke's method applied in this study is shown as follows:

$$\hat{\beta}_i''' = \frac{(1+\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)}\beta_i^{-2} + \frac{(1+2\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)}\beta_i^{-1} + \beta_i^{0} \frac{(1+2\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)}\beta_i^{+1} + \frac{(1+\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)}\beta_i^{+2}$$

$$\hat{\alpha}_i''' = \frac{1}{252}\sum_{t=-284}^{t=-33} R_{it} - \hat{\beta}_i''' \frac{1}{252}\sum_{t=-284}^{t=-33} R_{mt}$$

$$AR_{it} = R_{it} - (\hat{\alpha}_i''' - \hat{\beta}_i''' * R_{mt})$$

5.5.7.4 Summary of the adjustment for nonsynchronous trading

A number of prior empirical studies document that the market model parameters may be biased when using daily data. This may result from the problem of nonsynchronous trading (Scholes and Williams (1977); Dimson (1979); Fowler and Rorke (1983); Cohen *et al*. (1986); Clare *et al*. (2002); Brooks *et al*. (2005)). To deal with this problem, two approaches are widely used in terms of Scholes and Williams' (1977) and Dimson's (1979) method (Peterson (1989); Bartholdy and Riding (1994); Clare *et al*. (2002); Brooks *et al*. (2005)). This may indicate that these two approaches have their own strengths to deal with the problem of thin trading.

However, the Scholes and Williams and the Dimson methods have their own limitation. For example, Brooks *et al*. (2005) argue that the Scholes and Williams and the

Dimson method do not cope well in cases of extreme thin trading. On the other hand, Fowler and Rorke (1983) argue that Dimson's method cannot generate a consistent beta estimate in accordance with Scholes and Williams' method as Scholes and Williams have demonstrated that their method can yield an unbiased beta estimate.

Thus, Fowler and Rorke (1983) demonstrate that a weighted sum of the slope coefficients is required to obtain a consistent beta estimate instead of an unweighted sum of the slope coefficients from Dimson's (1979) approach. To provide additional insights to check the robustness of the results, this thesis also employs Fowler and Rorke's (1983) method as an alternative technique to deal with the problem of nonsynchronous trading

However, there are alternative approaches that can be applied to deal with the problem of nonsynchronous trading (Cohen *et al*. (1983)). For example, Dimson and March (1983) argue that the trade-to-trade method can overcome the problem of nonsynchronous trading when the timing of trades is known. Bartholdy *et al*. (2007) similarly argue that "the trade to trade method uses all available information about total stock and market returns over time and no bias is introduced by attempting to estimate unobserved daily stock returns." (p. 229). With regard to the trade to trade method, this model encounters a problem of data availability. This method cannot be used when the times of recording share prices within a time interval are unknown (Dimson (1979)). As a result, this method is not appropriate to be applied in this thesis in that the transaction information is not perfectly available. While zero returns may be used to proxy for non-trading, it is possible for trades to have taken place even if the share prices do not change.

In addition, Cohen *et al*. (1983) provide a price-adjustment delay structure to show how to estimate unbiased betas. Cohen *et al*. (1983) demonstrate that bias in beta changes when the length of the measurement interval is varied. As the interval length is increased, the estimates of true beta can be obtained when the bias approaches zero. However, this method is inappropriate to be employed in this thesis in that it costs time to obtain the

unbiased beta estimate. In addition, this method also requires a benchmark to the beta estimate, where the benchmark requires the beta estimate generated from that without thin trading problem. As the sample size is large, there is a potential difficulty in obtaining trading information for each share. So, this method is not suitable to be applied in this thesis. Thus, this thesis only relies on three approaches in terms of Scholes and Williams', Dimson's and Fowler and Rorke's method to deal with the problem of nonsynchronous trading.

5.5.8 The calculation of joint abnormal returns

As mentioned above, the abnormal return for targets and bidders is calculated by subtracting the expected return from the actual return of the share. However, the calculation of the joint return for the combined firm is distinct from the calculation of the abnormal return for the target and bidder. It is essential to consider the difference of the size between the targets and the bidders. A large percentage gain to the target could be more than offset by a small percentage loss to the bidder if the bidder is substantially larger (Bruner (2002)).

Empirically, researchers compute the joint return for the combined firm by weighting the market value of target and bidder abnormal return (e.g., Houston and Ryngaert (1994); Toyne and Tripp (1998); Becher (2000); Cybo-Ottone and Murgia (2000); Becher and Campbell (2005)). Houston and Ryngaert (1994) argue that the measure of the joint return by weighting the market value of the target and bidder abnormal return gives the true percentage change in the value of the combined pre-merger firm.

Following Houston and Ryngaert (1994), the joint return for the combined firm is calculated by weighting the market value for the target and bidder abnormal return on day -31 before the announcement date, day 0. As the event window stems from day -30 to day +30 in this thesis, the use of the market value for the targets and bidders on day -31 does not generate a correlation with the abnormal return of the firm. Thus, the calculation of the

joint return is calculated as follows:

$$AR_t^{JOINT} = \frac{MV_{TARGET} * AR_{T,it} + MV_{BIDDER} * AR_{B,it}}{MV_{TARGET} + MV_{BIDDER}}$$

Where

AR_t^{JOINT} is the joint abnormal return for the combined firms on day t,

MV_{TARGET} is the market value of the target firm 31 days before the announcement date, day 0,

MV_{BIDDER} is the market value of the bidder firm 31 days before the announcement date, day 0,

$AR_{T,it}$ is the target abnormal return for the ith target on day t,

$AR_{B,it}$ is the bidder abnormal return for the ith bidder on day t,

5.5.9 Statistical test procedure

A number of different models are applied in this thesis to measure the level of the abnormal return. In order to test the null hypothesis, H_0: the mean abnormal return is zero, this thesis applies several test statistics to examine the significance level of the mean abnormal return. This thesis initially uses the parametric statistic to test the results for each event study method. The parametric statistic is based on the assumption that the abnormal returns are normally distributed, as will be discussed in sections 5.5.9.1, 5.5.9.2 and 5.5.9.3.

However, the assumption of normal distribution in terms of the parametric statistic may be violated. The nonparametric statistic does not require that the sample satisfies the assumption of the parametric statistic (Bartholdy *et al*. (2007)). Thus, this thesis also

employs nonparametric statistics as will be discussed in sections 5.5.9.4 and 5.5.9.5 to examine the significance level for the null hypothesis, H_0: the proportion of positive abnormal returns is equal to that of negative abnormal returns. Thus, the following sections present the detailed specifications of test procedure for the parametric and nonparametric statistic.

5.5.9.1 Cross-sectional $t-statistic$

The first parametric statistic is the cross-sectional $t-statistic$ that is applied to test the null hypothesis in this thesis. Strong (1992) argues that "the most naive test procedure would be to calculate the average abnormal return and its standard error across event securities to give a t-statistic as follows:" (p. 544, 545).

$$\frac{\bar{u}_t}{SE(\bar{u}_t)} = \frac{\frac{1}{N}\sum_{i=1}^{N}\bar{u}_{it}}{\left[\frac{1}{N-1}\sum(\hat{u}_{it}-\bar{u}_t)^2\right]^{\frac{1}{2}}} \sim t(N-1)$$

Where $\bar{u}_t$ is the mean abnormal return across securities on day t,

$SE(\bar{u}_t)$ is the standard deviation of the mean abnormal return across securities on day t,

$\hat{u}_{it}$ is the abnormal return for stock i on day t,

N is the number of securities,

i is an individual security

t denotes the time period

$\wedge$ indicates the estimated value

$-$ denotes the mean value

The cross-sectional $t-statistic$ assumes that the mean abnormal return is normally distributed and independent. Implicitly, the cross-sectional $t-statistic$ assumes that the mean abnormal return is identical across securities. In addition, the cross-sectional $t-statistic$ assumes that variances of abnormal returns are equal across securities and there is no cross-correlation in abnormal returns.

Dodd (1980) employs the cross-sectional $t-statistic$ to test the null hypothesis that the mean abnormal return is zero. With a large sample size in this thesis, the cross-sectional $t-statistic$ can be assumed to satisfy the assumption that the mean abnormal return is normally distributed. Thus, the cross-sectional $t-statistic$ is applied in this thesis to test the significance level. As a result, the cross-sectional $t-statistic$ is calculated as follows:

H_0: the mean abnormal return across securities is zero ($\bar{u}_t = 0$)

$$t = \frac{\bar{u}_t}{S(\bar{u}_t)/\sqrt{n}}$$

$$\bar{u}_t = \frac{1}{n}\sum_{i=1}^{n}\hat{u}_{it}$$

Where $\bar{u}_t$ is the mean abnormal return across securities on day t,

$S(\bar{u}_t)$ is the standard deviation of the mean abnormal return across securities on day t,

$\hat{u}_{it}$ is the abnormal return for stock i on day t,

n is the number of securities[64],

As the sample size is larger than 30, the cross-sectional $t-statistic$ is distributed student

[64] 508 targets, 1424 bidders and 388 combined firms are included in the sample. The share price is available for at least 30 days during the estimation period.

$t-statistic$, with N-1 degree of freedom.

5.5.9.2 Time-series $t-statistic$

The cross-sectional $t-statistic$ assumes that the mean abnormal return is normally distributed and cross-sectionally independent. However, Strong (1992) argues that the cross-sectional $t-statistic$ leads to inefficient estimates of the significance of the mean abnormal return if the abnormal return exhibits cross-sectional dependence. The cross-sectional dependence may result from the clustering in the event date of the sample. Thus, the calculation of standard errors assuming cross-sectional independence leads to biases in the estimated standard errors. Accordingly, the statistical test for the significance level is misspecified.

Considering that the assumption of cross-sectional independent may be violated, Brown and Warner (1985) use the time-series $t-statistic$ to take into account cross-sectional dependence in the abnormal return of the stock. Baradwaj *et al*. (1990) also argue that the time-series $t-statistic$ assumes that the variance of the abnormal return is constant over time for each company. When using the time-series $t-statistic$ to test the significance level of the mean abnormal return, cross-sectional dependence is taken into consideration in the test statistic.

As the investigation period in this thesis covers from 1995 to 2005, it can be expected that the mean abnormal return should not cluster in any event date. However, to consider cross-sectional dependence on the influence of the significance statistic, the mean abnormal return is also examined by using the time-series $t-statistic$. Thus, the procedure of the time-series $t-statistic$ is shown as follows:

H_0 : the mean abnormal return for any event day t is zero ($\overline{u}_t = 0$)

$$t-statistic = \frac{\bar{u}_t}{\hat{S}(\bar{u}_t)}$$

$$\bar{u}_t = \frac{1}{n}\sum_{i=1}^{n}\hat{u}_{it}$$

$$\hat{S}(\bar{u}_t) = \sqrt{(\sum_{t=-286}^{t=-31}(\bar{u}_t - \bar{\bar{u}})^2 / 255}$$

$$\bar{\bar{u}} = \frac{1}{256}\sum_{t=-286}^{t=-31}\bar{u}_t$$

Where $\bar{u}_t$ is the mean abnormal return across securities on day t,

$\hat{u}_{it}$ is the mean abnormal return for stock i on day t,

$\hat{S}(\bar{u}_t)$ is the standard deviation of the mean abnormal return on day t, estimated from the time-series during the estimation period,

$\bar{\bar{u}}$ is the average of the mean abnormal return during the estimation period,

n is the number of securities,

-286, -31 denote that the estimation period starts from day -286 to day -31, where day 0 is the announcement date. There are 256 days during the estimation period.

However, Brown and Warner (1985) also argue that cross-sectional procedures in terms of time-series procedures have limitations when testing the null hypothesis that the mean abnormal return is equal to zero. “For example, if the variance shift differs across sample securities, the test statistic is likely to be misspecified because the assumption of identically distributed excess returns is violated. In addition, if there is no variance increase,

the cross-sectional procedure will not be very powerful because they ignore estimation period data." (p.24). Taking into consideration this limitation, this thesis also applies another parametric statistic in terms of the Patell Standardised Residual (PSR) test to test the mean abnormal return.

5.5.9.3 Patell Standardised Residual (PSR) test

Strong (1992) argues that equally weighting abnormal returns lead to insufficient estimates of the mean abnormal returns if abnormal returns exhibit heteroscedasticity. When the sample increases, the variances of the mean abnormal returns increase in the estimation period. Then, tests for the statistically significance level will be misspecified in that the calculation of standard errors from the estimation period could be biased.

Patell (1976) provides a refined test procedure, which is referred to as the Patell Standardised Residual (PSR) test. Czyrnik and Klein (2004) argue that the traditional Patell (1976) test statistics focuses on a possible event-induced increase in variance. Besides, Strong (1992) argues that abnormal returns are prediction errors rather than true residuals when the parameters of the market model are estimated from observations outside the test period.

Strong (1992) also argues that "The PSR test explicitly recognises the possibility of different residual variances across securities, and weights the abnormal returns accordingly. But, as Patell notes, the PSR test continues to assume cross-sectional independence of abnormal returns and no change in residual variances between the EP [estimation period] and the TP [test period]." (p. 546).

To take into account the variances of the mean abnormal returns during the estimation period that may affect the test of the significance level, this thesis also employs the PSR test to examine the mean abnormal return. Thus, the procedure related to PSR test is presented as follows:

The definition of the notion for the PSR test is provided as follows:

Estimation period	=	the period covers which the market model parameters are estimated. The estimation period ranges from day -286 to day -31.
Test period	=	the period covers which abnormal returns are estimated. The test period covers from day -30 to day +30.

(1) Estimate the variance of the residuals (estimated abnormal returns) ($\hat{u}_{it}$) during the estimation period.

$$s_i^2 = \frac{\sum_{t=1}^{T} \hat{u}_{it}^2}{T-2} \qquad (1)$$

Where T = the number of observations in the estimation period

The residuals (estimated abnormal returns ($\hat{u}_{it}$)) are estimated during the test period from day -30 to day +30, which is calculated by using the market model.

(2) Compute C_{it}, which reflects the adjustment for the increase in variance for prediction outside the estimation period. C_{it} is calculated for each day during the test period.

$$C_{it} = 1 + \frac{1}{T} + \frac{(R_{mt} - \overline{R}_m)^2}{\sum_{r=1}^{T} (R_{mr} - \overline{R}_m)^2} \qquad (2)$$

$$\overline{R}_m = \frac{1}{T}\sum_{r=1}^{T} R_{mr}$$

Where $\overline{R}_m$ = average return of market index in the estimation period

R_{mr} = the return of market index on day r during the estimation period

The notation of $(R_{mt} - \overline{R}_m)^2$ denotes the square for the deviation of the market return on day t during the test period from the mean market return during the estimation period. In addition, the notation of $(R_{mr} - \overline{R}_m)^2$ indicates the square for the deviation of the market return on day r during the estimation period from the mean market return during the estimation period. The formula (2) for the PSR procedure takes into account the adjustment for the increase in variance for prediction outside the estimation period. The variance may increase as a result of the increase of the estimation period. Thus, the test statistic is not biased when the variance of the residuals are taken into consideration during the estimation period.

(3) Compute the Patell Standardised Residuals (V_{it}) for each daily abnormal return. The test statistic is distributed as a Student t statistic with $T-2$ degree of freedom.

$$V_{it} = \frac{\hat{u}_{it}}{s_i\sqrt{C_{it}}} \sim t(T-2) \qquad (3)$$

(4) Compute the Patell Standardised Residuals (W_{iL}) for the cumulative abnormal returns. The test statistic is distributed as a Student t statistic with $T-2$ degree of freedom.

$$W_{iL} = \frac{1}{\sqrt{L}} \sum_{t=1}^{T} \frac{\hat{u}_{it}}{s_i \sqrt{C_{it}}} \sim t(T-2) \qquad (4)$$

Where L = the number of day, which abnormal return is cumulated in the test period.

L ranges from 1 to 61 days during the test period, depending on the event window.

As showed in the formula (3) and (4), the difference between V_{it} and W_{iL} is that the test statistics of the residuals are calculated for a single day and the event window during the test period, respectively. Thus, the abnormal return and the cumulative abnormal return can be performed to test the significance level.

(5) Compute the test statistic (Z_{vt}) for the standardised abnormal returns across securities on day t. For large N, Z_{vt} is distributed approximately unit normal.

$$Z_{vt} = \frac{\sum_{i=1}^{N} V_{it}}{\left[\sum_{i=1}^{N} \frac{T_i - 2}{T_i - 4}\right]^{1/2}} \sim N(0,1) \qquad (5)$$

(6) Compute the test statistic (Z_{WL}) for the standardised cumulative abnormal return for the event window. For large N, the test statistic is distributed approximately unit normal.

$$Z_{WL} = \frac{\sum_{i=1}^{N} W_{il}}{\left[\sum_{i=1}^{N} \frac{T_i - 2}{T_i - 4}\right]^{1/2}} \sim N(0,1) \qquad (6)$$

In sum, three parametric statistics are applied in this thesis to test the level of significance, including the cross-sectional $t-statistic$, time-series $t-statistic$ and Patell Standardised Residual (PSR) test, respectively. These three test procedures are based on the assumption that the sample is normally distributed.

However, if the sample violates the assumption that the sample is normally distributed, parametric statistics cannot generate powerful conclusions in testing the significance level. Brown and Warner (1980) argue that "If such an assumption is not met, then the sampling distribution of test statistics assumed for the hypothesis tests could differ from the actual distribution, and false inferences could result. If the distribution of the test statistic is misspecified, then the null hypothesis, when true, could be rejected with some frequency other than that given by the significance level of the test." (p. 217).

Thus, nonparametric statistics can be employed to test the null hypothesis for the level of significance in that the nonparametric statistic does not require that the sample is normally distributed. Hence, the nonparametric statistic yields a powerful conclusion and statistic test when the assumption of the parametric statistic is violated (Bartholdy *et al*. (2007)). Following Brown and Warner (1980), this thesis further employs two nonparametric statistics, the sign test and the Wilcoxon signed rank test, to test the significance level for the null hypothesis, H_0: the proportion of positive abnormal return is equal to that of negative abnormal return. These two nonparametric statistics are discussed below.

5.5.9.4 Sign test

A common nonparametric statistic related to market based research is the sign test. Corrado and Zivney (1992) argue that the sign test statistic does not require a symmetrical distribution of the mean abnormal return. Zivney and Thompson (1989) suggest that a properly specified sign test may provide a more powerful test for abnormal security price performance than the $t-test$ in event studies.

Brown and Warner (1980) argue that "In the sign test for a given sample, the null hypothesis is that the proportion of sample securities having positive measures of abnormal performance (e.g., positive residuals) is equal to 0.5; the alternative hypothesis (for any particular level of abnormal return performance) is that the proportion of sample securities having positive performance measures is greater than 0.5." (p. 218). Thus, the sign test provides additional insights to test the significance level. Following Brown and Warner (1980), the sign test is performed as follows:

H_0: The proportion of sample securities having positive abnormal return is equal to 0.5 ($p = 0.5$)

$$Z = \frac{|P - 0.5| - 1/2\, N}{\sqrt{(0.5(0.5)/N}}$$

Where P is the proportion of the abnormal return on day t with positive sign

N denotes the number of securities

For the sign test, the Z test statistic should be distributed unit normal in large samples, following the standard normal distribution.

5.5.9.5 Wilcoxon signed rank test

The Wilcoxon signed rank test has been performed in prior empirical studies (Brown and Warner (1980); Bradley (1988); Becher (2000); Mulherin and Boone (2000); Becher and Campbell (2005); Ismail and Davidson (2005)). Becher (2000) argues that the Wilcoxon signed rank test relaxes the assumption of normality, but assumes a symmetric distribution. Brown and Warner (1980) also argue that "In the Wilcoxon test, both the sign and the magnitude of the abnormal performance are taken into account in computing the

test statistic." (p. 218).

To perform the Wilcoxon signed rank test, the null hypothesis is specified that the number of positive mean abnormal return is equal to the number of negative mean abnormal return. For relatively large sample size, the $Z-statistic$ is approximately normally distributed. Accordingly, the Wilcoxon signed rank test can be conducted as follows:

H_0: The populations of positive mean abnormal return and negative mean abnormal return are identical ($u_T = 0$).

$$Z = \frac{T - u_T}{\sigma_T}$$

$$\sigma_T = \sqrt{\frac{n(n+1)(2n+1)}{6}}$$

Where T denotes the sum of the signed rank values.

σ_T is the standard deviation

n indicates the number of positive and negative mean abnormal return in the sample

Similar to the sign test, the Z test statistics is approximately normal for large samples, following the standard normal distribution.

In sum, the assumption of normal distribution for the parametric statistic may be violated. When the abnormal return is not normally distributed, the nonparametric statistic could generate more powerful conclusions in testing the significance level relative to the parametric statistic. Thus, this thesis also applies the nonparametric statistic in terms of the

sign test and the Wilcoxon signed rank test to test the level of significance. While employing the parametric and nonparametric statistic to examine the level of significance for the abnormal return, the results are not influenced by any particular statistic test. Then, the results can be robust to conclude the announcement returns based on the statistical test for the significance level.

5.6 Cross-sectional regression analysis

As discussed above, the event study method is utilised to analyse the impact of shareholder wealth effects around bank merger and acquisition announcements. In addition, this thesis further explores whether investor protection and bank regulation can be important determinants to explain shareholder wealth in bank mergers. Thus, this thesis provides cross-sectional ordinary least square (OLS) regression analyses to explore the relationship between the abnormal return and investor protection and bank regulation.

However, as discussed in chapter 2, deal characteristics and firm specific characteristics have been demonstrated to have an influence on the abnormal return. This thesis also controls for deal characteristics and firm specific characteristics in the cross-sectional regression analyses in order to accurately explain the impact of investor protection and bank regulation on the shareholder wealth in bank mergers. The variables include cross-border dummy, cash dummy, the relative size of the target to bidder, performance (ROA), the growth potential (market to book ratio), the capital ratio and firm size. Furthermore, due to the focus on country level corporate governance mechanisms in terms of investor protection and bank regulation in a country to explain shareholder wealth, I also control for the country level specific characteristics, the competitiveness of the banking market and the size of the banking market, in the regression analyses. It can be expected that the cross-sectional regression analyses can explain the relationship between the abnormal return and investor protection and bank regulation more precisely when controlling for these characteristics.

However, one concern to perform the cross-sectional regression analysis is whether the explanatory variables are highly correlated, especially for the variables of investor protection and bank regulation in a country. If the explanatory variables in the multiple regression analysis are highly correlated, problems of multicollinearity may occur. Thus, the coefficients generated from the regression analysis can be biased. To reduce this problem, the key explanatory variables related to investor protection and bank regulation are analysed separately in the cross-sectional regression analysis using different model specification. As will be indicated in the empirical section (chapters 6, 7 and 8), multicollinearity is not a problem in the cross-sectional regression analysis.

To distinguish the wealth effects of bank mergers for the firm, the cross-sectional regression analyses are separated in terms of targets, bidders and combined firms, respectively. The separation of the regression analysis enables this thesis to explain shareholder wealth effects of the firm clearly. Thus, the analysis of the cross-sectional regression analysis is presented in the empirical section (chapter 6, 7 and 8).

5.7 Conclusion

The aim of this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements during the 1995-2005 period. This chapter focuses on discussing the sample selection and methodology in this thesis.

As discussed in the section on sample selection, a number of sample criteria have been imposed in order to construct the final sample for this analysis. Eventually, the final sample consists of 508 targets, 1424 bidders and 388 combined firms. The sample contains 36 and 39 countries for targets and bidders, respectively.

To address the impact on the shareholder wealth in bank mergers, event study methodology is applied in this thesis with three event study models in terms of the market model, the mean adjusted returns model and the market adjusted returns model to calculate

the abnormal return. As each model has its own strengths and weaknesses, the results generated from different models could provide a robustness check and show additional insights to this analysis.

As mentioned previously, the market model parameters may be biased as a result of the problem of nonsynchronous trading. To take into account the problem of thin trading, this thesis employs three methods to estimate unbiased beta estimates, including Scholes and Williams' (1977) method, Dimson's (1979) method and Fowler and Rorke's (1983) method. When applying these three methods to cope with the problem of nonsynchronous trading, unbiased model parameters for the market model can be obtained. Using three different thin trading adjustment approaches, this can also reinforce the discussion of the results for this analysis and identify whether the problem of thin trading is an issue in this study.

In addition, this thesis applies the parametric statistic and nonparametric statistic to test the level of significance. The parametric statistic assumes that the abnormal return is normally distributed. As the assumption may be violated, the nonparametric statistic can be used to test the significance level. The nonparametric statistics can also lend support to the test of the significance level from the parametric statistics. This thesis can draw a strong statistical conclusion to interpret the results in this analysis. As a result, several test statistics are employed in the current study to test the significance level, including the cross-sectional $t-statistic$, time-series $t-statistic$, PSR test, sign test and Wilcoxon signed rank test.

Furthermore, this thesis performs cross-sectional regression analyses to explore whether investor protection and bank regulation can be important determinants to explain shareholder wealth in bank mergers. In the regression analysis, this thesis also controls for deal characteristics, firm specific characteristics and the country level specific characteristics in cross-sectional regression analyses. It can be expected that the interpretation of the results with respect to the relationship between the abnormal returns

and investor protection and bank regulation could be more precise. Thus, the analysis of the abnormal returns and OLS regression analysis is presented in the next three chapters.

Chapter 6 The Empirical Results for Target Firms

6.1 Introduction

The aim of this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. As has been discussed in chapter 2, the existing empirical studies have reported positive announcement returns to targets in bank mergers. However, these prior empirical studies report a wide variation of abnormal returns to targets, depending on the market, the investigation period and the event window. This thesis uses a large international sample of bank mergers to carry out this research. The empirical findings in this thesis can also make a comparison to prior empirical studies. Thus, this chapter presents the empirical findings in the current study based on 508 target firms.

As discussed in chapter 5 on the methodology, the measure of the level of abnormal returns may be influenced by the model parameters, the problem of thin trading and the confounding events.[65] This chapter discusses these issues on the influence of target announcement returns first, following by presenting the empirical findings for target firms. As target announcement returns may differ with respect to the market and activity focusing or diversifying acquisitions, target announcement returns are further analysed taking into account these aspects.

Furthermore, the cross-sectional regression analysis is undertaken in an attempt to explain the variation of target announcement returns. However, the regression analysis focuses on determining as to whether investor protection and bank regulation can be important determinants to explain target cumulative abnormal returns in bank mergers.

This chapter is organised as follows. Section 6.2 discusses the model parameters. Section 6.3 presents target announcement returns taking into account the problem of thin trading. Section 6.4 discusses the issue of the confounding events. Target abnormal returns

[65] To take into account the confounding effects, the sample of targets is classified as the clean and nonclean sample. If no other corporate events are announced over a 3-day (-1,+1) event window, the sample is categorised as the clean sample; otherwise it is grouped as the nonclean sample.

and cumulative abnormal returns are discussed in section 6.5. Section 6.6 and 6.7 present the empirical findings with respect to the market and whether the acquisitions are activity diversifying or focusing deals. The cross-sectional regression analyses are presented in section 6.8. Section 6.9 also provides the cross-sectional regression analyses with respect to the influence of the difference of investor protection and bank regulation between the bidder and target countries on the target announcements returns. Conclusion is provided in section 6.10.

6.2 The model parameters

As has discussed in chapter 5, the level of model parameters can be expected to influence the calculation of target abnormal returns. Thus, this section presents descriptive statistics of the market model parameters for target firms.

Table 6.1 The model parameters

	Mean	Maximum	Minimum	SD	Negative	Positive	Sample
Alpha	0.0003	0.0147	-0.0099	0.0014	0.36	0.64	508
Beta	0.4891	2.5524	-2.0036	0.4898	0.11	0.89	508

As table 6.1 shows, the mean value of beta for targets is 0.4891. This figure is much lower than 1 when comparing to the market adjusted returns (Mkt-Adj) model, assuming that beta is 1 and alpha is 0. A possible reason is that the model parameters may be influenced by the problem of thin trading. Thus, the problem of thin trading will be discussed in section 6.3.

When looking at the maximum beta value, a significant positive value of 2.5524 could result in lower abnormal returns to targets. Targets with positive beta value indicate that target's prior performance is consistent with market performance. On the contrary, a significant negative value at -2.0036 for the minimum of beta value indicates that target's prior performance has a reverse association with the market performance, suggesting that

targets with negative betas appear to have poor prior performance relative to the market.

Table 6.1 also shows that the percentage of positive beta amounts to 89% relative to 11% of negative beta. The large proportion of positive beta suggests that target prior performance is generally consistent with the market performance although beta is more or less volatile. Furthermore, table 6.1 shows that the mean value of alpha is 0.0003, which is marginally higher than 0. This suggests that the level of target abnormal returns is mainly affected by the magnitude of the beta. The percentage of positive and negative value of alpha is 64% and 36%, respectively.

6.3 The problem of thin trading

As the market model (MM) parameters may be biased due to the presence of the problem of thin trading, this thesis applies Scholes and Williams' (SW), Dimson's (DM) and Fowler and Rorke's (FR) approaches to adjust the model parameters. These models have discussed in section 5.5.7. This section discusses the model parameters after taking into account the problem of thin trading. Target abnormal returns adjusted for the thin trading adjustment approaches are also presented in this section in order to identify whether different thin trading adjustment approaches can result in differences of target announcement returns.

Table 6.2 presents the model parameters with respect to the thin trading adjustment approaches. As table 6.2 shows, the mean value of beta for the thin trading adjustment approaches is higher than that of the MM model. This suggests that the lead and lag structure of thin trading adjustment approaches does generate different levels of beta, implying that the analysis of target abnormal returns can be influenced by the problem of thin trading.

Among the thin trading adjustment approaches, the DM approach obtains the highest mean value of beta at 0.6044, following by the FR and SW approach at 0.5917 and 0.5569, respectively. These beta coefficients are still low and below 1. However, it should be

acknowledged that thin trading adjusted betas maybe not all that different from those from the MM model.

Table 6.2 The market model parameters adjusted for thin trading

	Beta				Alpha			
	MM	SW	DM	FR	MM	SW	DM	FR
Mean	0.4891	0.5569	0.6044	0.5917	0.0003	0.0002	0.0002	0.0065
Maximum	2.5524	3.0363	3.4416	3.0271	0.0147	0.0031	0.0035	2.1403
Minimum	-0.0036	-1.3367	-3.4878	-2.3807	-0.0099	-0.0077	-0.0080	-0.2215
SD	0.4898	0.5371	0.6050	0.6058	0.0014	0.0012	0.0013	0.1103
Negative	0.11	0.11	0.13	0.14	0.36	0.38	0.38	0.39
Positive	0.89	0.89	0.87	0.86	0.64	0.62	0.62	0.61
Sample	508	508	508	508	508	508	508	508

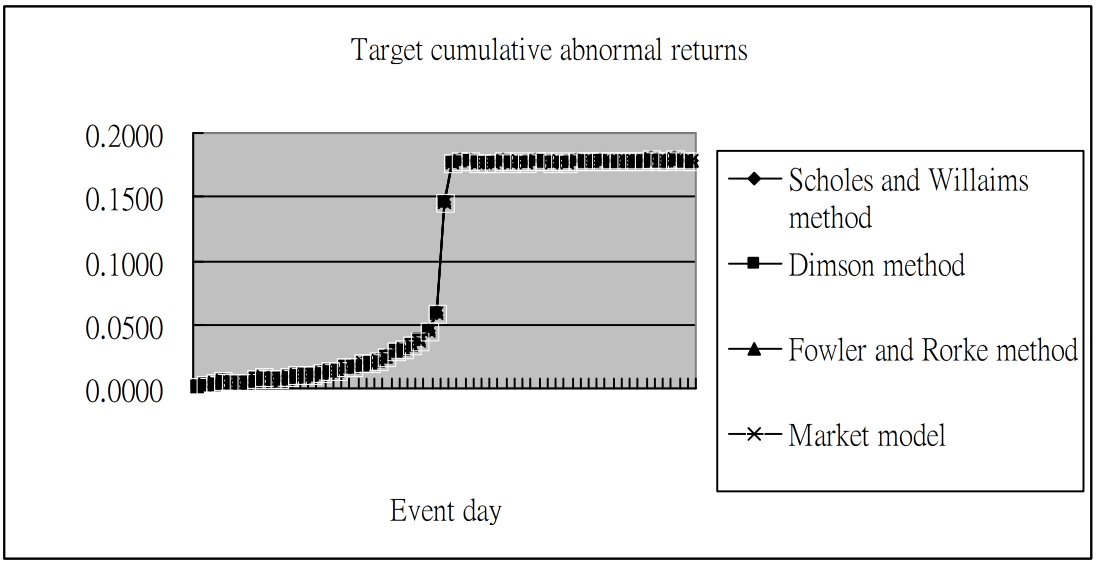
When looking at the maximum and minimum of beta value, the results show that the DM approach obtains the highest value at 3.4416 and the lowest value at -3.4878. The spread of beta estimates indicates that target abnormal returns adjusted for the DM approach can significantly vary. However, the percentage of positive (negative) beta does not show any difference between the thin trading adjustment approaches and the MM model, at around 89% (11%).

Furthermore, table 6.2 also shows that the mean alpha value for the FR approach is, at 0.0065, higher than that for the SW and DM approach as well as the MM model. This may be attributable to the difference of thin trading adjustment approaches as the FR approach also takes into the first and second order serial correlation coefficients in their model. As can be seen from table 6.2, the standard deviation of alpha value from the FR approach is significantly higher than that from the SW and DM approach. The figure suggests a wide variation of alpha value from the FR approach. However, the mean value of alpha for the SW and DM approach does not show any significant difference compared to the MM model.

When looking at the maximum and minimum of mean value of alpha, the results show that the FR approach similarly obtains the highest and lowest value of alpha at 2.1403 and -0.2215, respectively. A positive (negative) value of alpha also indicates that targets obtain lower (higher) abnormal returns. The percentage of positive (negative) value of alpha for the thin trading adjustment approaches is in general consistent with that of the MM model, at around 62% (38%). Overall, it can be found that thin trading adjustment approaches seem to produce better coefficients than the MM model. This also allows the current study to test the sensitivity of the results using different thin trading adjustment approaches.

To better uncover the impact of thin trading adjustment approaches on the influence of target announcement returns, figure 6.1 shows the drift of target cumulative abnormal returns during the event period. As can be seen in figure 6.1, the graph shows that the movement of target cumulative abnormal returns calculated from the thin trading adjustment approaches is in general the same and also consistent with that from the MM model.[66] There may still be thin trading problem, but the various models trying to control for thin trading have overall limited impact on the mean abnormal returns.

Figure 6.1 Target cumulative abnormal returns from the thin trading adjustment approaches



[66] Target abnormal returns and cumulative abnormal returns measured from the MM model will be presented in section 6.5.

In addition, as can be seen from figure 6.1, the impact of the level of target abnormal returns mainly centres on the announcement date, day 0. Thus, I further present target abnormal returns on day 0 for the thin trading adjustment approaches in order to provide a direct evidence to identify whether the issue of thin trading is really a problem to influence target cumulative abnormal returns in this thesis. As table 6.3 shows, targets in general earn around 8.74% abnormal returns on day 0 with respect to the thin trading adjustment approaches, all statistically significant at the 0.01 level. The results indicate that the use of different thin trading adjustment approaches does not show any difference to target abnormal returns.

Furthermore, as will be discussed in section 6.5, targets earn 8.73% abnormal returns on day 0 for the MM model. The results similarly do not show any difference between the thin trading adjustment approaches and the MM model, confirming that the analysis of target announcement returns does not suffer from the problem of thin trading. As thin trading does not appear to be a major issue, the analysis of target abnormal returns will then focus on the MM model.

Table 6.3 Target abnormal returns on the announcement date from the thin trading adjustment approaches

	Mean	p-value 1	Sign test	Wilcoxon test
Scholes-Williams method	0.0873	0.0000	0.0000	0.0000
Dimson method	0.0874	0.0000	0.0000	0.0000
Fowler and Rorke method	0.0874	0.0000	0.0000	0.0000
MM model	0.0873	0.0000	0.0000	0.0000

Day 0: abnormal returns

p-value 1: t test with assuming cross-sectional independence

Wilcoxon test: Wilcoxon signed rank test

6.4 Confounding events

As confounding events[67] can be expected to have an influence on target cumulative abnormal returns, this section further discusses target cumulative abnormal returns by controlling for the confounding events. The discussion of the confounding events is based on a 3-day (-1,+1) event window. The confounding events are identified from the database of PI, SEC Filings and Financial Times as has discussed in chapter 5. Target announcement returns are analysed in terms of the clean sample and nonclean sample in order to reveal whether the confounding events are issues to be concerned in this analysis.[68]

As table 6.4 shows, targets earn 8.98% and 4.73% abnormal returns on day 0 for the clean and nonclean sample, respectively, both statistically significant at the 0.01 and 0.1 level. A significant difference of target abnormal returns between the clean and nonclean sample would suggest that the analysis of target announcement returns can be affected by the confounding events. However, the difference is not statistically significant, as the p-value is 0.122. It is not possible to draw a statistical conclusion, claiming that the confounding events are important to be considered in the analysis of target announcement returns. However, care should be exercised to claim this in that quite large difference of target abnormal returns between the clean and nonclean sample is found, indicating that target abnormal returns are at least qualitatively different.

While comparing to the results for the clean sample and the full sample[69], targets earn 8.98% and 8.73% abnormal returns on day 0, respectively. The difference between the clean sample and the full sample is not statistically significant, p-value is 0.779. Due to a small difference of the sample, the comparison of target abnormal returns between the clean sample and the full sample could not generate any statistical significant results.

[67] Confounding events mean that target firms announce other corporate events on day -1, 0, +1, for example, earning or dividend announcements, the release of the annual report, etc.

[68] Clean sample means that targets do not announce other confounding events during a 3-day (-1,+1) event window. If targets announce other confounding events over a 3-day (-1,+1) event window, the sample is classified as the nonclean sample.

[69] As will be discussed in section 6.5, targets with the full sample earn 8.73% abnormal returns on day 0 and 13.25% cumulative abnormal returns over a 3-day (-1,+1) event window calculated from the market (MM) model.

Table 6.4 The influence of the confounding events on target cumulative abnormal returns

MM model						
	N	Mean	p-value 1	SD	Minimum	Maximum
Day 0 clean sample	478	8.98%	0.0000	0.1404	-0.3933	1.0661
(-1,+1) clean sample	478	13.33%	0.0000	0.1628	-0.6198	1.2209
Day 0 nonclean sample	30	4.73%	0.0800	0.1425	-0.2797	0.5773
(-1,+1) nonclean sample	30	11.99%	0.0010	0.1773	-0.308	0.5688

p-value 1: t test with assuming cross-sectional independence

Looking at a 3-day (-1,+1) event window, targets obtain 13.33% and 11.99% cumulative abnormal returns for the clean and nonclean sample, respectively, both statistically significant at the 0.01 level. However, the difference between the clean sample and nonclean sample is not statistically significant, p-value is 0.689. This indicates that there is no significant difference of target cumulative abnormal returns over a 3-day (-1,+1) event window between the clean sample and nonclean sample.

While comparing to the results for the clean sample and the full sample, targets earn 13.33% and 13.25% cumulative abnormal returns over a 3-day (-1,+1) event window, respectively, both statistically significant at the 0.01 level. However, the difference between the clean sample and the full sample is not statistically significant, p-value is 0.939. As a result, I cannot conclude that there is any difference between the clean sample and the full sample, suggesting that the analysis of target cumulative abnormal returns is not statistically and significantly influenced by the confounding events. However, it should be acknowledged that the comparison between the clean sample and the full sample may not be meaningful due to a small difference of the sample.

While the results based on the announcement date cannot draw a statistical conclusion and no significant difference between the clean sample and the full sample can be found, these findings suggest that the issue of the confounding effects is not a problem to be concerned with. So, the analysis of target abnormal returns and cumulative abnormal

returns is based on the full 508 sample in the following section.[70]

Overall, table 6.4 shows that the clean and nonclean sample is 478 and 30, respectively. The figure also supports the argument that mergers and acquisitions are major corporate events. The announcement of other corporate events may tend to avoid the announcement of mergers and acquisitions in order to reduce the impact of share price.

6.5 Target abnormal returns and cumulative abnormal returns

As has been discussed in chapter 2, prior empirical studies report positive announcement returns to targets. While using a large international sample of bank mergers, this section presents the empirical findings to targets. To understand target shareholder wealth of bank mergers, I analyse target daily abnormal returns over a 61-day period first, from day -30 to day +30, to ascertain whether there are significant abnormal returns either prior to or after the day of the bid announcement. Then, I further examine target cumulative abnormal returns over a certain event window in order to capture the change of target announcement returns within a certain period.

Table 6.5 shows target daily abnormal returns calculated from the market (MM) model and the market adjusted returns (Mkt-Adj) model, respectively.[71] As can be seen in table 6.5, target daily abnormal returns vary depending on the event day. However, the majority of target daily abnormal returns during the event period are positive with a significant impact of target abnormal returns on day 0. In addition, the parametric and nonparametric statistics as discussed in section 5.5.9 are employed to test the significant level. The results of the significant level are generally the same around the announcement date although the significant level can vary depending on the event day.

[70] Due to similar results, target cumulative abnormal returns for the market adjusted returns (Mkt-Adj) model and the mean adjusted returns (Mean-Adj) model are not repeatedly discussed.

[71] The results from the mean adjusted returns (Mean-Adj) model are the same as those from the market (MM) model and the market adjusted returns (Mkt-Adj) model. The results are not repeatedly discussed.

Table 6.5 Target daily abnormal returns

	Market model						Market adjusted return model				
day	Mean	p-value1	p-value2	p-value3	Sign	Wilcoxon	Mean	p-value1	p-value2	Sign	Wilcoxon
-30	0.0019	0.2425	0.2425	0.2846	0.1205	0.5030	0.0020	0.2279	0.0768	0.0370	0.7010
-29	0.0017	0.0900	0.0900	0.1910	0.5641	0.6500	0.0015	0.1391	0.1665	1.0000	0.4830
-28	0.0004	0.3666	0.3666	0.3899	0.0237	0.5070	0.0008	0.3154	0.3180	0.3075	0.9050
-27	0.0024	0.0211	0.0211	0.1328	0.6897	0.1310	0.0032	0.0028	0.0065	0.0370	0.0030
-26	-0.0016	0.2225	0.2225	0.1326	0.0000	0.0020	-0.0018	0.1978	0.1105	0.0001	0.0060
-25	-0.0002	0.3906	0.3906	0.3887	0.0114	0.3940	-0.0001	0.3964	0.3968	0.4507	0.8390
-24	0.0005	0.3488	0.3488	0.3292	0.0564	0.9100	0.0002	0.3949	0.3949	0.1007	0.7090
-23	0.0025	0.0171	0.0171	0.0324	1.0000	0.0940	0.0025	0.0217	0.0316	0.1205	0.0310
-22	0.0009	0.2672	0.2672	0.1926	0.1432	0.6740	0.0009	0.2839	0.2916	0.2309	0.8620
-21	-0.0010	0.2068	0.2068	0.2049	0.0006	0.0490	-0.0011	0.2160	0.2567	0.0114	0.1840
-20	0.0005	0.3475	0.3475	0.0019	0.5057	0.3890	0.0006	0.3420	0.3509	0.3992	0.4750
-19	0.0009	0.2968	0.2968	0.2594	0.9646	0.5330	0.0016	0.1707	0.1522	0.3515	0.0570
-18	0.0012	0.1848	0.1848	0.2651	0.5641	0.7210	0.0011	0.2010	0.2368	0.1982	0.8040
-17	0.0002	0.3950	0.3950	0.0000	0.0836	0.2780	0.0008	0.3523	0.3106	0.5057	0.9900
-16	0.0006	0.3200	0.3200	0.0000	0.5641	0.9680	0.0014	0.1320	0.1754	0.9646	0.2750
-15	0.0020	0.0993	0.0993	0.0482	0.7561	0.3680	0.0018	0.1369	0.1100	0.6570	0.5180
-14	0.0009	0.3272	0.3272	0.0568	0.7561	0.7310	0.0014	0.2393	0.1829	0.7224	0.2250
-13	0.0005	0.3484	0.3484	0.3484	0.0459	0.3960	0.0009	0.2711	0.2840	0.2309	0.8790
-12	0.0025	0.0353	0.0353	0.0050	0.3515	0.3330	0.0020	0.0957	0.0794	0.1432	0.5580
-11	0.0008	0.2916	0.2916	0.3959	0.4507	0.9680	0.0004	0.3761	0.3779	0.1553	0.8310
-10	0.0018	0.1090	0.1090	0.1390	0.4507	0.5780	0.0016	0.1458	0.1394	0.3992	0.5530
-9	0.0004	0.3828	0.3828	0.3657	0.5641	0.8310	0.0003	0.3878	0.3843	0.3515	0.3820
-8	0.0025	0.0459	0.0459	0.0517	0.9646	0.2370	0.0023	0.0659	0.0504	0.8941	0.2020
-7	0.0031	0.0072	0.0072	0.0039	1.0000	0.0710	0.0033	0.0057	0.0054	0.8941	0.0430
-6	0.0042	0.0024	0.0024	0.0000	0.8244	0.0410	0.0053	0.0002	0.0000	0.0297	0.0010
-5	0.0011	0.2121	0.2121	0.2778	0.0370	0.8790	0.0009	0.2734	0.2876	0.3075	0.9000
-4	0.0033	0.0201	0.0201	0.0024	0.8244	0.1050	0.0035	0.0149	0.0029	0.2673	0.0220
-3	0.0038	0.0230	0.0230	0.0001	0.5057	0.1060	0.0043	0.0108	0.0003	0.7561	0.0220
-2	0.0070	0.0001	0.0001	0.0000	0.1432	0.0000	0.0073	0.0001	0.0000	0.0045	0.0000
-1	0.0137	0.0000	0.0000	0.0000	0.0000	0.0000	0.0141	0.0000	0.0000	0.0001	0.0000
0	0.0873	0.0000	0.0000	0.0000	0.0000	0.0000	0.0875	0.0000	0.0000	0.0000	0.0000
1	0.0315	0.0000	0.0000	0.0000	0.1982	0.0000	0.0316	0.0000	0.0000	0.1432	0.0000

2	0.0015	0.1405	0.1405	0.3076	0.1690	0.8860	0.0015	0.1375	0.1534	0.8941	0.2830
3	-0.0003	0.3787	0.3787	0.3796	0.3075	0.9560	-0.0002	0.3908	0.3937	0.2865	0.7600
4	-0.0019	0.0299	0.0299	0.0000	0.0297	0.0720	-0.0021	0.0230	0.0745	0.0039	0.0210
5	-0.0002	0.3787	0.3787	0.0000	0.5057	0.9490	-0.0002	0.3884	0.3937	0.1690	0.9890
6	0.0003	0.3716	0.3716	0.3973	0.0068	0.2160	0.0002	0.3855	0.3920	0.3992	0.9030
7	0.0014	0.0890	0.0890	0.2058	0.0114	0.6780	0.0011	0.1601	0.2371	0.1205	0.6520
8	-0.0014	0.0540	0.0540	0.0301	0.0068	0.0440	-0.0010	0.1634	0.2627	0.0068	0.2380
9	0.0008	0.1989	0.1989	0.2161	0.8941	0.2010	0.0010	0.1676	0.2748	0.3075	0.0330
10	-0.0001	0.3958	0.3958	0.0000	0.0564	0.0140	0.0000	0.3987	0.3987	0.1007	0.0990
11	0.0012	0.1248	0.1248	0.0000	0.8244	0.4380	0.0012	0.1421	0.2249	0.6255	0.4920
12	-0.0005	0.2869	0.2869	0.1976	0.1982	0.1520	-0.0006	0.2815	0.3438	0.0689	0.1160
13	-0.0006	0.2914	0.2914	0.2867	0.0459	0.4330	-0.0003	0.3653	0.3830	0.2309	0.9410
14	0.0001	0.3952	0.3952	0.0328	0.6897	0.9120	-0.0000	0.3982	0.3986	0.8941	0.8210
15	-0.0005	0.3042	0.3042	0.3969	0.0370	0.2800	0.0002	0.3818	0.3902	0.6897	0.5680
16	0.0016	0.0173	0.0173	0.3375	0.6897	0.1900	0.0018	0.0114	0.1120	0.1982	0.0580
17	-0.0004	0.3281	0.3281	0.2089	0.0000	0.0140	-0.0003	0.3670	0.3858	0.0089	0.3010
18	-0.0002	0.3804	0.3804	0.3860	0.1690	0.6230	0.0006	0.2750	0.3424	0.9646	0.1580
19	0.0007	0.2530	0.2530	0.0700	0.5057	0.4650	0.0013	0.0984	0.2083	0.6897	0.0500
20	-0.0009	0.1585	0.1585	0.2966	0.0002	0.0060	-0.0007	0.2783	0.3349	0.0129	0.1100
21	0.0004	0.3429	0.3429	0.3965	0.1205	0.9680	0.0012	0.0971	0.2207	0.8941	0.0300
22	-0.0001	0.3950	0.3950	0.0020	0.3075	0.9470	0.0006	0.3002	0.3402	0.7561	0.4540
23	0.0000	0.3986	0.3986	0.3897	0.1205	0.5760	0.0001	0.3960	0.3966	0.1007	0.7240
24	0.0003	0.3722	0.3722	0.3927	0.1690	0.8320	0.0001	0.3967	0.3977	0.2309	0.9880
25	0.0014	0.1003	0.1003	0.2681	0.6897	0.7830	0.0012	0.1611	0.2299	0.4507	0.7920
26	-0.0010	0.1176	0.1176	0.1818	0.0012	0.0070	-0.0009	0.1903	0.2986	0.1690	0.2720
27	0.0003	0.3742	0.3742	0.3977	0.0564	0.5690	0.0001	0.3943	0.3962	0.0370	0.8910
28	0.0011	0.1531	0.1531	0.2819	0.2309	0.5840	0.0009	0.2211	0.2858	0.8941	0.6330
29	-0.0010	0.1432	0.1432	0.0000	0.0016	0.0110	-0.0009	0.2039	0.2885	0.0016	0.0510
30	-0.0009	0.1827	0.1827	0.2365	0.0689	0.3350	-0.0006	0.2931	0.3478	0.7561	0.9160

p-value 1: t test with assuming cross-sectional independence

p-value 2: t test with assuming cross-sectional dependence

p-value 3: PSR test

Sign: Sign test

Wilcoxon: Wilcoxon signed rank test

The results show that targets earn 8.73% and 8.75% abnormal returns on day 0 from the MM and Mkt-Adj model, respectively, both statistically significant at the 0.01 level.[72] Applying other testing procedures, the results are all the same, statistically significant at the 0.01 level. This also allows the current study to confirm that there is a statistical significant impact of target abnormal returns on the announcement date. A significant impact of target abnormal returns on day 0 lends support to the market efficient hypothesis, implying that the market responds the information efficiently. However, it should be necessary to exercise care to claim this as there is also a significant impact of target announcement returns on day -1 and +1.

In addition, significant positive abnormal returns with statistically significant at the 0.01 level also allow this analysis to reject the null hypothesis, concluding that there are positive abnormal returns to targets around bank merger and acquisition announcements. Positive abnormal returns to targets also indicate that bank mergers create value to target shareholders.

When looking at the pre-announcement period, targets, for example, earn 0.33% abnormal returns on day -4, raising to 1.37% abnormal returns on day -1, all statistically significant at the 0.01 level. An increase of target abnormal returns suggests the existence of the information leakage during the pre-announcement period.

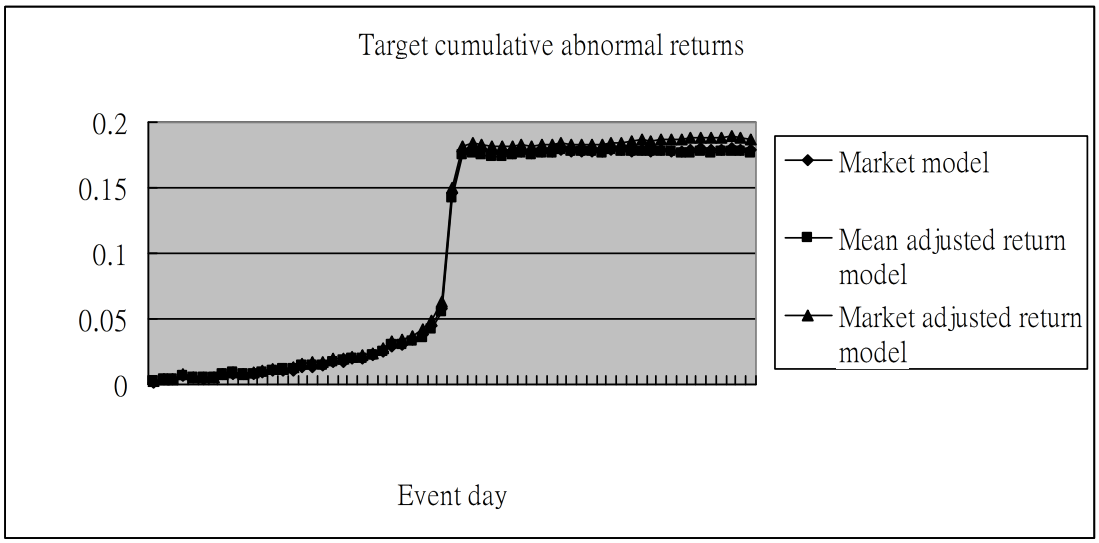
Taking into account the post-announcement period, the results show that targets, for example, earn 3.15% abnormal returns on day +1, statistically significant at the 0.01 level. Positive abnormal returns for targets on day +1 may attribute to the presence of information lag. A possible explanation is that the market may additionally evaluate the transactions that may trigger the market to further respond the information of bank mergers and acquisitions.

Furthermore, this thesis also presents a figure to illustrate the movement of target

[72] The discussion of the significance level is based on p-value 1, assuming cross-sectional independence.

announcement returns during the event period. As figure 6.2 shows, there is an upward trend prior to the announcement date. The figure shows approximately 5% cumulative abnormal returns over 30 days leading up to the bid announcement date. This clearly indicates the existence of the information leakage before the transactions.

Figure 6.2 The movement of target cumulative abnormal returns during the test period



With a significant impact of the abnormal returns on day 0 and +1, target cumulative abnormal returns are fairly stable during the post-event period. The results suggest that the impact of target announcement returns mainly derive from the announcement date and the pre-announcement period. The figure shows that the level of total target cumulative abnormal returns is approximately 18% over the 61-day period.

To better perceive the change of target abnormal returns within a certain period, this thesis also reports target cumulative abnormal returns over different event windows. As table 6.6 shows, targets earn cumulative abnormal returns of 14.67% over a 6-day (-4,+1) event window, statistically significant at the 0.01 level.

While looking at a 3-day (-1,+1) event window, the results show that targets obtain 13.25% cumulative abnormal returns. Extending to a longer 61-day (-30,+30) event

window, targets earn 17.81% cumulative abnormal returns, statistically significant at the 0.01 level. Hence, it is apparent that the impact of target shareholder wealth mainly centres on 3-day (-1,+1) event window.

Table 6.6 Target cumulative abnormal returns over various event windows

	Market model					Market adjusted return model			
	Mean	p-value1	p-value3	Sign test	Wilcoxon test	Mean	p-value1	Sign test	Wilcoxon test
(-4,1)	0.1467	0.0000	0.0000	0.0000	0.0000	0.1484	0.0000	0.0000	0.0000
(-1,1)	0.1325	0.0000	0.0000	0.0000	0.0000	0.1332	0.0000	0.0000	0.0000
(-30,30)	0.1781	0.0000	0.0000	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000
(0)	0.0873	0.0000	0.0000	0.0000	0.0000	0.0875	0.0000	0.0000	0.0000
(-1,0)	0.1010	0.0000	0.0000	0.0000	0.0000	0.1016	0.0000	0.0000	0.0000
(-30,-1)	0.0586	0.0000	0.0000	0.0000	0.0000	0.0631	0.0000	0.0000	0.0000
(0,1)	0.1188	0.0000	0.0000	0.0000	0.0000	0.1191	0.0000	0.0000	0.0000
(1,30)	0.0322	0.0000	0.0000	0.0030	0.0000	0.0372	0.0000	0.0030	0.0000

p-value 1: t-test with assuming cross-sectional independence

p-value 3: PSR test

Wilcoxon test: Wilcoxon signed rank test

As has mentioned previously, cross-sectional analysis is undertaken to explain the variation of target announcement returns. While target announcement returns center on a 3-day (-1,+1) event window, this thesis applies 3-day (-1,+1) target cumulative abnormal returns as the dependent variable in the regression analysis. The regression analysis focuses on the country level corporate governance mechanisms in terms of investor protection and bank regulation to explain target announcement returns, as will be discussed in section 6.8.[73]

Overall, the results show that targets earn positive announcement returns around bank merger and acquisition announcements, indicating that bank mergers create value to target

[73] The results do not show any significant difference when computing from the Mkt-Adj model. Similarly, the results from the Mean-Adj model are in general consistent with the MM and Mkt-Adj model. Thus, the results are not repeatedly discussed.

firms. Similarly, positive announcement returns to targets are also consistent with prior empirical studies, as has been discussed in chapter 2. On the other hand, while the results of target announcement returns from the MM, Mkt-Adj and Mean-Adj model are in general the same, the discussion of target announcement returns related to the market and activity diversifying or focusing deals is based on the MM model.

6.6 Country differences in target cumulative abnormal returns

Prior empirical studies have been reviewed in chapter 2. The prior empirical evidence has reported a variation of target cumulative abnormal returns depending on the market. It can be useful to further examine target announcement returns with respect to the market. The analysis of target announcement returns related to the market can also make a comparison to prior empirical evidence.[74]

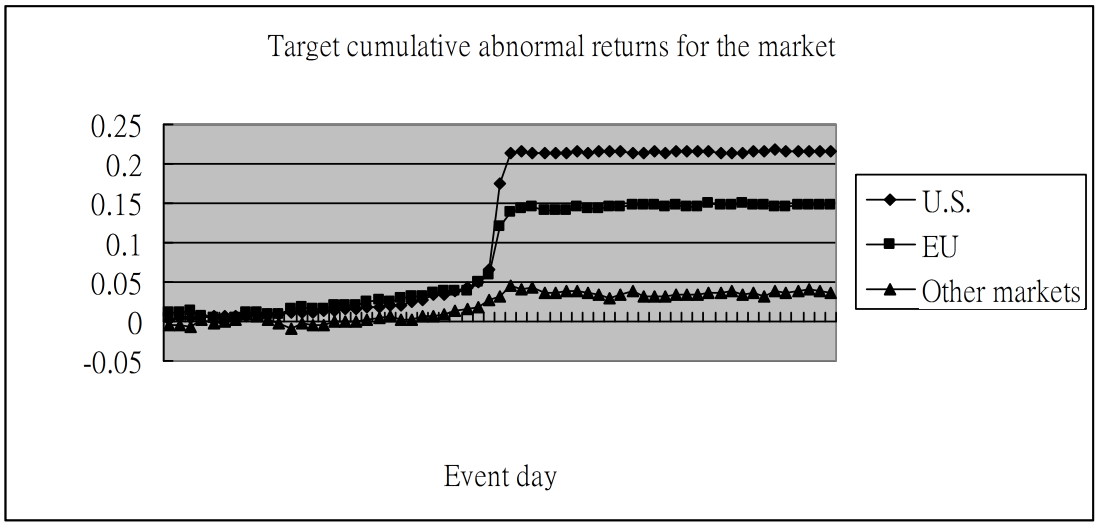
While the U.S. banking takeover market can be regarded as the most competitive banking takeover market relative to the EU market and the markets from the rest of the world[75], it can be hypothesised that U.S. targets obtain higher announcement returns than EU targets and targets from other markets as discussed in section 4.3.1.1. This section discusses target announcement returns with respect to the U.S., EU market and other markets.

Figure 6.3 shows the development of target cumulative abnormal returns from day -30 to day +30 in terms of the U.S., EU market and other markets, respectively.[76] As figure 6.3 shows, U.S. targets earn higher cumulative abnormal returns relative to EU targets and targets from other markets. The results implicate that U.S. banking takeover market is more competitive than the EU market and other markets. However, targets from other markets obtain the lowest cumulative abnormal returns around bank merger and

[74] Other markets mean the markets from outside the U.S. and EU market.
[75] Conn and Connell (1990) and Aybar and Ficici (2009) argue that U.S. targets can obtain high bid premia due to highly competitive nature of the U.S. takeover market.
[76] Figure 6.3 shows target cumulative abnormal returns measured from the MM model.

acquisition announcements, implying that banking takeover markets from other markets are less competitive relative to the U.S. and EU market.[77]

Figure 6.3 Target cumulative abnormal returns for the market



As discussed in section 6.5, the information leakage can be spotted in the analysis of target announcement returns during the pre-announcement period. Given the presence of the information leakage, figure 6.3 similarly shows that the information leakage is more significant in the U.S. and EU market compared to other markets. A possible explanation may be that the information flow could be relatively faster in the U.S. and EU market relative to other markets. However, the information leakage does not show a large difference between U.S. targets and EU targets as figure 6.3 shows.

In addition, figure 6.3 also indicates that there is a significant impact of target abnormal returns on day 0 in the U.S. and EU market compared to that from other markets. This suggests that the U.S. and EU market can also be more efficient to respond the newly released information quickly as the abnormal returns on day 0 in the U.S. and EU market are rather significant.

[77] As discussed in chapter 4, other markets in the current study also include some highly developed markets, such as Canada or Japan, etc. It should be acknowledged that it is necessary to exercise care to interpret the results.

Furthermore, this thesis presents target cumulative abnormal returns from different event windows in order to better understand the impact of target shareholder wealth over a certain period. As table 6.7 shows, targets in the U.S. market earn 11.01% abnormal returns on day 0, compared to 6.22% and 0.57% for those in the EU market and other markets, respectively. However, the results are statistically significant at the 0.01 level for the U.S. and EU market only. The difference between the markets is all statistically significant, p-value is 0.005 (U.S.-EU), 0.000 (U.S.-Others) and 0.002 (EU-Others).

These findings suggest that U.S. targets obtain the highest bid premium and are also consistent with the argument by Conn and Connell (1990) and Aybar and Ficici (2009), where U.S. targets earn high bid premia due to the highly competitive nature of the U.S. banking takeover market.

Looking at a 3-day (-1,+1) event window, targets obtain 16.47%, 8.88% and 2.57% cumulative abnormal returns in the U.S., EU market and other markets, respectively. The results are statistically significant at the 0.01 level for the U.S. and EU market only. Significant positive cumulative abnormal returns for targets are consistent with the study of U.S. bank mergers (e.g., Siems (1996); Toyne and Tripp (1998); Akhigbe *et al*. (2004)) and EU bank mergers (e.g., Cybo-Ottone and Murgia (2000); Beitel *et al*. (2004)). Similarly, positive announcement returns to targets from other markets are also consistent with prior empirical evidence from international studies, e.g., Biswas *et al*. (1997), DeLong (2003), Scholtens and de Wit (2004) and Valkanov and Kleimeier (2007).

In comparison of prior empirical studies, my results, showing 16.47% cumulative abnormal returns to targets over a 3-day (-1,+1) event window in the U.S. market, are consistent with those of U.S. studies, e.g., 14.39% of Houston and Ryngaert (1994), 5.06% of Zhang (1995), 13.04% of Siems (1996), 10.97% of Toyne and Tripp (1998), 16.70% of Becher and Campbell (2005). The results also indicate that targets earn significant announcement returns regardless of the investigation period although a variation of target

announcement returns is reported.

In addition, my results, showing 8.88% cumulative abnormal returns to targets in the EU market, are also consistent with those of EU studies, e.g., 4.65% of Rad and Beek (1999), 12.93% of Cybo-Ottone and Murgia (2000), 12.39% of Beitel *et al*. (2004), 3.24% of Campa and Hemando (2006), 3.31% of Ismail and Davidson (2007). Although my results are consistent with prior empirical studies, it can be found a wide variation of target announcement returns in EU bank mergers. A possible explanation is that the analysis of target announcement returns in EU bank mergers could be more sensitive to the sample construction and the investigation period.

While looking at other markets, my results show 2.57% cumulative abnormal returns to targets. The results are consistent with those in international studies, e.g., 6.23% of Biswas *et al*. (1997), 2.98% of Fields *et al*. (2007), 19.06% of Valkanov and Kleimeier (2007). However, it should be necessary to exercise care to make such a comparison in that these prior empirical studies in international studies also include the sample of U.S. and EU bank mergers in their study.

Overall, the results show that targets in the U.S. market earn higher announcement returns than those in EU market and those from other markets. These findings are consistent with the hypothesis set out in section 4.3.1.1, predicting that U.S. targets earn higher announcement returns than EU targets and targets from outside the U.S. and EU market. The results also indicate that U.S. banking takeover market is more competitive as bidders need to pay more to U.S. targets. Table 6.6 shows that the samples of bank mergers are 355, 78 and 75 from the U.S., EU market and other markets, respectively. The figure also denotes that bank mergers mainly take place in the U.S. market, further indicating that U.S. banking takeover market is more active.[78]

[78] The discussion of the results above focuses on the MM model. The discussion of statistically significant level is based on p-value 1, assuming t-test with cross-sectional independent. As the results from the Mkt-Adj model and the Mean-Adj model are in general the same, these findings are not repeatedly discussed.

Table 6.7 Target cumulative abnormal returns for the market

Market model												
	U.S.				EU				Others			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4,1)	0.1519	0.0000	0.0000	0.0000	0.1281	0.0000	0.0000	0.0000	0.1414	0.0000	0.0000	0.0000
(-1 , 1)	0.1647	0.0000	0.0000	0.0000	0.0888	0.0000	0.0000	0.0000	0.0257	0.1150	0.0027	0.0080
(-30 , 30)	0.2148	0.0000	0.0000	0.0000	0.1478	0.0000	0.0002	0.0000	0.0362	0.2890	0.2482	0.0560
(0)	0.1101	0.0000	0.0000	0.0000	0.0622	0.0000	0.0002	0.0000	0.0057	0.5210	0.6442	0.3140
(-1 , 0)	0.1262	0.0000	0.0000	0.0000	0.0708	0.0000	0.0001	0.0000	0.0134	0.2000	0.1659	0.0800
(-30 , -1)	0.0653	0.0000	0.0000	0.0000	0.0589	0.0030	0.4280	0.0170	0.0269	0.2930	0.0012	0.0050
(0 , 1)	0.1183	0.0000	0.0000	0.0000	0.1148	0.0000	0.0000	0.0000	0.1252	0.0000	0.0000	0.0000
(1 , 30)	0.0305	0.0000	0.0010	0.0000	0.0182	0.2030	0.4280	0.9290	0.0546	0.0020	0.1659	0.0240
N	355				78				75			

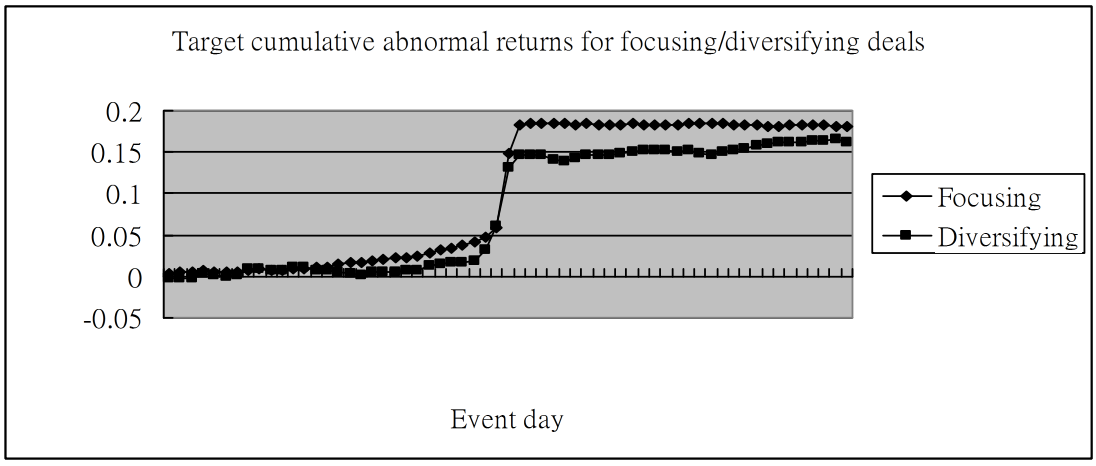
p-value 1: t test with assuming cross-sectional independence

Wilcoxon test: Wilcoxon signed rank test

6.7 The analysis of diversifying or focusing deals

Banks can achieve risk diversification through diversifying acquisitions. However, when banks engage in mergers with focusing deals, managers may be relatively easy to manage similar bank risks after the transactions. Thus, it can be expected that there are differences in target announcement returns between activity diversifying and focusing deals as discussed in section 4.3.1.1.[79] This section discusses target cumulative abnormal returns in terms of diversifying or focusing deals. The discussion of target cumulative abnormal returns related to activity focusing and diversifying deals is based on a sample of 508 targets, where 424 targets are focusing deals and 84 targets are diversifying deals.

Figure 6.4 The development of target cumulative abnormal returns for activity focusing/diversifying deals



The development of target cumulative abnormal returns for activity focusing and diversifying deals from day -30 to day +30 is presented in Figure 6.4. The figure shows

[79] Diversifying or focusing deals mean that the type of deals is in the form of bank to other financial institution (cross-product) deals and bank to bank deals, respectively. If the two merging companies have the same 2-digit SIC code, the deals are categorised as focusing (bank-to-bank) deals. Otherwise, the deals are classified as diversifying (cross-product) deals if banks with 2-digit SIC code are different. With regard to diversifying deals, it should be acknowledged that the definition of diversification transactions may not provide a clear picture of the impact of bank diversification. This may derive from the fact that banks within the same 2-digit SIC code may also contain different types of banks, such as retail banks, wholesale banks, etc. The analysis of the abnormal returns may vary depending on different types of the banks. This can also suggest future research to further look into the impact of shareholder wealth in bank mergers within different types of banks.

that there is an upward trend for target cumulative abnormal returns prior to the announcement date and this upward trend is more significant to target cumulative abnormal returns in focusing deals relative to those in diversifying deals. This indicates that the information leakage for targets is more apparent in focusing deals. However, it remains unknown as to why the information leakage is more significant to targets in focusing deals.

Table 6.8 presents the results of target announcement returns over different event windows. As table 6.8 shows, targets in focusing deals earn 9.06% abnormal returns on day 0 higher than 7.08% abnormal returns for those in diversifying deals, both statistically significant at the 0.01 level. The results lend support to the hypothesis that targets earn higher cumulative abnormal returns in focusing deals than in diversifying deals. This suggests that the management of bidders wants to pay more in bank to bank deals in that managers do not need to manage more types of risks after the transactions. However, the difference of target abnormal returns between focusing and diversifying deals is not statistically significant, p-value is 0.335.

Table 6.8 Target cumulative abnormal returns for activity focusing/diversifying deals

	Focusing				Diversifying			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4,1)	0.1490	0.0000	0.0000	0.0000	0.1352	0.0000	0.0000	0.0000
(-1,1)	0.1366	0.0000	0.0000	0.0000	0.1126	0.0000	0.0000	0.0000
(-30,30)	0.1810	0.0000	0.0000	0.0000	0.1641	0.0000	0.0000	0.0000
(0)	0.0906	0.0000	0.0000	0.0000	0.0708	0.0000	0.0005	0.0000
(-1,0)	0.1017	0.0000	0.0000	0.0000	0.0978	0.0000	0.0000	0.0000
(-30,-1)	0.0586	0.0000	0.0000	0.0000	0.0590	0.0180	0.0024	0.0000
(0,1)	0.1185	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000
(1,30)	0.0284	0.0000	0.0087	0.0000	0.0513	0.0010	0.1931	0.0220
N	424				84			

p-value 1: t test assuming cross-sectional independence

Wilcoxon test: Wilcoxon signed rank test

Looking at a 3-day (-1,+1) event window, targets in focusing deals earn 13.66% cumulative abnormal returns relative to 11.26% for those in diversifying deals, both statistically significant at the 0.01 level. Targets earn statistically significant higher announcement returns in focusing deals than those in diversifying deals. The results are consistent with the studies of DeLong (2001) and Ismail and Davidson (2005), but contradict Cybo-Ottone and Murgia's (2000) findings.

In addition, targets in focusing deals in general earn higher cumulative abnormal returns also over other event windows than those in diversifying deals, excluding a 2-day (0,+1) and 30-day (+1,+30) event window. When looking at a 2-day (0,+1) and 30-day (+1,+30) event window, targets in diversifying deals earn higher cumulative abnormal returns than those in focusing deals. The results may suggest that the market attempts to revise its expectation after the transactions. The results imply that diversifying acquisitions are more favourable due to risk diversification effects after the transactions.[80]

This section discusses target cumulative abnormal returns taking into accounting activity focusing and diversifying deals. The results overall show that targets earn significant positive cumulative abnormal returns in both activity focusing and diversifying deals. These findings also reveal that targets in focusing deals in general earn higher announcement returns than those in diversifying deals. The results indicate that the market responds focusing deals favourably, denoting that managers may be relatively easy to manage similar bank risks after the transactions.

Overall, as discussed above, this thesis presents the empirical findings of target

[80] The discussion of statistical significance levels is based on p-value 1, which is a t-test assuming cross-sectional independent. Due to similar results of target cumulative abnormal returns from the Mean-Adj and Mkt-Adj model, those findings are not repeatedly discussed.

announcement returns in the previous sections, taking into account the issues of thin trading, the confounding events, the analysis of the market and activity focusing or diversifying deals, respectively. The results show that targets earn positive announcement returns around bank merger and acquisition announcements, which are consistent with prior empirical studies as discussed in chapter 2.

Furthermore, in order to explain the variation of target cumulative abnormal returns, this thesis carries out a cross-sectional regression analysis. The regression analysis is to explore as to whether the country level corporate governance mechanisms in terms of investor protection and bank regulation can be important determinants to explain target announcement returns. Thus, the following section provides the cross-sectional regression analysis in this thesis.

6.8 Cross-sectional regression analysis

This thesis aims to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. As has been discussed in chapter 3, prior empirical studies pay less attention to explore the impact of the country level corporate governance mechanisms in terms of investor protection and bank regulation on target announcement returns in bank mergers. This section further provides the cross-sectional regression analysis to determine as to whether investor protection and bank regulation in a country can be important determinants to influence target cumulative abnormal returns around bank merger and acquisition announcements.

While focusing on the country level corporate governance mechanisms in terms of investor protection and bank regulation in a country, target announcement returns may be affected by the country level specific characteristics. In addition, as has been discussed in chapter 2, the deal and firm specific characteristics can have an influence on target

shareholder wealth of bank mergers. Thus, this thesis also controls for the country level specific characteristics and the deal and firm specific characteristics in the cross-sectional regression analyses in order to explore the relationship between target cumulative abnormal returns and investor protection and bank regulation in a country accurately.

Controlling for these characteristics also allows the current study to further explore the factors that can affect target announcement returns in bank mergers. The variables related to the country level specific characteristics contain the competitiveness of the banking market and the size of the banking market. The variables related to the deal and firm characteristics include cross-border dummy, cash dummy, the relative size of the target to bidder, firm performance, the growth potential, the capital ratio and firm size. The hypotheses related to these variables have been discussed in chapter 4.

However, it should be acknowledged that other variables may also affect target announcement returns. Without controlling for other variables in the regression analysis, this may be a limitation in the analysis. In addition, the regression analysis does not control for whether the deals are diversifying or focusing transactions although the previous section has shown the difference in target announcement returns. This allows the regression analysis to further control for other factors. Controlling for other factors allows the current study to look at different facets in explaining target announcement returns.

To undertake the regression analysis in this thesis, the variables related to investor protection and bank regulation in a country may be highly correlated. This may be due to the fact that highly developed markets may be expected to have better investor protection and bank regulation. Thus, this thesis employs different model specifications in the cross-sectional regression analyses. This can reduce a high level of the correlation among the variables in terms of investor protection and bank regulation in a country that may affect the regression analysis.[81]

[81] The correlation matrix is provided in appendix A table 6.1.

Furthermore, to entirely focus on bank merger and acquisition announcements, this thesis only includes the clean sample in the regression analyses to explore the relationship between target announcement returns and investor protection and bank regulation in a country.[82] This thesis also deletes 1% of the observations from the top and bottom of target 3-day (-1,+1) cumulative abnormal returns in order to control for outliers in the regression analyses.[83] The existence of outliers may reduce the validity of the regression analysis as the coefficients cannot actually reflect the relationship between the cumulative abnormal returns and investor protection and bank regulation in a country. Thus, the regression analysis deletes the observations on the top and bottom 1% of the distribution of target 3-day (-1,+1) cumulative abnormal returns.

However, it may be argued that a relative small number of the observations being deleted may not actually affect the regression analysis. In order to have a robustness check and distinguish whether outliers are an issue to be considered in this analysis, the regression analysis with the full 508 sample is also provided in the appendix B. As can be seen from the discussion of target cumulative abnormal returns in section 6.5, target cumulative abnormal returns mainly centre on a 3-day (-1,+1) event window. Hence, the dependent variable in the regression analyses only relies on a 3-day (-1,+1) event window for target cumulative abnormal returns.

Table 6.9 shows the results based on the market (MM) model. In model specification (1) of table 6.9, the results show that target cumulative abnormal returns have a positive relationship with investor protection measured as the antidirector rights index in a target country. The coefficient is 0.018, statistically significant at the 0.05 level.[84] The results

[82] The clean sample indicates that the sample does not announce other corporate events over a 3-day (-1,+1) event window.

[83] All model specifications in target regression analyses are met these two requirements, including the sample without any confounding events and deleting 1% observations from the top and bottom of target 3-day (-1,+1) cumulative abnormal returns.

[84] This thesis also applies Djankov *et al.*'s (2006) revised antidirector rights index to the regression analysis as a robustness check. The results show that the coefficient is 0.009 between target cumulative abnormal returns and the revised antidirector rights index. A positive relationship is consistent with the results in table 6.9, where investor protection is measured from La Porta *et al.*'s (1998) index. However, the results are not

suggest that an increase in the level of investor protection in a target country of one point can be expected to result in an increase in target cumulative abnormal returns of 1.8 percentage points. As the results are statistically significant, I can therefore reject the null hypothesis and conclude that higher target cumulative abnormal returns are associated with stronger investor protection measured as the antidirector rights index in a target country.

Table 6.9 The cross-sectional regression analysis for targets

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.273	***	0.046		0.317	***	0.266	***	0.365	***	0.389	***
Antidirector rights index	0.018	**										
Rule of law			0.025	***								
Overall Activities Restrictiveness					0.010	*						
Official Supervisory Power							0.009	**				
Prompt Corrective Power									0.007	**		
Independence of Supervisory Authority - Overall											0.003	
Cross-border	0.028		0.036		0.041	*	0.046	*	0.040	*	0.026	
Cash	0.007		0.009		0.001		0.006		0.003		-0.003	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	0.127		0.120		0.134		0.164		0.153		0.154	
MKTV	-0.001		-0.002	*	-0.001		-0.001		-0.001		-0.001	
Capital to assets	0.009		0.017		-0.010		0.005		0.003		-0.006	
ln (total assets)	-0.014	***	-0.011	***	-0.015	***	-0.014	***	-0.015	***	-0.016	***
Deposit Money Bank Assets / GDP	-0.009		-0.009		-0.018		-0.019		-0.020		-0.019	
Net Interest Margin	-0.331		0.247		-0.455		-0.605		-0.658		-0.326	
Observations	376		376		376		376		376		376	

statistically significant, p-value is 0.5. The adjusted R square is 8.67% and F-value is 4.56 with p-value is 0.000.

Adjusted R Square	9.89%		12.49%		8.99%		9.44%		9.29%		8.59%	
F-value	5.11		6.35		4.71		4.91		4.84		4.52	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.9 presents the results of targets to explore the impact of investor protection and bank regulation on the shareholder wealth in bank mergers using OLS regression analysis. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the market model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin in a bidder country. The size of the banking market is measured as deposit money bank assets to GDP in a bidder country. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$\text{CAR}_{(-1,+1)}^{Target} = \alpha_0 + \beta_1 (\text{Target's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) + \beta_6 (\text{ROA}) + \beta_7 (\text{The market to book ratio}) + \beta_8 (\text{The capital ratio}) + \beta_9 (\text{Size}) + \beta_{10} (\text{The competitiveness of the banking market}) + \beta_{11} (\text{The size of the banking market}) + \varepsilon_i$$

With regard to control variables in model specification (1), the results only show that target cumulative abnormal returns are negatively and significantly correlated to target size. The coefficient is -0.014, statistically significant at the 0.01 level. The results indicate that targets gain more when target size is small. The null hypothesis can thus be rejected. A negative impact between target cumulative abnormal returns and target firm size is consistent with the study of Valkanov and Kleimeier (2007).

In model specification (1), the adjusted R square is 9.89% and F-value is 5.11,

statistically significant at the 0.01 level. When performing additional statistical tests of Ramsey test, the results show that there is no omitted variable. Variance inflation factor (VIF) also indicates that multicollinearilty is not a major issue to be taken into account in the regression analysis as the figure is lower than 3.

In model specification (2), the results show that the coefficient is 0.025 between target cumulative abnormal returns and investor protection measured as the rule of law in a target country. The results are statistically significant at the 0.01 level. The results are consistent with the findings in model specification (1), suggesting that higher target cumulative abnormal returns are associated with better investor protection in a target country.

The results suggest that strong investor protection in a country can mitigate the conflicts between managers and shareholders. This also illustrates that strong enforcement mechanisms can limit managerial discretion at the expense of shareholders through mergers and acquisitions. When managers make decisions of mergers and acquisitions, their decisions tend to aim at shareholders' interests. A positive relationship between target cumulative abnormal returns and investor protection in a target country also lend support to Anderson (2009) *et al*.'s arguments, where they argue that stronger investor protection in a target country offers higher bargaining power to targets. Thus, bidders need to pay more to targets. The findings are also consistent with prior empirical studies from the industrial firms, e.g., Bris and Cabolis (2004), Martynova and Renneboog (2008), and Anderson *et al*. (2009). Comparing the results of the measurement of investor protection between the antidirector rights index and the rule of law, it can be found that the rule of law appears to have stronger influence on target announcement returns in that the coefficient of the rule of law is at 0.025 higher than that of the antidirector rights index at 0.018. However, it should be necessary to exercise care to make such a comparison in that the significant level for these variables is different.

Similar to model specification (1), the results also indicate that there is a negative and significant association between target cumulative abnormal returns and target size, the coefficient is -0.011. The results suggest that higher target cumulative abnormal returns are associated with smaller target size. In addition, the results also show that the coefficient is -0.002 between target cumulative abnormal returns and the market to book ratio, statistically significant at the 0.1 level. The results indicate that higher target cumulative abnormal returns are related to lower growth potential for targets. A possible explanation is that target shareholders expect to obtain higher future gains if they have poor growth potential prior to the transactions. In model specification (2), the adjusted R square is 12.49% and F-value is 6.35, statistically significant at the 0.01 level.

Turning to the analysis of bank regulation, the results in model specification (3) show that there is a positive relationship between target cumulative abnormal returns and bank regulation measured as overall activities restrictiveness in a bidder country, the coefficient is 0.010. The results are statistically significant at the 0.1 level.

The results also find that target cumulative abnormal returns are positively and significantly correlated to bank regulation measured as official supervisory power and prompt corrective power in model specification (4) and (5), respectively, the coefficient is 0.009 and 0.007. The results are both statistically significant at the 0.05 level. Thus, the null hypothesis can be rejected and conclude that higher target cumulative abnormal returns are related to stronger bank regulation measured as official supervisory power and prompt corrective power in a bidder country. These findings denote that targets gain more when bank regulation in a bidder country is strong.

The results show a positive relationship between target cumulative abnormal returns and bank regulation in a bidder country, suggesting that bidder managers evaluate the transactions more carefully in the presence of stronger bank regulation in a bidder country. The transactions of mergers and acquisitions can then be expected to enhance synergy

effects after the transactions. Thus, targets can gain higher announcement returns in bank mergers and acquisitions.

Although the results similarly show a positive relationship between target cumulative abnormal returns and bank regulation in a bidder country measured as independence of overall supervisory authority in model specification (6), the coefficient is 0.003, the results are not statistically significant.

With regard to control variables, the results show that higher target cumulative abnormal returns are associated with cross-border deals in model specification (3), (4) and (5); the coefficients are 0.041, 0.046 and 0.040, respectively. The results are statistically significant at the 0.1 level. The findings indicate that targets gain more when the bidder is a foreign company.

In addition, the results in model specification (3)-(6) also find that there is a negative relationship between target cumulative abnormal returns and target size. The coefficients are similar at around -0.015. The results are all significant at the 0.01 level. These findings indicate that higher target cumulative abnormal returns are associated with smaller target size. The adjusted R square in model specification (3)-(6) is at around 9% and F-value is at around 4.84 with all statistically significant at the 0.01 level.[85]

Similar to the model specification (1), additional statistical tests of Ramsey test in model specification (2)-(6) indicate that there is no omitted variable and multicollinearity is not a major issue in the regression analysis as the figure of Variance Inflation Factor (VIF) is lower than 3.

As mentioned earlier, the regression analysis is also analysed with the full 508 sample in order to investigate whether the outliers are an issue to be taken into account in

[85] Appendix A table 6.2 and 6.3 show the results of the regression analyses, where target cumulative abnormal returns calculated from the market adjusted (Mkt-Adj) returns model and the mean adjusted (Mean-Adj) returns model, respectively. The results show that the sign of the coefficient for explanatory variables is in general consistent with table 6.9. Thus, the results are not repeatedly discussed in this thesis.

this study. As shows in appendix B table 6.1, the results show that the coefficients of the variables for investor protection and bank regulation are sensitive. The level of the coefficients varies although the coefficients do not show a significant difference. However, the significance level for the variables of bank regulation shows a significant difference. The variables of bank regulation in appendix B table 6.1 are not statistically significant, suggesting that the presence of outliers in the regression analysis can reduce the creditability in testing significant level. This can illustrate that a small number of outliers can be an issue to affect the regression analysis in the current study.[86]

While this section presents the empirical findings to show the relationship between target announcement returns and investor protection and bank regulation in a country, the difference of investor protection and bank regulation may also have an influence on target announcement returns. To provide additional insights to reveal the impact of investor protection and bank regulation on target announcement returns, the following section further controls for this issue in the regression analysis.

6.9 Cross-sectional regression analysis for the difference of investor protection and bank regulation

Section 6.8 has discussed the relationship between target cumulative abnormal returns and investor protection and bank regulation in a country. Rossi and Volpin (2004) argue that bidders tend to come from a country with better investor protection. The difference of investor protection and bank regulation can also be expected to have an influence on target announcement returns. The regression analysis further controls for the variable of the difference of investor protection and bank regulation in a bidder and target country to shed lights on the impact of target cumulative abnormal returns in bank

[86] Appendix B table 6.2 and 6.3 also show the results of the regression analyses with respect to the full 508 sample, where targets cumulative abnormal returns are calculated from the market adjusted (Mkt-Adj) returns model and the mean adjusted (Mean-Adj) returns model, respectively.

mergers.[87]

Similar to the discussion in section 6.8, the regression analysis also deletes the top and bottom 1% of target 3-day (-1,+1) cumulative abnormal returns in order to control for the outliers that may affect the regression analysis. However, removing a small number of observations in the regression analysis may not necessarily change the results significantly. Thus, this thesis also presents the results run by the full 508 sample in appendix to have a robustness check and identify whether the outliers cannot an issue to be taken into account.

As table 6.10 shows, the results in model specification (1) find that there is a positive relationship between target cumulative abnormal returns and investor protection measured as the antidirector rights index in a target country. The coefficient is 0.015, statistically significant at the 0.1 level. The results indicate that higher target cumulative abnormal returns are related to stronger investor protection in a target country. The level of the antidirector rights index in a target country is still significantly positive, even when additionally controlling for the difference of the antidirector rights index in a bidder and target country.

In addition, the results show that the coefficient for the difference in the antidirector rights index in a bidder and target country is -0.015, suggesting that higher target cumulative abnormal returns are associated with smaller difference in antidirector rights. However, the results are not statistically significant.[88]

With regard to the control variables, the results only show that target cumulative abnormal returns are negatively and significantly related to target size. The coefficient is

[87] As Rossi and Volpin (2004) argue that bidders tend to come from a country with better investor protection, the variable of the difference of investor protection and bank regulation in a bidder and target country is constructed by the level of investor protection and bank regulation in a bidder country minus the level of investor protection and bank regulation in a target country.

[88] Applying Djankov *et al.*'s (2006) revised antidirector rights index in the regression analyses, the results show that the coefficient is -0.011 between target cumulative abnormal returns and the difference of the revised antidirector rights index in a bidder and target country. However, the results are not statistically significant, as the p-value is 0.6. The results also show that there is a positive relationship between target cumulative abnormal returns and the revised antidirector rights index, the coefficient is 0.008. However, the results are not statistically significant, where the p-value is 0.5. The adjusted R square is 8.30% and F-value (p-value) is 4.07 (0.000).

-0.014, statistically significant at the 0.01 level. The results suggest that targets obtain higher gains when the size of targets is small. The results are also consistent with those in section 6.8. This also suggests that target size is an important factor to affect target announcement returns. The adjusted R square is 9.77% and F-value (p-value) is 4.66 (0.000) in model specification (1).

In model specification (2), investor protection in a target country is measured by the rule of law in a target country. The results show that target cumulative abnormal returns have a positive relationship with the rule of law, the coefficient is 0.022, statistically significant at the 0.01 level. The results indicate that targets earn higher cumulative abnormal returns when the rule of law in a target country is strong, which is consistent with the discussion in section 6.8.

Interestingly, the results show that the coefficient between target cumulative abnormal returns and the difference of the rule of law in a bidder and target country is -0.023, suggesting that higher target cumulative abnormal returns are associated with smaller difference of the rule of law in a bidder and target country. The results are statistically significant at the 0.1 level.

The results implicate that targets earn higher announcement returns when bidders come from a country with weaker investor protection relative to the target country. A possible interpretation may be that targets require high bid premium in order to compensate their additional risk to be expropriated by managers due to lower investor protection in a bidder country.

With regard to control variables in model specification (2), the results show that target cumulative abnormal returns are positively related to cross-border deals. The coefficient is 0.044, statistically significant at the 0.1 level. The results suggest that targets gain more when targets engage in cross-border deals. The results also show that target cumulative abnormal returns have a negative relationship to the market to book ratio and

target size. The coefficients for the market to book ratio and target size are -0.002 and -0.010, statistically significant at the 0.1 and 0.01 level, respectively. The results indicate that higher target cumulative abnormal returns are correlated with lower target growth potential and smaller target size. The adjusted R square is 12.47% and F-value (p-value) is 5.82 (0.000) in model specification (2).

Turning to the analysis of bank regulation, table 6.10 shows that target cumulative abnormal returns are positively related to bank regulation in a bidder country measured as overall activities restrictiveness, official supervisory power, and prompt corrective power. The coefficients are 0.010, 0.007 and 0.007 in model specification (3), (4) and (5), respectively, all statistically significant. These findings indicate that targets earn higher announcement returns when bank regulation in a bidder country is strong. The results are consistent with those in section 6.8, denoting that these variables are still significantly positive even when additionally controlling for the difference of bank regulation in a bidder and target country. Although the results in model specification (6) also show a positive relationship between target cumulative abnormal returns and bank regulation in a bidder country measured as independence of overall supervisory authory, the results are not statistically significant.

In addition, the results show that there is a negative relationship between target cumulative abnormal returns and the difference of bank regulation in a bidder and target country, where bank regulation is measured as overall activities restrictiveness, official supervisory power, and prompt corrective power. The coefficients are -0.060, -0.022 and -0.067, respectively. These findings indicate that targets earn higher announcement returns when the difference of bank regulation in a bidder and target country is small. However, the results are statistically significant at the 0.1 level for the difference of prompt corrective power in a bidder and target country only. Although target announcement returns are positively related to the difference of bank regulation in a bidder and target country, bank

regulation measured as independence of overall supervisory authority, is not statistically significant.

With regard to the control variables, the results show that target cumulative abnormal returns are negatively related to target size in model specification (3)-(6). The coefficient is around -0.015, statistically significant at the 0.01 level. This denotes that higher target cumulative abnormal returns are associated to smaller target size.

In addition, the results in model specification (4) and (5) also show that targets earn higher announcement returns when targets have better performance prior to the transactions, where performance is measure as ROA. The coefficients are 0.181 and 0.180, both statistically significant at the 0.1 level. In addition, the results also show that target cumulative abnormal returns are negatively associated with the capital ratio in model specification (6). The coefficient is -0.017, statistically significant at the 0.1 level. The results indicate that higher target cumulative abnormal returns are related to lower target capital ratio. Overall, the adjusted R square in model specification (3)-(6) is around 9.30% and F-value is around 4.40 with statistically significant at the 0.01 level.[89]

In addition to discussing above, the results run by the full 508 sample are presented in appendix B table 6.4.[90] Table 6.4 shows that the results are sensitive for the variables of the difference of bank regulation in a bidder and target country. This suggests that outliers do actually generate an influence to the analysis of the relationship between target announcement returns and the difference of investor protection and bank regulation in a bidder and target country. However, to reduce the outliers that may decrease the validity of this analysis, the regression analysis is based on deleting the top and bottom 1% observations for target 3-day (-1,+1) cumulative abnormal returns.

[89] The analysis for the difference of investor protection and bank regulation between the bidder and target countries on target shareholder wealth are presented in appendix A table 6.4 and 6.5 with respect to the market adjusted returns model and the mean adjusted returns model, respectively.

[90] The results analysed with the full sample are also reported in appendix B table 6.5 and 6.6, where target cumulative abnormal returns are measured from the market adjusted returns model and the mean adjusted returns model, respectively.

Table 6.10 The cross-sectional regression analysis for targets controlling for the difference of investor protection and bank regulation in a bidder and target country based on the market (MM) model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.282	***	0.072		0.309	***	0.286	***	0.358	***	0.388	***
Antidirector rights index	0.015	*										
Difference (Antidirector rights index)	-0.015											
rule of law			0.022	***								
Difference (Rule of law)			-0.023	*								
Overall Activities Restrictiveness					0.010	*						
Difference (Overall Activities Restrictiveness)					-0.060							
Official Supervisory Power							0.007	*				
Difference (Official Supervisory Power)							-0.022					
Prompt Corrective Power									0.007	**		
Difference (Prompt Corrective Power)									-0.067	*		
Independence of Supervisory Authority - Overall											0.001	
Difference (Independence of Supervisory Authority - Overall)											0.064	
Cross-border	0.014		0.044	*	0.035		0.032		0.020		0.004	
Cash	0.006		0.010		0.001		0.003		0.005		-0.002	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	0.108		0.096		0.149		0.181	*	0.180	*	0.185	
MKTV	-0.001		-0.002	*	-0.001		-0.001		-0.001		-0.001	
Capital to assets	-0.006		0.004		-0.015		-0.006		-0.003		-0.017	*
ln (total assets)	-0.014	***	-0.010	***	-0.015	***	-0.015	***	-0.015	***	-0.016	***

Deposit Money Bank Assets / GDP	-0.011		-0.012		-0.013		-0.014		-0.015		-0.014	
Net Interest Margin	0.154		0.363		-0.325		-0.385		-0.507		-0.176	
Observations	373		373		372		372		372		372	
Adjusted R Square	9.77%		12.47%		9.20%		9.38%		9.35%		8.63%	
F-value	4.66		5.82		4.42		4.49		4.48		4.19	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.10 presents the results to explore the impact of the difference of investor protection and bank regulation on target shareholder wealth in bank mergers using OLS regression analysis. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the market model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR_{(-1,+1)}^{Target} = \alpha_0 + \beta_1(\text{Target's investor protection}) + \beta_2(\text{The difference of target's investor protection}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bidder's bank regulation}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA}) + \beta_9(\text{The market to book ratio}) + \beta_{10}(\text{The capital ratio}) + \beta_{11}(\text{Size}) + \beta_{12}(\text{The competitiveness of the banking market}) + \beta_{13}(\text{The size of the banking market}) + \varepsilon_i$$

6.10 Conclusion

This chapter consists of a number of discussions with regard to the empirical results for target firms. As discussed in the previous sections, the analysis of target announcement returns does not suffer the problem of thin trading or confounding events. With the analysis of 508 targets, I find that targets earn 13.25% cumulative abnormal returns over a 3-day (-1,+1) event window, statistically significant at the 0.01 level. Significant positive cumulative abnormal returns lend support to prior empirical studies as has discussed in chapter 2.

Splitting the sample based on the market, I further find that U.S. targets obtain 16.47% cumulative abnormal returns over a 3-day (-1,+1) event window, compared to 8.88% and 2.57% cumulative abnormal returns for EU targets and targets from other markets, respectively. Positive announcement returns to targets are consistent with prior empirical evidence in U.S. studies (e.g., Siems (1996); Toyne and Tripp (1998); Akhigbe *et al*. (2004)), EU studies (e.g., Cybo-Ottone and Murgia (2000); Beitel *et al*. (2004)) and international studies (Biswas *et al*. (1997); DeLong (2003); Scholtens and de Wit (2004); Valkanov and Kleimeier (2007)). Using a large international sample of bank mergers, I do find that there are differences in target announcement returns depending on the market. The findings are consistent with prior empirical studies, where these studies report higher announcement returns to U.S. targets. The results also suggest that U.S. banking takeover market is more competitive resulted in higher announcement returns to U.S. targets.

Additional analysis shows that targets in focusing deals earn 13.66% cumulative abnormal returns over a 3-day (-1,+1) event window relative to 11.26% for those in diversifying deals. The results are consistent with DeLong (2001) and Ismail and Davidson (2005), where the authors report higher announcement returns to targets in focusing deals.

In the cross-sectional regression analysis, I find that investor protection and bank regulation have a positive impact to target shareholder wealth. When shareholders have

more rights against managers in mergers and acquisitions, shareholders have more ability to protect their wealth. Thus, targets gain more when targets are in a country with strong antidirector rights. In addition, when the target country has stronger enforcement of law, target managers can be expected to better look after the interests of shareholders. This also illustrates that stronger rule of law can reduce the problem of shareholders being expropriated by targets managers. The results also support Anderson *et al.*'s (2009) argument, claiming that targets have more bargaining power if targets are in a country with strong investor protection. Thus, bidders need to pay more to targets. This can be an important contribution as shareholders can be better protect not only for industrial firms but also for banking firms.

Furthermore, when analysing bank regulation, targets gain more when the bidder's bank regulation is more restrictive to bank activity. A possible explanation is that bidder managers can be expected to more carefully evaluate the transactions when bank regulation in a bidder country is more restrictive to bank activity. In addition, when bank regulators in a bidder country have more ability to take action to correct problems, it can be expected to reduce any negative impact on bank mergers and acquisitions. This can reduce the expropriation and create higher gains to targets. This can be expected to create higher synergy effects to targets. Thus, targets can be expected to obtain higher announcement returns in bank mergers. Similarly, when bank regulation in a bidding country has more ability to enforce actions, such as intervention, this can also be expected to reduce any problem in bank mergers. This can therefore increase target gains after the transactions. As a consequent, bank regulation in a bidder country can be expected to offer alternative mechanisms to protect minority shareholders of targets.

The regression analysis also reveals that bidders may have problem to integrate large firm resources after the transactions when targets size is large. The synergy effects can thus be lower. The results find that targets gain more when target size is small. When

additionally controlling for the difference of investor protection and bank regulation in the regression analysis, the results show that targets earn higher announcement returns when the difference of the rule of law between the bidder and target countries is small.

In addition, the findings also show that higher target announcement returns are associated with smaller difference of bank regulation between the bidder and target countries, where bank regulation is measured as prompt corrective power. When bank regulation in a target country has more power to correct the problem promptly relative to in a bidder country, targets can be expected to obtain higher announcement returns.

Interestingly, the results related to the variables of investor protection and bank regulation still remain significant when additionally controlling for the difference of investor protection and bank regulation. This also suggests that investor protection and bank regulation can be important determinants to explain target announcement returns in bank mergers.

Finally, the analysis in this chapter shows some interesting findings. The results reveal that the legal and regulation system in a country in terms of investor protection and bank regulation can generate an influence to target shareholder wealth in bank mergers and acquisitions. My findings provide the empirical findings showing that investor protection is important to shareholders not only to industrial firms but also to banking firms. In addition, the results also find that bank regulation can also offer a function to protect shareholders and have an influence to target announcement returns in bank mergers and acquisitions.

Chapter 7 The Empirical Results for bidding Firms

7.1 Introduction

The existing empirical literatures have reported mixed results for bidding firms, as has been discussed in chapter 2. While the empirical findings in chapter 6 have reported positive announcement returns to target firms, it is not clear as to whether positive announcement returns to targets can be attributable to wealth transfer from bidding firms. Thus, this chapter presents the empirical findings for bidding firms in this thesis.

Similar to the discussion of target cumulative abnormal returns in chapter 6, this chapter commences from discussing the model parameters, followed by discussing the problem of thin trading and the confounding events, respectively. Then, the empirical findings for bidder shareholder wealth are presented. Additional analyses for bidder cumulative abnormal returns are also presented in this chapter with respect to the market and activity diversifying or focusing deals.

Furthermore, the cross-sectional regression analyses for bidders are provided in order to determine as to whether investor protection and bank regulation in a country can be important determinants to explain bidder cumulative abnormal returns. To explore the relationship between bidder cumulative abnormal returns and investor protection and bank regulation accurately, the regression analyses also control for the country level specific characteristics and the deal and firm specific characteristics. Controlling for these characteristics also provides additional insights to explore the factors that may affect bidder announcement returns around bank merger and acquisition announcements.

This chapter is organised as follows. The discussion of the market model parameters is provided in section 7.2. Section 7.3 and 7.4 discuss the problem of thin trading and the confounding events. Section 7.5 presents the empirical results for bidder abnormal returns and cumulative abnormal returns. Bidder cumulative abnormal returns with respect to the market and activity diversifying or focusing deals are presented in section 7.6 and 7.7,

respectively. The cross-sectional regression analyses are provided in section 7.8. Section 7.9 also provides the cross-sectional regression analyses with respect to the difference of investor protection and bank regulation in a bidder and target country. Conclusion is provided in section 7.10.

7.2 The model parameters

The level of the market model parameters can be expected to affect bidder cumulative abnormal returns in that the model parameters are important components to measure the expected returns. Bidder abnormal returns are measured by subtracting the expected returns from the actual returns as has been discussed in chapter 5. Thus, this section discusses the model parameters for bidding firms.

Table 7.1 The market model parameters

	Mean	Maximum	Minimum	SD	Negative	Positive	Sample size
Alpha	0.0004	0.0050	-0.0033	0.0010	0.33	0.67	1424
Beta	0.6770	2.2149	-1.9249	0.4626	0.05	0.95	1424

Table 7.1 presents descriptive statistics for the market (MM) model parameters of bidding firms. As table 7.1 shows, the mean beta value is 0.6770. While the market adjusted returns (Mkt-Adj) model assumes that alpha is 0 and beta is 1, the mean value of beta from the MM model is lower than 1. Lower mean value of beta may suggest that the analysis of bidder abnormal returns may encounter the problem of thin trading. Therefore, a discussion of the problem of thin trading is provided in section 7.3.[91]

As has been discussed in section 6.2, the mean value of beta for targets is 0.4891. It is

[91] While the assumption of the MM model and the Mkt-Adj model is different, as discussed in section 5.5.5, this thesis also applies the Mkt-Adj model to calculate bidder abnormal returns. Furthermore, this thesis also uses the mean adjusted returns (Mean-Adj) model to measure bidder abnormal returns as a robustness check.

apparent that the mean value of beta for bidders is at 0.6770 higher than that for targets. This suggests that bidder's prior performance highly correlates to the market performance relative to that for target's. For example, bidders in general perform well when the market has a better performance.

Table 7.1 also shows that the maximum (minimum) value of beta is 2.2149 (-1.9249). Based on the assumption that market returns are normally positive, the positive (negative) value of beta indicates that bidders appear to generate lower (higher) abnormal returns. The percentage of positive (negative) value of beta accounts for 95% (5%). The significant higher percentage of the positive value of beta also suggests that bidder's prior performance is significantly consistent with the market performance although beta is more or less volatile.

In addition, the mean value of alpha is 0.0004. Although the level of beta can be compensated by the level of alpha, the mean value of alpha is rather low. This suggests that bidder abnormal returns are mainly affected by the magnitude of beta. Overall, the percentage of positive (negative) value of alpha amounts to 67% (33%).

7.3 The problem of thin trading

As discussed above, the model parameters may be biased due to the presence of the problem of thin trading. If the model parameters are influenced by the problem of thin trading, this thesis cannot accurately detect the announcement returns to bidding firms. Thus, this section discusses the model parameters measured from the thin trading adjustment approaches in terms of Scholes-Williams' (SW), Dimson's (DM) and Fowler and Rorke's (FR) approach.

As table 7.2 shows, the mean of beta value is 0.7105, 0.7558 and 0.7493 for the SW, DM and FR approach, respectively. Comparing to the mean value of beta from the MM model, the use of thin trading adjustment approaches yields slightly higher mean value of beta, suggesting that beta value for bidding firms is sensitive to the thin trading adjustment

approaches. However, the level of mean value of beta varies, depending on the thin trading adjustment approaches applied. This also indicates the lead and lag structure can produce different levels of beta value.

Table 7.2 The market model parameters adjusted for thin trading

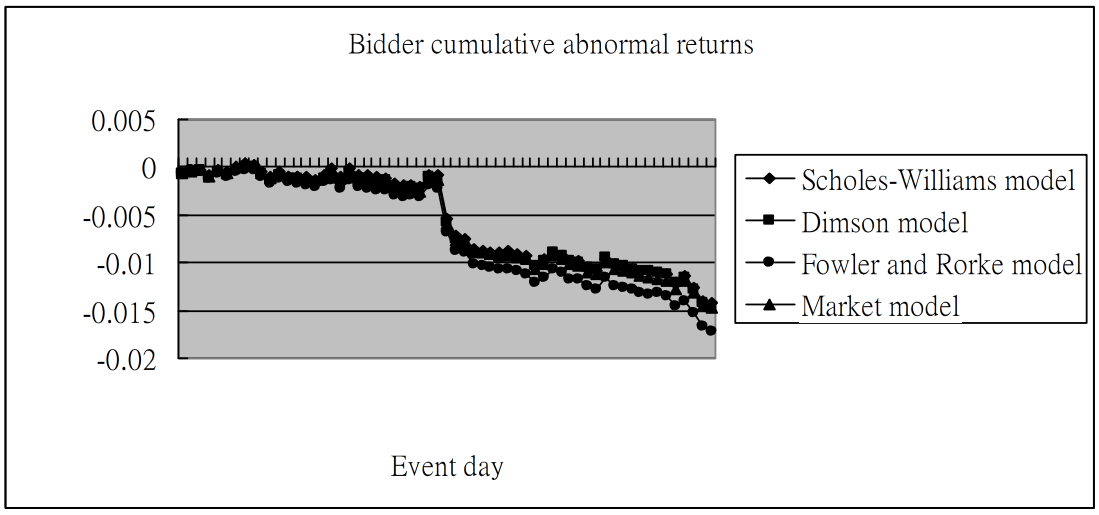
	Beta				Alpha			
	MM	SW	DM	FR	MM	SW	DM	FR
Mean	0.6770	0.7105	0.7558	0.7493	0.0004	0.0004	0.0003	0.0003
Maximum	2.2149	2.4722	2.6924	4.1787	0.0050	0.0055	0.0057	0.0057
Minimum	-1.9249	-0.9846	-1.2072	-0.8423	-0.0033	-0.0036	-0.0050	-0.0038
SD	0.4626	0.4650	0.5096	0.5505	0.0010	0.0009	0.0010	0.0010
Negative	0.05	0.05	0.06	0.05	0.33	0.34	0.36	0.35
Positive	0.95	0.95	0.94	0.95	0.67	0.66	0.64	0.65
Sample size	1424	1424	1424	1424	1424	1424	1424	1424

Taking into account the maximum beta value, the FR approach produces the highest value relative to the SW and DM approach. However, the DM approach generates the lowest value of the minimum of beta. In addition, the spread of beta estimates from the FR approach appears to be significant, suggesting that bidder abnormal returns can significantly vary. Overall, the percentage of the positive (negative) value of beta is around 95% (5%). Higher positive percentage of beta value suggests that bidders tend to be consistent with market performance. The figure also indicates that thin trading approaches generally produce better beta estimates than the MM model.

With regard to alpha value, the results are in general the same for the SW, DM and FR approach at around 0.0004. The figure is similarly consistent with the mean value of alpha from the MM model. As the mean alpha value does not show differences between thin trading adjustment approaches and the MM model, this suggests that the analysis of

bidder cumulative abnormal returns adjusted for the thin trading approaches are mainly driven by the parameter of beta. Table 7.2 also shows that the percentage of the positive (negative) value of alpha is generally the same at around 65% (35%) for the thin trading adjustment approaches. The results are also in general consistent with that from the MM model. Thus, the figure indicates that alpha value does not alter significantly when using different thin trading adjustment approaches.

Figure 7.1 Bidder cumulative abnormal returns from the thin trading adjustment approaches



In order to identify whether the problem of thin trading is an issue to be considerably taken into account in the analysis of bidder announcement returns, figure 7.1 shows the graph to exhibit the drift of bidder cumulative abnormal returns during the event period. As figure 7.1 shows, the movement of bidder cumulative abnormal returns is generally consistent of which the thin trading adjustment approaches are being used although a slight difference of bidder cumulative abnormal returns is observed. Similarly, the development of bidder cumulative abnormal returns based on different thin trading adjustment approach is generally consistent with that from the MM model. In addition, a significant impact of bidder abnormal returns can be spotted on day 0. To make a clear comparison between each thin trading approach, this thesis also presents the results of bidder abnormal returns on day 0 in table 7.3.

Table 7.3 Bidder abnormal returns on the announcement date from the thin trading adjustment approaches

	Mean	p-value 1	Sign test	Wilcoxon test
Scholes-Williams method	-0.0045	0.0000	0.0000	0.0000
Dimson method	-0.0046	0.0000	0.0000	0.0000
Fowler and Rorke method	-0.0047	0.0000	0.0000	0.0000
MM model	-0.0046	0.0000	0.0000	0.0000

Day 0: abnormal returns

p-value 1: t test with assuming cross-sectional independence

Wilcoxon test: Wilcoxon signed rank test

As table 7.3 shows, bidder abnormal returns are -0.45%, -0.46% and -0.47% on day 0 for the SW, DM and FR approach, respectively, all statistically significant at the 0.01 level. These findings suggest that the use of different thin trading adjustment approaches does not make any significant difference on bidder abnormal returns. While bidders with the full sample experience -0.46% abnormal returns on day 0 for the MM model[92], the results calculated from the thin trading adjustment approaches do not show any significant difference relative to those from the MM model. Thus, thin trading cannot be a significant issue to be taken into account when analysing bidder abnormal returns in this thesis. The analysis of bidder abnormal returns is then on the basis of the MM model.

7.4 Confounding events

Similar to the discussion of target announcement returns in chapter 6, the confounding events[93] may be expected to have an influence on the announcement returns of bidding firms. I control for confounding events during a 3-day (-1,+1) event window in

[92] The full sample means that the sample of bidders is based on 1,424 bidding firms. The discussion of bidder cumulative abnormal returns with the full sample will be presented in section 7.5.

[93] As has been discussed in chapter 5, the confounding events are identified from the database of Perfect Information, SEC Filings and Financial Times, where the sample does not release the information of corporate events over a 3-day (-1,+1) event window. The announcement of other corporate events means the release of the information, such as earning and dividend announcement, the annual report and other corporate events, etc.

terms of the clean or nonclean sample in order to check whether the confounding events would be an issue to influence bidder cumulative abnormal returns.[94] Thus, this section discusses bidder cumulative abnormal returns taking into account the effects of the confounding events.

As table 7.4 shows, bidders in the clean sample obtain -0.53% abnormal returns on day 0 relative to -0.06% for those in the nonclean sample. The results are statistically significant at the 0.01 level for the clean sample only. The difference between the clean and nonclean sample is statistically significant, p-value is 0.026. This indicates that there is a statistical significant difference of bidder announcement returns between the clean and nonclean sample. However, the difference between the clean sample and the full sample is not statistically significant, p-value is 0.620.[95]

Table 7.4 The influence of the confounding events on bidder cumulative abnormal returns

MM model						
	N	Mean	p-value 1	SD	Minimum	Maximum
Day 0 clean sample	1208	-0.53%	0.0000	0.0331	-0.2727	0.4687
(-1,+1) clean sample	1208	-0.76%	0.0000	0.0510	-0.3839	0.7057
Day 0 nonclean sample	216	-0.06%	0.7520	0.0284	-0.1097	0.1540
(-1,+1) nonclean sample	216	0.07%	0.8300	0.0497	-0.1297	0.3213

p-value 1: t test with assuming cross-sectional independence

In addition, table 7.4 also shows that bidders in the clean sample yield -0.76% cumulative abnormal returns over a 3-day (-1,+1) event window relative to 0.07% for those with the nonclean sample. The results are statistically significant at the 0.01 level for the

[94] The clean sample means that no other corporate events are announced for a 3-day (-1,+1) event window. If there are any corporate events announced over a 3-day (-1,+1) event window, the sample is classified as the nonclean sample.

[95] As will be discussed in section 7.5, bidders with the full 1,424 sample experience -0.46% abnormal returns on day 0 and -0.63% cumulative abnormal returns over a 3-day (-1,+1) event window.

clean sample only. The difference between the clean sample and nonclean sample is statistically significant, p-value is 0.015. The results also suggest that the analysis of bidder cumulative abnormal returns can suffer from the confounding events.

However, the difference between the clean sample and the full sample is not statistically significant, p-value is 0.726. Thus, I cannot conclude that there is statistically significant difference between the clean sample and the full sample. So, the analysis of bidder announcement returns is based on the full 1,424 sample in the following section. On the other hand, the results are sensitive as the difference between the clean sample and nonclean sample is statistically significant. To make a clear comparison with prior empirical studies, this thesis uses the clean 1,208 sample to measure bidder announcement returns in terms of the market and activity diversifying or focusing deals in section 7.6 and 7.7, respectively.

7.5 Bidder abnormal returns and cumulative abnormal returns

In chapter 6, the empirical results show that targets earn positive announcement returns around bank merger and acquisition announcements. However, prior empirical studies report contradictory findings regarding bidder announcement returns. It is uncertain as to whether positive announcement returns to targets can be attributable to wealth transfer from bidders. Thus, the empirical evidence for bidder abnormal returns and cumulative abnormal returns is presented in this section.

As can be seen in table 7.5, bidder abnormal returns vary during the event period. Bidders, for example, obtain 0.12% and 0.13% abnormal returns on day -2 from the MM and Mkt-Adj model, respectively, both statistically significant at the 0.05 level. Furthermore, the results show that bidders experience -0.46% and -0.44% abnormal returns on day 0 from the MM model and the Mkt-Adj model[96], respectively, both statistically

[96] The results in appendix A table 7.1 also show that bidders experience -0.46% abnormal returns on day 0 from the mean adjusted (Mean-Adj) returns model, statistically significant at the 0.01 level.

significant at the 0.01 level.[97] However, the majority of bidder daily abnormal returns are negative during the event period. As can be seen in table 7.5, bidder daily abnormal returns are also tested by using the nonparametric statistics in terms of sign test and wilcoxon signed rank test. While the significance level for bidder daily abnormal returns varies during the test period, bidder abnormal returns on day 0 are all statistically significant regardless of the parametric or nonparametric test of statistical significance used. This clearly indicates that there is a significant negative impact of bidder shareholder wealth on the announcement date.

Table 7.5 Bidder daily abnormal returns

	MM model						Mkt-Adj model				
day	Mean	p-value 1	p-value 2	p-value 3	Sign test	Wilcoxon test	Mean	p-value 1	p-value 2	Sign test	Wilcoxon test
-30	-0.0007	0.1435	0.1441	0.1245	0.0011	0.0180	-0.0005	0.2137	0.3716	0.0183	0.0910
-29	0.0003	0.3457	0.3429	0.3030	0.0413	0.5150	0.0005	0.2248	0.3715	0.2773	0.8010
-28	0.0001	0.3957	0.3961	0.3902	0.0033	0.1670	0.0002	0.3483	0.3932	0.0018	0.4120
-27	-0.0006	0.1818	0.1708	0.2458	0.0013	0.1150	-0.0003	0.3114	0.3866	0.2890	0.5120
-26	0.0007	0.1409	0.1409	0.2774	0.0531	0.7240	0.0007	0.1601	0.3580	0.1179	0.8660
-25	-0.0003	0.3306	0.3263	0.3292	0.0211	0.3790	0.0000	0.3988	0.3989	0.5077	0.8150
-24	0.0006	0.1786	0.1811	0.3235	0.3014	0.5030	0.0009	0.0567	0.3175	0.9366	0.0880
-23	0.0003	0.3106	0.3054	0.2150	0.3014	0.9990	0.0005	0.2481	0.3767	0.2545	0.5150
-22	-0.0001	0.3868	0.3853	0.3227	0.0054	0.1010	0.0001	0.3962	0.3985	0.0159	0.3480
-21	-0.0009	0.0677	0.0606	0.1206	0.0039	0.0070	-0.0006	0.1863	0.3634	0.0074	0.0560
-20	-0.0005	0.2155	0.1936	0.1921	0.0102	0.0380	-0.0003	0.3318	0.3892	0.0137	0.2430
-19	0.0006	0.1641	0.1498	0.2140	0.0850	0.6300	0.0010	0.0570	0.3098	0.6910	0.1470

[97] The discussion of the significance level is based on p-value 1, where p-value 1 assumes cross-sectional independence. However, the significance level for bidder abnormal returns on day 0 is generally the same regardless of the use of different statistical tests.

-18	-0.0005	0.2335	0.2253	0.0888	0.0000	0.0070	-0.0003	0.3128	0.3873	0.0001	0.0350
-17	0.0001	0.3928	0.3918	0.3049	0.4114	0.9170	0.0005	0.2646	0.3774	0.8115	0.5050
-16	-0.0001	0.3806	0.3801	0.3661	0.3268	0.4390	0.0003	0.3456	0.3922	0.1941	0.8620
-15	-0.0003	0.3507	0.3394	0.3902	0.0009	0.0660	-0.0001	0.3955	0.3984	0.0002	0.1920
-14	0.0005	0.2191	0.2087	0.1195	0.3537	0.5990	0.0006	0.1827	0.3617	0.4907	0.4280
-13	0.0006	0.1965	0.1732	0.3352	0.4422	0.8710	0.0006	0.1831	0.3598	0.1765	0.8300
-12	-0.0009	0.0653	0.0568	0.0631	0.0039	0.0180	-0.0007	0.1370	0.3500	0.0118	0.1060
-11	0.0009	0.0738	0.0680	0.1592	0.5779	0.2560	0.0011	0.0274	0.2943	1.0000	0.0380
-10	-0.0008	0.1130	0.0737	0.2639	0.0469	0.3640	-0.0002	0.3749	0.3952	0.9789	0.5390
-9	0.0001	0.3968	0.3964	0.3521	0.0027	0.2210	0.0000	0.3989	0.3989	0.0675	0.4140
-8	-0.0002	0.3696	0.3656	0.3672	0.2331	0.6350	0.0003	0.3288	0.3890	0.5077	0.3070
-7	-0.0002	0.3880	0.3740	0.3571	0.0137	0.4720	0.0001	0.3922	0.3970	0.1941	0.7290
-6	-0.0005	0.2465	0.2095	0.1738	0.0039	0.0880	-0.0004	0.3085	0.3842	0.0278	0.1590
-5	-0.0002	0.3551	0.3484	0.3188	0.1060	0.4310	0.0001	0.3939	0.3982	0.5077	0.7860
-4	-0.0000	0.3973	0.3970	0.3183	0.0137	0.1390	0.0001	0.3856	0.3969	0.0278	0.3320
-3	-0.0002	0.3527	0.3475	0.3852	0.0243	0.3320	0.0004	0.2668	0.3790	0.4743	0.6000
-2	0.0012	0.0198	0.0146	0.0274	0.5779	0.1850	0.0013	0.0127	0.2554	0.3818	0.1040
-1	-0.0000	0.3979	0.3974	0.2991	0.0531	0.1690	0.0003	0.3472	0.3891	0.0278	0.7240
0	-0.0046	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0044	0.0000	0.0026	0.0000	0.0000
1	-0.0017	0.0180	0.0004	0.0000	0.0002	0.0010	-0.0014	0.0494	0.2351	0.0009	0.0070
2	-0.0002	0.3688	0.3513	0.2530	0.0002	0.0250	0.0000	0.3983	0.3988	0.0033	0.2080
3	-0.0011	0.0323	0.0233	0.0322	0.0074	0.0830	-0.0011	0.0409	0.2981	0.0003	0.0530
4	0.0000	0.3982	0.3981	0.3239	0.1179	0.3040	-0.0000	0.3978	0.3987	0.0599	0.3600
5	-0.0002	0.3619	0.3589	0.3416	0.1179	0.4430	-0.0002	0.3674	0.3948	0.0531	0.6050
6	-0.0002	0.3543	0.3564	0.3981	0.0758	0.2820	0.0001	0.3832	0.3971	0.2129	0.9340
7	0.0001	0.3818	0.3804	0.3944	0.1309	0.8840	0.0005	0.2169	0.3696	0.3537	0.5230

8	-0.0002	0.3805	0.3777	0.3947	0.1450	0.5180	0.0002	0.3641	0.3940	0.1450	0.7140
9	-0.0003	0.3308	0.3262	0.2579	0.0074	0.0750	0.0003	0.3405	0.3912	0.1309	0.6670
10	-0.0010	0.0471	0.0387	0.0512	0.0054	0.0120	-0.0006	0.1856	0.3636	0.0159	0.1910
11	0.0005	0.2193	0.2028	0.1825	0.0469	0.6710	0.0006	0.1943	0.3646	0.0147	0.5360
12	0.0008	0.0995	0.0948	0.2671	0.1765	0.9670	0.0009	0.0651	0.3212	0.4743	0.3550
13	-0.0003	0.3170	0.3121	0.3900	0.0046	0.0410	-0.0000	0.3989	0.3989	0.0102	0.3730
14	-0.0006	0.1982	0.1905	0.1125	0.0159	0.0650	-0.0001	0.3904	0.3978	0.1179	0.5080
15	-0.0001	0.3928	0.3908	0.2344	0.9366	0.6300	0.0004	0.3234	0.3864	0.6146	0.2880
16	-0.0006	0.1595	0.1469	0.0921	0.0004	0.0010	-0.0002	0.3640	0.3942	0.0243	0.0560
17	-0.0003	0.3243	0.3218	0.3276	0.0033	0.1120	-0.0004	0.2781	0.3826	0.0159	0.1120
18	0.0012	0.0169	0.0131	0.0078	0.6146	0.0750	0.0016	0.0025	0.2070	0.2545	0.0080
19	-0.0007	0.1212	0.1210	0.0381	0.0039	0.0130	-0.0006	0.1776	0.3619	0.0211	0.0260
20	-0.0001	0.3898	0.3897	0.3832	0.1179	0.3170	0.0002	0.3607	0.3942	0.0675	0.8380
21	-0.0002	0.3641	0.3521	0.2104	0.1602	0.5090	0.0001	0.3900	0.3975	0.1941	0.6930
22	-0.0004	0.2847	0.2824	0.2294	0.0046	0.0970	0.0000	0.3989	0.3989	0.0318	0.5560
23	-0.0001	0.3907	0.3908	0.3851	0.0183	0.3170	0.0001	0.3868	0.3975	0.0211	0.5260
24	-0.0002	0.3700	0.3700	0.3812	0.0469	0.2300	0.0001	0.3966	0.3986	0.0675	0.7030
25	-0.0001	0.3847	0.3850	0.3389	0.0137	0.1170	0.0002	0.3586	0.3940	0.3818	0.7620
26	-0.0009	0.1025	0.0657	0.0979	0.0054	0.0310	-0.0003	0.3319	0.3886	0.3014	0.4810
27	0.0007	0.1154	0.1087	0.3050	0.1060	0.8080	0.0009	0.0831	0.3293	0.3268	0.4040
28	-0.0012	0.0147	0.0124	0.0203	0.0001	0.0100	-0.0009	0.0803	0.3298	0.0074	0.1560
29	-0.0014	0.0040	0.0051	0.0071	0.0003	0.0010	-0.0010	0.0450	0.3147	0.0013	0.0140
30	-0.0002	0.3516	0.3537	0.3371	0.1450	0.3220	0.0001	0.3898	0.3979	0.1602	0.9250

p-value 1: t test with assuming cross-sectional independence

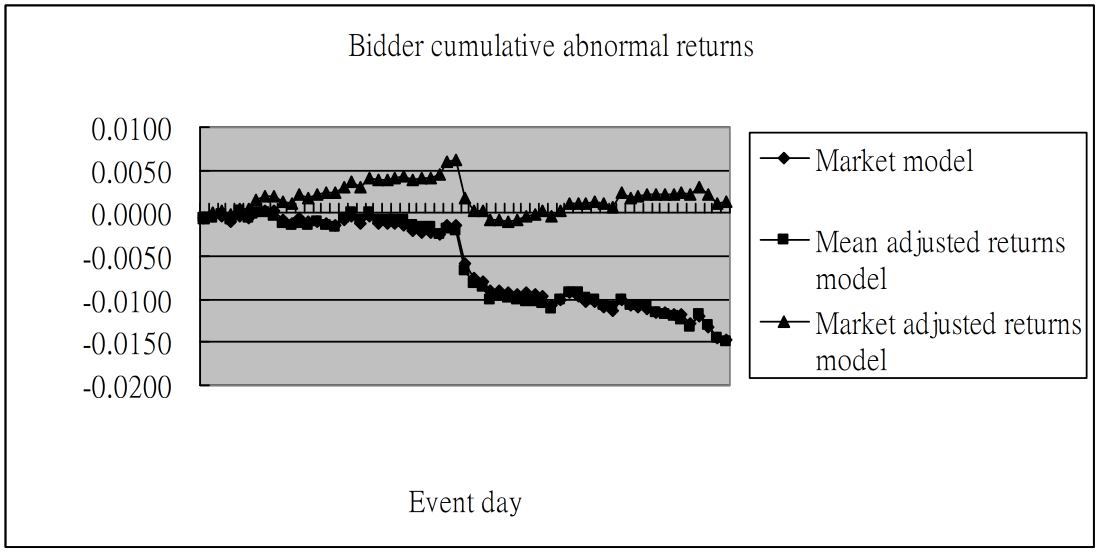
p-value 2: t test with assuming cross-sectional dependence

p-value 3: PSR test

Wilcoxon test: Wilcoxon signed rank test

In addition to bidder daily abnormal returns, this chapter also shows the figure to capture the movement of bidder cumulative abnormal returns during the event period. As shows in figure 7.2, the movement of bidder cumulative abnormal returns is similar when using the MM model and the Mean-Adj model. The results show that there is a downward trend for bidder cumulative abnormal returns during the post-event period. This suggests that the analysis of bidder announcement returns during the post-announcement period contains the information lag.

Figure 7.2 The movement of bidder cumulative abnormal returns during the test period



However, as can be seen in figure 7.2, the movement of bidder cumulative abnormal returns calculated from the Mkt-Adj model is clearly distinct from that of the MM model and the Mean-Adj model. This may attribute to the assumption of the model specification, where the Mkt-Adj model assumes alpha equal to 0 and beta equal to 1. As bidders tend to outperform the market prior to the transactions, bidders can be expected to obtain higher abnormal returns during the pre-announcement period. On the other hand, if bidders tend to outperform the market prior to the transactions, it can be expected that bidders may also outperform the market after the transactions. Thus, bidders can also obtain higher abnormal returns after the transactions when using the Mkt-Adj model. As a consequent, it is

apparent that there are differences of bidder abnormal returns between the Mkt-Adj model and the MM and Mean-Adj model.

To detect the change of bidder cumulative abnormal returns in a certain period, this chapter also presents bidder cumulative abnormal returns over different event windows. As table 7.6 shows, bidders experience -0.63% and -0.56% cumulative abnormal returns over a 3-day (-1,+1) event window measured from the MM model and the Mkt-Adj model, respectively, both statistically significant at the 0.01 level.[98] In addition, the results are also statistically significant at the 0.01 level, testing from the nonparametric statistics in terms of sign test and wilcoxon singed rank test. The results enable the current study to reject the null hypothesis, concluding that there are negative cumulative abnormal returns to bidders around bank merger and acquisition announcements. However, the difference between the MM and Mkt-Adj model is not statistically significant, p-value is 0.705.

Negative cumulative abnormal returns to bidders suggest that bidders experience losses in their wealth in bank mergers. This also lends support to either the hubris or agency hypothesis, where the hypotheses expect that bidders may overpay to targets. In addition, negative announcement returns to bidders are also consistent with prior empirical studies, e.g., Neely (1987), Houston and Ryngaert (1994), Siems (1996), Cornett *et al*. (2003), DeLong (2003), Beitel *et al*. (2004), Campa and Hernando (2006), Hagendorff *et al*. (2008).

While looking at a 61-day (-30,+30) event window, the results show that bidders from the MM model obtain -1.48% cumulative abnormal returns relative to 0.13% cumulative abnormal returns from the Mkt-Adj model. The results are statistically significant at the 0.01 level for the MM model only. The difference between the MM model and the Mkt-Adj model is statistically significant, and the p-value is 0.001.

As bidders tend to outperform the market prior the acquisition resulting on average in

[98] The results calculated from the Mean-Adj model are in general consistent with those from the MM model. Thus, the results are not repeatedly discussed in this section. However, the results are provided in the appendix A table 7.2.

positive alpha coefficients, it is not surprising that bidders still obtain positive cumulative abnormal returns in terms of the Mkt-Adj model when measuring from a longer 61-day (-30,+30) event window. This also indicates that bidder cumulative abnormal returns are sensitive to the use of the model specification.

Table 7.6 Bidder cumulative abnormal returns over various event windows

	MM model					Mkt-Adj model			
	Mean	p-value 1	p-value 3	Sign test	Wilcoxon test	Mean	p-value1	Sign test	Wilcoxon test
(-4,1)	-0.0054	0.0006	0.0000	0.0000	0.0000	-0.0037	0.0219	0.0000	0.0000
(-1,1)	-0.0063	0.0000	0.0000	0.0000	0.0000	-0.0056	0.0001	0.0000	0.0000
(-30,30)	-0.0148	0.0001	0.0000	0.0001	0.0000	0.0013	0.3696	0.0950	0.7520
(0)	-0.0046	0.0000	0.0000	0.0000	0.0000	-0.0044	0.0000	0.0000	0.0000
(-1,0)	-0.0046	0.0001	0.0000	0.0000	0.0000	-0.0041	0.0004	0.0002	0.0000
(-30,-1)	-0.0014	0.3291	0.2754	0.3537	0.2990	0.0062	0.0071	0.0278	0.0150
(0,1)	-0.0063	0.0000	0.0000	0.0000	0.0000	-0.0059	0.0000	0.0000	0.0000
(1,30)	-0.0088	0.0008	0.0000	0.0074	0.0000	-0.0005	0.3917	0.2773	0.5440

p-value 1: t test with assuming cross-sectional independence

p-value 3: PSR test

Wilcoxon test: Wilcoxon signed rank test

In addition to examining bidder shareholder wealth, this thesis further provides regression analysis to explore the determinants that can explain the announcement returns of bidding firms. As has been mentioned previously, this thesis focuses on exploring whether the country level corporate governance mechanisms in terms of investor protection and bank regulation are important determinants to explain bidder announcement returns. To explore investor protection and bank regulation on the impact of bidder cumulative abnormal returns accurately, the regression analysis also controls for the

country level specific characteristics.

While the deal and firm specific characteristics have shown its importance to influence the announcement returns of the firms as discussed in chapter 2, the regression analysis also controls for these characteristics in order to provide additional insights to explore the factors that can also affect bidder announcement returns. Thus, the regression analysis for bidders will be presented in section 7.8.

Overall, the results show that bidders experience negative announcement returns around bank merger and acquisition announcements, also implying wealth transfer from bidders to targets. The analysis of bidder cumulative abnormal returns is based on the full 1,424 sample of bidding firms.

7.6 Country differences in bidder cumulative abnormal returns

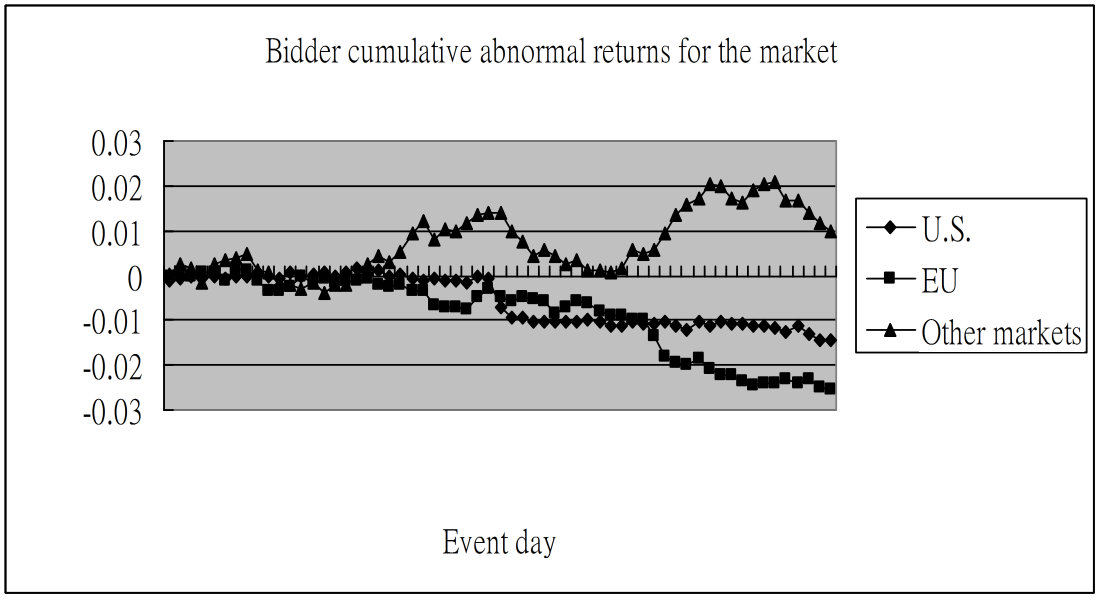
Prior empirical studies discussed in chapter 2 have reported that bidder cumulative abnormal returns vary depending on the market. While the majority of prior empirical studies focus on a signal market, it is interesting to see whether bidder announcement returns are different in various regions as this thesis contains a large international sample of bank mergers.

As has been discussed in section 6.6, Conn and Connell (1990) and Aybar and Ficici (2009) argue that U.S. targets earn higher bid premia due to the highly competitive U.S. takeover market. Thus, bidders need to pay more to targets in the U.S. market. So, U.S. bidders may obtain lower announcement returns than EU bidders and bidders from outside the U.S. and EU market. It can be expected that a difference of bidder announcement returns between the markets can be found. Accordingly, this thesis further splits the sample based on the markets to analyse bidder announcement returns.[99] The analysis of bidder announcement returns is based on the clean 1,208 sample as this allows the current study to

[99] The sample is further divided into the U.S. and EU market and other markets to examine bidder announcement returns. The discussion of bidder announcement returns is based on the MM model. The results measured from the Mkt-Adj and Mean-Adj model are provided in the appendix A table 7.3 and 7.4, respectively.

make a clear comparison between the markets. Thus, the analysis of bidder cumulative abnormal returns for the U.S., EU market and other markets is based on the sample of 943, 164 and 101, respectively.

Figure 7.3 Bidder cumulative abnormal returns for the market



Bidder cumulative abnormal returns in terms of the U.S., EU market and other markets are presented in order to capture the development of bidder cumulative abnormal returns during the event period, as is given in figure 7.3. The figure shows that bidders from other non-U.S. and European markets in general perform well relative to bidders from the U.S. and EU markets, particularly centring on the announcement date and the post-announcement period. This can be an indication that the banking takeover market from other markets is less competitive compared to the U.S. and EU market. Thus, bidders from other markets do not need to pay so much to targets.

However, it should be acknowledged that it is necessary to exercise care to claim this argument. This is because other markets also contain some competitive banking takeover market, such as Japan, Canada, etc. As a consequent, the results for bidders from other non-U.S. and European markets cannot strongly draw a conclusion that bidders from these

markets do obtain lower announcement returns due to less competitive banking takeover markets.

On the other hand, when taking into account the analysis of target announcement returns from other non-U.S. and European countries discussed in section 6.6, the results can lend support to the argument that banking takeover markets outside the U.S. and EU market are generally less competitive. This can attribute to lower announcement returns to targets from other markets and higher announcement returns to bidders from other markets.

Furthermore, this thesis presents bidder cumulative abnormal returns over various event windows in order to capture bidder cumulative abnormal returns in a certain period. As table 7.7 shows, bidders obtain -0.64%, -0.20% and -0.01% abnormal returns on day 0 for the U.S., EU market and other markets, respectively. The results are statistically significant at the 0.01 level for the U.S. market only. These results suggest that bidders marginally lose their wealth on the announcement date.

While looking at a 3-day (-1,+1) event window, the results show that bidders in the U.S. market obtain -0.91% cumulative abnormal returns, statistically significant at the 0.01 level. Similarly, the results are also statistically significant at the 0.01 level when performing the nonparametric statistics in terms of sign test and wilcoxon signed rank test. Negative cumulative abnormal returns to U.S. bidders are consistent with prior empirical evidence in U.S. studies, e.g., -1.96% of Siems (1996), -2.24% of Toyne and Tripp (1998) and -0.74% of Cornett *et al*. (2003).

With regard to bidder cumulative abnormal returns in the EU market, the results show that EU bidders experience -0.10% cumulative abnormal returns over a 3-day (-1,+1) event window. However, the results are not statistically significant. This finding is consistent with prior empirical evidence in EU studies, e.g., -0.01% of Beitel *et al*. (2004), -0.33% of Rad and Beek (1999), -0.87% of Campa and Hernando (2006), but contradicts to the studies of EU bank mergers, e.g., 0.99% of Cybo-Ottone and Murgia (2000), 0.03% of Ismail and Davidson (2005), 0.03% of Ekkayokkaya *et al*. (2007) and 0.39% of Lensink

Table 7.7 Bidder cumulative abnormal returns for the market

MM model												
	U.S.				EU				Other			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4,1)	-0.0082	0.0000	0.0000	0.0000	0.0012	0.7850	0.6962	0.2690	-0.0006	0.5210	1.0000	0.8730
(-1,1)	-0.0091	0.0000	0.0000	0.0000	-0.0010	0.7980	0.9378	0.7620	-0.0039	0.5270	0.3197	0.2490
(-30,30)	-0.0145	0.0010	0.0003	0.0000	-0.0255	0.0140	0.1844	0.0340	0.0097	0.7710	0.5505	0.7350
(0)	-0.0064	0.0000	0.0000	0.0000	-0.0020	0.4310	0.3100	0.8120	-0.0001	0.3650	0.6906	0.7040
(-1,0)	-0.0072	0.0000	0.0000	0.0000	-0.0000	0.9960	0.3100	0.3960	0.0005	0.2040	0.8423	0.9590
(-30,-1)	-0.0009	0.7320	0.7945	0.8430	-0.0028	0.6720	0.1379	0.1580	0.0141	0.4650	0.3197	0.3310
(0,1)	-0.0083	0.0000	0.0000	0.0000	-0.0030	0.3930	0.8148	0.8440	-0.0045	0.8130	0.2325	0.2040
(1,30)	-0.0072	0.0180	0.0904	0.0020	-0.0207	0.0050	0.0509	0.0120	-0.0043	0.6440	1.0000	0.6890
N	943				164				101			

p-value 1: t test with assuming cross-sectional independence

Wilcoxon test: Wilcoxon signed rank test

and Maslennikova (2008).

While looking at other markets, bidders obtain -0.39% cumulative abnormal returns over a 3-day (-1,+1) event window, not statistically significant. Similarly, the results are not statistically significant when performing nonparametric statistics in terms of sign test and wilcoxon signed rank test. Taking into account the difference of bidder cumulative abnormal returns for a 3-day (-1,+1) event window between the markets, the results are only statistically significant between the U.S. and EU market, p-value is 0.067. The results indicate that bidders do obtain a different level of the announcement returns between the U.S. and EU market. Overall, the results show that U.S. bidders experience more losses than EU bidders and bidders from outside the U.S. and EU market. This lends support to the hypothesis discussed in section 4.3.1.2, expecting that there are differences of bidder announcement returns between the markets, although the results are not statistically significant.

When extending to a longer 61-day (-30,+30) event window, it can be found that bidders in the EU market encountered significant mean abnormal losses of -2.55% although bidders in U.S. market obtain -1.45% cumulative abnormal returns, both statistically significant at the 0.05 and 0.01 level, respectively. The results indicate that EU bidders experience more losses when analysing a longer event window relative to U.S. bidders. The results contradict to those from the shorter 3-day (-1,+1) event window. On the contrary, bidders from other markets obtain marginally positive announcement returns when looking at a longer 61-day (-30,+30) event window. The results suggest that bidders from other markets gain more, partially attributing to a less competitive banking takeover markets.

7.7 The analysis of diversifying or focusing deals

As mentioned in section 6.7, banks can diversify risks through diversification acquisitions. Instead, managers may find it relatively easy to manage similar risks when

engaging in focusing deals. It can therefore be expected that there are differences in bidder cumulative abnormal returns in activity focusing and diversifying deals. Thus, this section discusses bidder cumulative abnormal returns with respect to activity diversifying and focusing deals measured from the MM model and based on the clean 1,208 sample. The analysis of bidder cumulative abnormal returns for focusing and diversifying deals is further based on the sample of 1,032 and 176, respectively.[100]

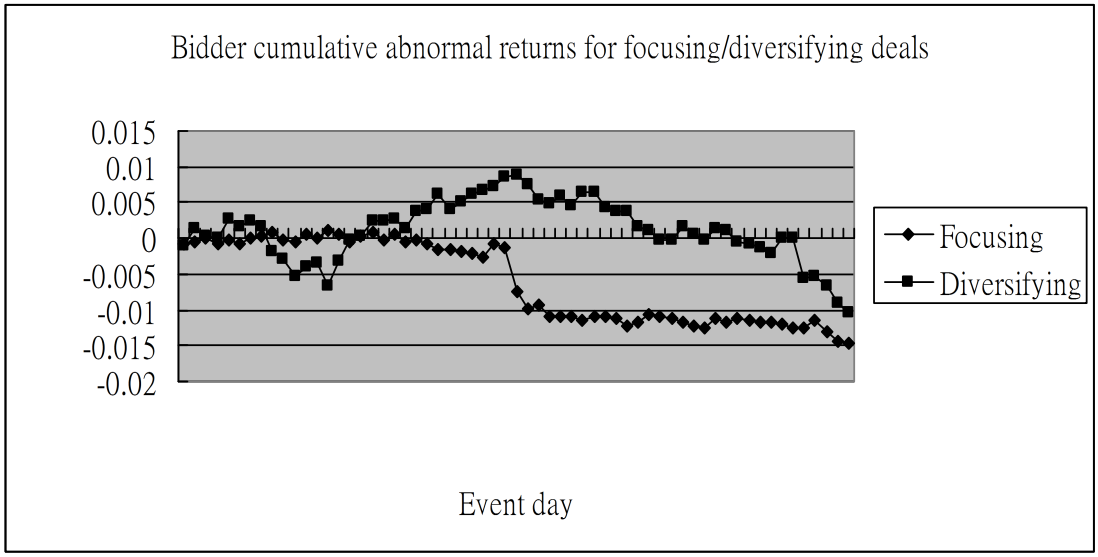
The development of bidder cumulative abnormal returns during the event period with respect to activity diversifying and focusing deals is presented in figure 7.4. As figure 7.4 shows, bidders in diversifying deals in general perform well during the test period relative to those in focusing deals although the reverse situation is found around two weeks prior to the announcement date. As can be seen in figure 7.4, bidders in diversifying deals clearly obtain higher announcement returns than those in focusing deals, starting from one week prior to the announcement date. Although the results still show significant difference of bidder announcement returns between diversifying and focusing deals during the post-event period, the difference becomes small approaching the end of the test period. Thus, the findings clearly indicate that banks in diversifying deals create higher announcement returns to bidders, suggesting that banks can be expected to achieve risk diversification through diversification acquisitions.

Surprisingly, figure 7.4 also shows interesting findings. As can be seen, the movement of bidder cumulative abnormal returns in focusing deals during the post-announcement period is rather stable with a significant impact of the announcement returns to bidders on the announcement date. A possible explanation is that the market may not exist too much information regarding focusing deals. Thus, the movement of bidder

[100] It should be acknowledged that the definition of diversification transactions may not provide a clear picture to analyse the abnormal returns of bank diversification acquisitions. This may derive from the fact that banks within the same 2-digit SIC code may also contain different types of banks, such as retail banks, wholesale banks, etc. The analysis of the abnormal returns may vary depending on different types of the banks. This can also suggest future research to further look into the impact of shareholder wealth in bank mergers within different types of banks.

cumulative abnormal returns is stable during the post-announcement period.

Figure 7.4 The development of bidder cumulative abnormal returns for activity focusing/diversifying deals



However, the variation of bidder cumulative abnormal returns appears to be significant in diversifying deals. The presence of a wide variation of bidder cumulative abnormal returns in diversifying deals may suggest that the market may have more rumour regarding to diversifying deals. However, it remains unknown as to why bidder cumulative abnormal returns in diversifying deals appear to vary during the test period.

As the variation of bidder announcement returns in diversifying deals is wide relative to that in focusing deals, another interesting implication in figure 7.4 is that the presence of either information leakage or information lag is mainly driven by the transactions in diversification deals. This also implies the importance to control for activity diversifying or focusing deals in the analysis of bidder announcement returns in bank mergers. However, this thesis does not intend to control for activity focusing or diversifying deals in the regression analysis to explore the impact of investor protection and bank regulation on bidder announcement returns. Due to several variables being controlling for in the regression analysis, I do not control for whether the deals are focusing or diversifying

acquisitions. Instead, bidder regression analysis allows the current study to look at different facets to affect bidder announcement returns.

In addition, this thesis also presents bidder cumulative abnormal returns over various event windows in order to capture the impact of bidder announcement returns in a certain period. As table 7.8 shows, bidders in focusing deals on average obtain -0.62% abnormal returns on day 0 relative to 0.03% for those in diversifying deals. The results are statistically significant at the 0.01 level for focusing deals only. While performing nonparametric statistics in terms of sign test and wilcoxon singed rank test, the results are statistically significant the 0.01 level for focusing deals only. The difference between focusing and diversifying deals is statistically significant, p-value is 0.005. Thus, these findings suggest that bidders in diversifying deals can be expected to achieve risk diversification benefits, resulting in higher bidder announcement returns.

Table 7.8 Bidder cumulative abnormal returns for activity focusing/diversifying deals

	Focusing				Diversifying			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4,1)	-0.0078	0.0000	0.0000	0.0000	0.0026	0.5320	1.0000	0.4420
(-1,1)	-0.0089	0.0000	0.0000	0.0000	0.0005	0.8770	0.9399	0.9240
(-30,30)	-0.0146	0.0010	0.0009	0.0000	-0.0105	0.3250	0.3271	0.2410
(0)	-0.0062	0.0000	0.0000	0.0000	0.0003	0.8840	0.9399	0.6680
(-1,0)	-0.0068	0.0000	0.0000	0.0000	0.0018	0.5110	1.0000	0.5450
(-30,-1)	-0.0014	0.6010	0.2759	0.4000	0.0086	0.2120	0.2000	0.3010
(0,1)	-0.0084	0.0000	0.0000	0.0000	-0.0010	0.7210	0.7063	0.8830
(1,30)	-0.0070	0.0180	0.1272	0.0050	-0.0194	0.0140	0.0288	0.0040
N	1032				176			

p-value 1: t test with assuming cross-sectional independence

Looking at a 3-day (-1,+1) event window, the results show that bidders in focusing deals on average obtain -0.89% cumulative abnormal returns relative to 0.05% for those in diversifying deals. The results are also statistically significant at the 0.01 level for focusing deals only. The difference between focusing and diversifying deals is statistically significant, p-value is 0.011. This allows the current study to reject the null hypothesis as discussed in section 4.3.1.2 and conclude that there are differences of bidder cumulative abnormal returns between activity focusing and diversifying deals. This finding is consistent with Ekkayokkaya *et al*. (2007) and Hagendorff *et al*. (2008) in the study of EU bank mergers, where these two studies have reported higher announcement returns to bidders in diversifying deals.

Interestingly, table 7.8 shows that bidders obtain higher cumulative abnormal returns in diversifying deals than those in focusing deals in all event windows, except a 30-day (+1,+30) event window. However, the results show that bidders in focusing deals obtain higher announcement returns over a 30-day (+1,+30) event window than those in diversifying deals although both diversifying and focusing deals generate negative announcement returns to bidders. The figure shows that bidder cumulative abnormal returns are -0.70% and -1.94% for focusing and diversifying deals, respectively, both statistically significant at the 0.05 level. However, the difference between focusing and diversifying deals is not statistically significant, p-value is 0.141.[101]

While bidders in diversifying deals obtain higher announcement returns within various event windows in table 7.8, bidders, on the contrary, yield higher announcement returns in focusing deals during the post-announcement 30-day (+1,+30) event window. This indicates that the market has a reverse expectation after the transactions regarding to diversifying acquisitions. A possible reason is that the market may realise that it may be

[101] Bidder cumulative abnormal returns measured from the Mkt-Adj and Mean-Adj model are presented in the appendix A table 7.5 and 7.6, respectively.

relatively difficult to manage different risks for various financial products after the transactions when acquiring other financial firms. Thus, bidders in diversifying acquisitions experience significantly negative announcement returns after the transactions.

Another possible explanation is that the market may react the advantages of the risk diversification effects significantly to bidders in diversifying deals prior to the transactions. The market may therefore show a reverse reaction after the transactions in order to revise its pervious expectation for diversifying deals. As a result, bidders experience more losses in diversifying acquisitions than in focusing deals during the post-announcement 30-day (+1,+30) period.

Overall, as discussed above, this chapter discusses the empirical findings of bidder announcement returns, taking into account the issues of thin trading, the confounding events, the market and activity diversifying or focusing deals, respectively. The results show that bidders in general obtain negative announcement returns around bank merger and acquisition announcements.

In order to explain bidder announcement returns, this thesis also carries out cross-sectional regression analysis to explore the factors that can affect bidder announcement returns. As has been discussed in chapter 1, the main focus in the regression analysis is to determine as to whether the country level corporate governance mechanisms in terms of investor protection and bank regulation can be important determinants to explain bidder announcement returns. Thus, the following section provides the cross-sectional regression analysis for bidders.

7.8 Cross-sectional regression analysis

The empirical findings related to bidder cumulative abnormal returns have been discussed in the previous sections. To explain bidder shareholder wealth, this thesis

provides cross-sectional regression analysis to determine as to whether investor protection and bank regulation in a country can be important determinants to influence bidder cumulative abnormal returns. The regression analysis also controls for the country level specific characteristics to explain bidder announcement returns.

In addition, as has been suggested by prior empirical studies discussed in chapter 2, bidder cumulative abnormal returns can be influenced by factors, such as the deal and firm specific characteristics. Thus, the cross-sectional regression analysis also controls for the country level specific characteristics and the deal and firm specific characteristics in order to explore the relationship between bidder cumulative abnormal returns and investor protection and bank regulation in a country accurately. With regard to control variables, the country level specific characteristics include the variable of the competitiveness of the banking market and the size of the banking market. The control variables related to the deal and firm specific characteristics include a cross-border dummy, cash dummy, the relative size of the target to bidder, firm performance, the growth potential, the capital ratio and firm size.

Similar to the discussion of target regression analyses in section 6.8, the sample only includes the clean sample in bidder regression analyses.[102] Bidder regression analyses also control for outliers by deleting 1% observations from the top and bottom of bidder 3-day (-1,+1) cumulative abnormal returns. However, due to a relative small number of observations being deleted from the sample, the results may not change significantly. In order to identify whether the existence of outliers is an issue to affect the regression analysis, this thesis also uses the full 1,424 sample of bank mergers in the analysis. The results are presented in appendix B.

Furthermore, this thesis uses different model specifications in order to avoid a high level of the correlation among the variables of investor protection and bank regulation in a

[102] The clean sample indicates that the sample firms do not announce other corporate events over a 3-day (-1,+1) event window.

country that may affect the analysis.[103] The dependent variable in bidder regression analyses only relies on bidder cumulative abnormal returns for a 3-day (-1,+1) event window in that bidder 3-day (-1,+1) announcement returns can capture the immediate reaction of bank merger and acquisition announcements efficiently.

Table 7.9 shows the results of bidder regression analysis based on the market (MM) model. The results in model specification (1) show that bidder cumulative abnormal returns are positively related to investor protection measured as the antidirector rights index in a bidder country, the coefficient is 0.001.[104] However, the results are not statistically significant.

In addition, the results show that bidder cumulative abnormal returns are negatively and significantly related to investor protection measured as the rule of law in a bidder country in model specification (2). The coefficient is -0.002, statistically significant at the 0.1 level. The results indicate that higher bidder cumulative abnormal returns are associated with weaker investor protection in a bidder country. The results denote that bidders reduce -0.002 cumulative abnormal returns when the rule of law in a bidder country increases 1 point.

Although the statistical significant finding allows the current study to reject the null hypothesis, it should be acknowledged that the sign of the coefficient contradicts the expectation as has been discussed in chapter 4. A possible explanation for a negative relationship between bidder announcement returns and investor protection in a bidder country can be that strong investor protection in a bidder country can actually impede managers' ability to pursue risky investment projects through mergers and acquisitions. This would reduce the potential future gains to shareholders. Thus, stronger investor protection in a bidder country can result in lower bidder cumulative abnormal returns in

[103] The correlation matrix is provided in appendix A table 7.7.

[104] This thesis also applies Djankov *et al*.'s (2006) revised antidirector rights index to explore the impact of investor protection on the bidder cumulative abnormal returns in bank mergers. The results show that the coefficient is 0.001 between bidder cumulative abnormal returns and the revised antidirector rights index. However, the results are not statistically significant.

bank mergers.

With regard to the control variables, several explanatory variables are found to be highly statistically significant. As can be seen in model specification (1) and (2) of table 7.9, the results show that higher bidder cumulative abnormal returns are associated with cash payment, the coefficient is 0.011.

In addition, the results also show that bidder cumulative abnormal returns have a positive relationship with the market to book ratio and capital ratio, the coefficients are 0.002 and 0.032, respectively, both statistically significant. The results indicate that higher bidder cumulative abnormal returns are related to higher growth potential and higher capital ratio.

While the variables of cash payment, the market to book ratio and the capital ratio have a positive relationship with bidder cumulative abnormal returns, it can be seen that the capital ratio generates the highest coefficient at 0.032. This denotes that the capital ratio is an important determinant to explain bidder announcement returns. However, it should be necessary to exercise care to make such a comparison in that the significant level of the coefficient among these three variables is different. A positive coefficient of the capital ratio also suggests that higher capital ratio of banks can serve as a cushion to protect unexpected losses through bank mergers and acquisitions.

In contrast, the results show that bidder cumulative abnormal returns are negatively and significantly correlated to the relative size of the target to bidder, indicating that bidders obtain higher announcement returns when targets are relatively smaller than bidders. Similarly, the results also show that bidder size has a negative impact to bidder cumulative abnormal returns. Bidder cumulative abnormal returns are negatively and significantly related to ROA, the coefficient is -0.312, suggesting that bidders obtain higher announcement returns when bidder’s prior performance is poor. Furthermore, the results also find that bidder cumulative abnormal returns are negatively and significantly associated with net interest margin, suggesting that bidders in a more competitive banking

market obtain lower announcement returns.

Overall, the results show that the adjusted R square in model specification (1) and (2) is 7.44% and 7.64%, respectively. F-value in model specification (1) and (2) is 9.66 and 9.91, respectively, both statistically significant at the 0.01 level.

Turning to the analysis of bank regulation on the impact of bidder cumulative abnormal returns in model specification (3)-(6), the results are mixed. The results in model specification (3) of table 7.9 show that bidder cumulative abnormal returns are negatively and significantly associated with bank regulation measured as overall activity restrictiveness in a bidder country, the coefficient is -0.003. The results suggest that higher bidder cumulative abnormal returns are associated with less restriction of banking activity in a bidder country.

However, when bank regulation is measured as independence of overall supervisory authority in a bidder country, the results in model specification (6) show that bidder cumulative abnormal returns are positively and significantly associated with bank regulation, the coefficient is 0.006. The results suggest that higher bidder cumulative abnormal returns are related to stronger bank regulation measured as independence of supervisory authority-overall in a bidder country. However, when bank regulation is measured as official supervisory power and prompt correct power in model specification (4) and (5) respectively, the results do not show any statistical relationship with bidder announcement returns.

With regard to control variables in model specification (3)-(6), the results are in general consistent with those in model specification (1) and (2). The results show that higher bidder cumulative abnormal returns are related to cash payment, higher market to book ratio and higher capital ratio. On the contrary, the results find that higher bidder cumulative abnormal returns are associated with smaller relative size of the target to bidder, smaller bidder size, lower ROA and lower net interest margin. However, the results in model specification (3) also show that higher bidder cumulative abnormal returns are

related to cross-border deals.

Overall, the adjusted R square in model specification (3)-(6) is around 8%. F-value in model specification (3)-(6) is around 10, with statistically significant at the 0.01 level.[105] Additional statistical tests of Ramsey test show that there are no omitted variables in all model specifications. Multicollinearity is similarly not a problem as the figure of Variance Inflation Factor (VIF) is lower than 3.

From the empirical findings reported above, my findings show that bidder cumulative abnormal returns are negatively related to investor protection measured as the rule of law and bank regulation measured as overall activities restrictiveness, respectively. The results suggest that the presence of strong legal and regulation system cannot mitigate the conflicts between managers and shareholders resulted in lower announcement returns to bidders. As discussed previously, the existence of strong legal and regulation system may limit managerial ability to pursue risky investment projects through mergers and acquisitions in return of higher returns to shareholders. Thus, a strong legal and regulation system can exaggerate the conflicts between managers and shareholders to bidding firms.

However, when bank regulation measured as overall independence of supervisory authority applies in the regression analysis, the results show a positive relationship with bidder cumulative abnormal returns. The findings imply that managers can carry out their duty to benefit their firms and shareholders when supervisory authority is more independence without outside influence through political consideration. Thus, a more independent supervisory authority can reduce the conflicts between managers and shareholders. This can then benefit shareholders of bidders showing higher announcement returns.

In addition to the analysis above, this thesis also analyses the regression analysis based on the full 1,424 sample of bank mergers. As appendix B table 7.1 shows, the

[105] Appendix A table 7.8 and 7.9 show the results based on bidder 3-day (-1,+1) cumulative abnormal returns measured from the market adjusted (Mkt-Adj) returns model and the mean adjusted (Mean-Adj) returns model, respectively.

coefficients of the variables for investor protection and bank regulation vary, showing a degree of the different level in determining the coefficients and significance level. However, it is obvious that the explanatory power, adjusted R square, in the model specifications in appendix B table 7.1 is lower. This suggests that the presence of outliers in the regression analysis can actually reduce the explanatory power in the regression analysis. Thus, this thesis relies on the results, where the regression analysis removes the top and bottom 1% sample of bidder 3-day (-1,+1) cumulative abnormal returns.[106]

Table 7.9 The cross-sectional regression analysis for bidders

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.039	**	0.072	***	0.072	***	0.052	***	0.047	***	0.023	
Antidirector rights in dex	0.001											
Rule of law			-0.002	*								
Overall Activities Restrictiveness					-0.003	**						
Official Supervisory Power							-0.000					
Prompt Corrective Power									0.000			
Independence of Supervisory Authority - Overall											0.006	**
Cross-border	-0.004		-0.004		-0.008	*	-0.005		-0.004		-0.003	
Cash	0.011	***	0.009	***	0.010	***	0.010	***	0.011	***	0.012	***
Relative size	-0.159	***	-0.163	***	-0.161	***	-0.160	***	-0.159	***	-0.158	***
ROA	-0.312	*	-0.202		-0.271	*	-0.266	*	-0.275	*	-0.386	**
MKTV	0.002	***	0.002	**	0.002	***	0.002	**	0.002	**	0.002	***
Capital to assets	0.032	**	0.030	**	0.029	*	0.028	*	0.030	*	0.035	**
ln (total assets)	-0.003	***	-0.003	***	-0.003	***	-0.003	***	-0.003	***	-0.002	***
Deposit Money Bank Assets / GDP	0.005		0.004		0.002		0.004	*	0.005		0.007	
Net Interest Margin	-0.392	*	-0.475	**	-0.431	**	-0.416	*	-0.423	*	-0.299	

[106] Appendix B table 7.2 and 7.3 presents the results with the full 1,424 sample of bank mergers based on bidder 3-day (-1,+1) cumulative abnormal returns measured from the market adjusted (Mkt-Adj) returns model and the mean adjusted (Mean-Adj) returns model, respectively.

Observations	1078		1078		1080		1078		1080		1080	
Adjusted R Square	7.44%		7.64%		7.90%		7.58%		7.57%		8.01%	
F-value	9.66		9.91		10.25		9.83		9.84		10.40	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.9 presents the results of bidder regression analysis. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the market model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR_{(-1,+1)}^{Bidder} = \alpha_0 + \beta_1 (\text{Bidder's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) + \beta_6 (\text{ROA}) + \beta_7 (\text{The market to book ratio}) + \beta_8 (\text{The capital ratio}) + \beta_9 (\text{Size}) + \beta_{10} (\text{The competitiveness of the banking market}) + \beta_{11} (\text{The size of the banking market}) + \varepsilon_i$$

7.9 Cross-sectional regression analysis for the difference in investor protection and bank regulation

As has been discussed in section 7.8, the results have shown that bidder cumulative abnormal returns have a relationship with investor protection and bank regulation in a country. As Rossi and Volpin (2004) argue that bidders tend to come from a country with better investor protection, I can therefore expect that the difference of investor protection

and bank regulation in a bidder and target country may also have an influence on bidder announcement returns. Thus, this section further controls for the difference of investor protection and bank regulation in a bidder and target country in the regression analysis.[107]

Similar to the discussion in section 7.8, the regression analysis is based on the clean sample. Although the regression analysis deletes the top and bottom 1% distribution of bidder 3-day (-1,+1) cumulative abnormal returns to control for the outliers, the regression analysis is also analysed on the basis of the full 1,424 sample to identify whether outliers are an issue to be taken into account in this study. Thus, appendix B table 7.1/7.2/7.3 presents the results based on the full 1,424 sample of bank mergers.

With regard to the aspects of investor protection in table 7.10, the results in model specification (1) and (2) do not find a statistical significant relationship between bidder announcement returns and the difference of investor protection in a bidder and target country. However, the results find that higher bidder announcement returns are associated with weaker investor protection measured as the rule of law in a bidder country in model specification (2), the coefficient is -0.003. Although the regression analysis in model specification (2) also controls for the difference of investor protection in a bidder and target country, the rule of law is still statistically significant. This suggests that investor protection measured as the rule of law in a bidder to target country is an important component to explain bidder announcement returns.

When investor protection is measured as the antidirector rights index in model specification (1), the results are not statistically significant. Similarly, when analysing the difference of the antidirector rights index in a bidder and target country, the results do not show any statistical significance.[108] Thus, I cannot draw a conclusion that there is any

[107] Similar to the discussion of target regression analysis in section 6.9, the variable related to the difference of investor protection and bank regulation in a bidder and target country is constructed by the level of investor protection and bank regulation in a bidder country minus the level of investor protection and bank regulation in a target country.

[108] Applying Djankov *et al.*'s (2006) revised antidirector rights index in the regression analysis, the results show that the coefficient for the difference of the revised antidirector rights index is -0.008. The results suggest that higher bidder announcement returns are associated with smaller difference of the revised antidirector rights index. The results are statistically significant at the 0.01 level.

statistically significant relationship between bidder cumulative abnormal returns and the difference of the antidirector rights index in a bidder and target country.

With regard to the control variables in model specification (1) and (2), the results show that higher bidder cumulative abnormal returns are related to cash payment, higher market to book ratio and higher capital ratio, with coefficients of 0.011, 0.003 and 0.040, respectively. The results are all statistically significant. On the contrary, the results find that higher bidder cumulative abnormal returns are associated with smaller relative size of the target to bidder and smaller bidder size. The coefficients are -0.155 and -0.003, respectively. In addition, the results also show that bidder cumulative abnormal returns are negatively and significantly related to net interest margin, suggesting that higher bidder announcement returns are associated with less competitive banking market in a bidder country. The coefficients in model specification (1) and (2) are -0.403 and -0.549, respectively.

While additionally controlling for the difference of investor protection in a bidder and target country in the regression analysis, these control variables above are still statistically significant. These findings are also consistent with those in section 7.8. Thus, the results also demonstrate the importance of these variables in explaining bidder announcement returns. Overall, the adjusted R square in model specification (1) and (2) is 7.58% and 8.16% and F-value is 8.84 and 9.49, both statistically significant at the 0.01 level, respectively.

Turning to the analysis of bank regulation, the results only show that bidder cumulative abnormal returns are positively and significantly related to bank regulation measured as independence of overall supervisory authority in a bidder country in mode specification (6). The results suggest that higher bidder cumulative abnormal returns are associated with stronger bank regulation measured as independence of overall supervisory authority in a bidder country, which is also consistent with those reported in table 7.9 in the previous section. This illustrates that the shareholders of bidders can obtain higher gains when

supervisory authority is more independent to carry out their duty. Thus, bank mergers can result in higher announcement returns to bidders.

When analysing the difference of bank regulation in a bidder and target country, the results only show that bidder cumulative abnormal returns are positively and significantly associated with the difference of prompt corrective power in a bidder and target country in model specification (5). The results indicate that higher bidder cumulative abnormal returns are related to a larger difference in the prompt corrective power in a bidder and target country. When bidders in a country with higher prompt corrective power engage in bank mergers, their bank regulation can carefully monitor the transactions. Overall, the adjusted R square in model specification (3)-(6) is around 8%. F-value is around 9 with statistically significant at the 0.01 level.[109]

As can be seen in appendix B table 7.4, the coefficients of the variables for investor protection and bank regulation show a degree of the difference in comparison with those in table 7.10 below. However, the explanatory power for the model specifications in appendix B table 7.4 is lower. This suggests that the existence of outliers in the regression analysis can actually reduce the explanatory power in model specifications. As a result, the regression analysis in the current study relies on the sample that deletes the top and bottom 1% distribution of bidder 3-day (-1,+1) cumulative abnormal returns.[110]

Table 7.10 The cross-sectional regression analysis for bidders controlling for the difference of investor protection and bank regulation in a bidder and target country based on the market (MM) model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.041	**	0.084	***	0.064	***	0.057	***	0.051	***	0.027	
Antidirector rights	0.001											

[109] The analysis for the difference of investor protection and bank regulation in a bidder and target country with respect to the market adjusted (Mkt-Adj) returns model and the mean adjusted (Mean-Adj) returns model are presented in appendix A table 7.9 and 7.10, respectively.

[110] The results based on the full 1,424 sample of bank mergers from the market adjusted returns model and the mean adjusted returns model are provided in appendix B table 7.5 and 7.6, respectively.

index												
Difference (Antidirector rights index)	-0.000											
rule of law			-0.003	**								
Difference (Rule of law)			0.003									
Overall Activities Restrictiveness					-0.002							
Difference (Overall Activities Restrictiveness)					-0.001							
Official Supervisory Power							-0.001					
Difference (Official Supervisory Power)							-0.000					
Prompt Corrective Power									-0.001			
Difference (Prompt Corrective Power)									0.003	*		
Independence of Supervisory Authority - Overall											0.005	*
Difference (Independence of Supervisory Authority - Overall)											0.001	
Cross-border	-0.004		-0.007		-0.008		-0.005		-0.002		-0.004	
Cash	0.011	***	0.009	***	0.011	***	0.011	***	0.010	***	0.012	***
Relative size	-0.155	***	-0.161	***	-0.156	***	-0.156	***	-0.156	***	-0.154	***
ROA	-0.259		-0.141		-0.233		-0.209		-0.184		-0.327	*
MKTV	0.003	**	0.002	**	0.003	**	0.003	***	0.002	**	0.003	***
Capital to assets	0.040	***	0.038	***	0.038	***	0.038	**	0.038	**	0.042	***
ln (total assets)	-0.003	***	-0.003	***	-0.003	***	-0.003	***	-0.003	***	-0.002	***
Deposit Money Bank Assets / GDP	0.006		0.003		0.003		0.005		0.006		0.008	
Net Interest Margin	-0.403	**	-0.549	***	-0.444	**	-0.413	**	-0.446	**	-0.336	
Observations	1052		1051		1054		1047		1054		1054	

Adjusted R Square	7.58%		8.16%		8.03%		7.83%		8.04%		8.05%	
F-value	8.84		9.49		9.36		9.08		9.36		9.38	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.10 presents the results to explore the impact of the difference of investor protection and bank regulation in a bidder and target country on bidder shareholder wealth. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the market model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression analysis also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target and bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to the transactions. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR_{(-1,+1)}^{Bidder} = \alpha_0 + \beta_1(\text{Bidder's investor protection}) + \beta_2(\text{The difference of investor protection in a bidder and target country}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bank regulation in a bidder and target country}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA}) + \beta_9(\text{The market to book ratio}) + \beta_{10}(\text{The capital ratio}) + \beta_{11}(\text{Size}) + \beta_{12}(\text{The competitiveness of the banking market}) + \beta_{13}(\text{The size of the banking market}) + \varepsilon_i$$

7.10 Conclusion

This chapter consists of several discussions for bidder announcement returns in order to identify whether positive cumulative abnormal returns to targets can be attributable to wealth transfer from bidders to targets. In the previous sections, the analysis of bidder announcement returns does not suffer from the problem of thin trading. While taking into

account the confounding events, the results do show a difference between the clean sample and nonclean sample. Based on the full 1,424 sample of bank mergers, the empirical findings show that bidders experience -0.63% cumulative abnormal returns over a 3-day (-1,+1) event window. While targets earn positive cumulative abnormal returns, bidders obtain negative cumulative abnormal returns. This can be an indication of wealth transfer from bidders to targets. Negative announcement returns to bidders are consistent with prior empirical studies, e.g., Neely (1987), Houston and Ryngaert (1994), Siems (1996), Cornett *et al*. (2003), DeLong (2003), Beitel *et al*. (2004), Campa and Hernando (2006), Hagendorff *et al*. (2008).

To make a clear comparison with prior empirical studies, the analysis of the market and diversifying/focusing deals is based on the clean 1,208 sample of bank mergers. Splitting the sample based on the market, U.S. bidders obtain -0.91% cumulative abnormal returns over a 3-day (-1,+1) event window, compared to 0.97% for bidders from the markets outside the U.S. and EU market and -2.55% for EU bidders. The results indicate that there are differences in bidder cumulative abnormal returns in the U.S., EU market and the markets from outside the U.S. and EU market. This also suggests that the level of the competitive banking takeover market can cause different levels of bidder cumulative abnormal returns.

Additional analysis shows that bidders in diversifying deals obtain higher cumulative abnormal returns at 0.05% over a 3-day (-1,+1) event window relative to -0.89% for those in focusing deals. These findings suggest that bidders in diversifying acquisitions obtain higher gains in that diversifying acquisitions allow bidding banks to diversify their risks and create higher synergies after the transactions. These findings are consistent with Ekkayokkaya *et al*. (2007) and Hagendorff *et al*. (2008) in the study of EU bank mergers, where these two studies have reported higher announcement returns to bidders in diversifying deals.

Theoretically, stronger investor protection can be expected to better protect

shareholders. This can reduce the expropriation by managers through mergers and acquisitions. In other words, stronger investor protection can be expected to reduce the effects of the conflicts of interests between managers and shareholders. This can be expected to increase the gains to bidders. However, in the regression analysis, the results reveal that bidders gain more when bidders are in a country with weak investor protection. A possible explanation is that strong investor protection in a bidder country can actually reduce the incentives or ability to bidder managers to pursue risky investment projects through mergers and acquisitions in return of higher future gains to bidders. Thus, when legal enforcement in a bidder country is strong, bidders obtain lower gains as reflected in lower announcement returns to bidders.

Turning to the analysis of bank regulation, the results show that bidders gain more when bank regulation measured as overall activities restrictiveness, is low. When bank regulation in a bidder country has less restriction on bank activity, mergers and acquisitions allow bidder managers to create higher synergies to shareholders. Thus, bidders obtain higher announcement returns.

On the other hand, the findings show that bidders obtain higher gains when supervisory authority in a bidder country is more independent. When supervisory authority can independently evaluate the transactions of mergers and acquisitions and reduce the outside influence from the political consideration, they can create higher value to bidding firms. This suggests that bidder managers can be expected to better aim at the interests of shareholders in mergers and acquisitions. So, bidders obtain higher gains.

Furthermore, the regression analysis also finds that bidder gains more when bidders use cash payment in mergers and acquisitions. When bidders have higher growth potential, they can create higher synergies to the firms after the transactions. Thus, bidders gain more when they have higher growth potential. When bidders have higher capital ratio, this can serve as higher cushion to bidders against unexpected losses after the transactions. Thus, the results show that bidders gain more when bidders have higher capital ratio.

On the contrary, the results also reveal that bidders obtain higher gains when the relative size of the target to bidder is small and bidder size is small. In addition, bidders obtain higher gains if their prior performance is poor. This suggests that mergers and acquisitions allow bidders to improve their performance after the transactions. When bidders are in a country with less competitive banking market, bidders can be expected to obtain higher gains after the transactions.

Controlling for additional factors in the regression analysis, the results only find that higher bidder announcement returns are related to the difference of bank regulation in a bidder and target country measured as the difference of prompt corrective power. However, the results related to investor protection and bank regulation in a bidder country still remain significant when additionally controlling for the differences of investor protection and bank regulation in a bidder and target country. This also demonstrates the importance of investor protection and bank regulation in a bidder country in explaining bidder announcement returns.

Finally, this chapter presents the empirical findings for bidding firms. The results reveal that the legal and regulation system in a country in terms of investor protection and bank regulation can have an impact on bidder announcement returns in bank mergers and acquisitions. However, the influence can be positive or negative depending on various variables, suggesting that the country level corporate governance mechanisms in terms of investor protection and bank regulation have positive and negative impact to bidder shareholder wealth in bank mergers and acquisitions. My findings contribute our knowledge to illustrate how managerial decisions in bank mergers and acquisitions can be influenced by the country level corporate governance mechanisms. This can then be expected to affect shareholder wealth of the firms.

Chapter 8 The Empirical Results for Combined Firms

8.1 Introduction

The empirical results for targets and bidders in the current study have been discussed in chapters 6 and 7, respectively. The results show that targets earn significant positive announcement returns and bidders experience marginally negative announcement returns around bank merger and acquisition announcements in this thesis. While prior empirical studies discussed in chapter 2 have reported marginally positive announcement returns to combined firms, this may be attributable to the fact that insignificant negative announcement returns to bidders can be compensated by significant positive announcement returns to targets.

However, prior empirical studies in general contain smaller samples. This thesis consists of a large international sample of bank mergers to compute the abnormal returns of combined firms. Thus, this chapter presents the empirical findings for combined firms in this thesis.

Prior empirical studies discussed in chapter 2 apply a weighted average approach to measure combined firms announcement returns. Following prior empirical studies, such as Cybo-Ottone and Murgia (2000), this thesis also employs the weighted average approach to measure combined firms announcement returns. The weighted average approach is calculated below.

$$AR_t^{JOINT} = \frac{MV_{TARGET} * AR_{T,it} + MV_{BIDDER} * AR_{B,it}}{MV_{TARGET} + MV_{BIDDER}}$$

As has been discussed in chapter 5, MV_{TARGET} and MV_{BIDDER} indicate market value of the target and bidder on day -31, respectively. When market value of the target and bidder calculates from day -31, this can reduce the influence to calculate the abnormal returns of combined firms during the test period from day -30 to day +30.

Similar to the discussion in chapter 6 and 7, this chapter also takes into account the

influence of the confounding events on combined firms abnormal returns. Then, the empirical findings for combined firms are presented. An additional analysis for combined firms announcement returns with respect to activity focusing and diversifying deals is presented. Furthermore, the cross-sectional regression analysis is carried out in order to explore as to whether the country level corporate governance mechanisms in terms of investor protection and bank regulation can be important determinants to explain the cumulative abnormal returns of combined firms in bank mergers. To explore the relationship between combined firms announcement returns and investor protection and bank regulation accurately, the regression analysis also controls for the country level specific characteristics and the deal and firm specific characteristics. This provides additional insights to explore the factors that can affect combined firms announcement returns.

This chapter is organised as follows. Section 8.2 discusses combined firms announcement returns taken into account the confounding events. The empirical results of combined firms cumulative abnormal returns are presented in section 8.3. Section 8.4 presents combined firms announcement returns with respect to activity diversifying and focusing deals. The cross-sectional regression analyses are provided in section 8.5. Section 8.6 provides the conclusion.

8.2 The confounding events

As has been discussed in chapter 5, the calculation of combined firms announcement returns requires the data for a pair of the target and bidder. While this thesis yields an unmatched sample of targets and bidders, the computation of combined firms announcement returns is based on a sample of 388 bank mergers due to data availability.

In chapters 6 and 7, this thesis has already discussed the influence of the confounding events on target and bidder announcement returns, respectively. It is also important to take

into account the influence of the confounding events on the analysis of combined firms announcement returns when analysing a pair of target and bidder announcement returns to combined firms. As a result, this section discusses combined firms announcement returns considering the influence of the confounding events.[111]

Table 8.1 Combined firms abnormal returns and cumulative abnormal returns controlling for the confounding events

MM model						
	N	Mean	p-value 1	SD	Minimum	Maximum
Day 0 clean sample	314	0.16%	0.4500	0.0361	-0.1830	0.2208
(-1,+1) clean sample	314	0.32%	0.2590	0.0505	-0.2749	0.2198
Day 0 nonclean sample	74	0.14%	0.6990	0.0317	-0.0877	0.1159
(-1,+1) nonclean sample	74	0.67%	0.4000	0.0674	-0.1041	0.3347

p-value 1: t test with assuming cross-sectional independence

As table 8.1 shows, combined firms with the clean sample on average earn 0.16% abnormal returns on day 0 relative to 0.14% for those in the nonclean sample. The results are both statistically insignificant. The difference between the clean and nonclean sample is not statistically significant, p-value is 0.979. When comparing the clean sample to the full sample[112], the results show that the difference is not statistically significant either, p-value is 0.924. While the results are both statistically insignificant, I cannot conclude that the confounding events can generate an influence on the analysis of combined firms announcement returns.

Looking at a 3-day (-1,+1) event window, the results show that combined firms in the clean sample earn 0.32% cumulative abnormal returns relative to 0.67% for those in the nonclean sample, neither statistically significant. The difference between the clean and

[111] The sample is classified as the clean and nonclean sample depending on whether either the target or bidder announces other corporate events over a 3-day (-1,+1) event window.

[112] As will be discussed in section 8.3, the results show that combined firms earn 0.15% abnormal returns on day 0 and 0.39% cumulative abnormal returns for a 3-day (-1,+1) event window.

nonclean sample is not statistically significant, p-value is 0.683. In addition, the difference between the clean sample and the full sample is not statistically significant, p-value is 0.794. This also suggests that the results are not affected by the confounding effects. As a result, the analysis of combined firms announcement returns is based on the full sample of 388 bank mergers.

8.3 Combined firms abnormal returns and cumulative abnormal returns

While targets earn positive announcement returns and bidders experience negative announcement returns as discussed in chapter 6 and 7, this section presents the empirical findings for combined firms. This allows the current study to reveal whether bank mergers create an overall value to combined firms.

Table 8.2 shows combined firms daily abnormal returns during the test period measured from the MM and Mkt-Adj model. As can be seen in table 8.2, combined firms daily abnormal returns vary depending on the event day. The results show that combined firms obtain 0.15% and 0.19% abnormal returns on day 0 measured from the MM and Mkt-Adj model, respectively, neither statistically significant.[113] Due to statistical insignificant results, I cannot reject the null hypothesis that combined firms obtain positive announcement returns.

Although I do find slight positive abnormal returns to combined firms, showing that bank mergers do create value to combined firms, the results are statistically insignificant. This illustrates that bank mergers create small amount of wealth to combined firms, which is consistent with synergy hypothesis. However, it is observed that gains to targets generally exceed overall wealth creation, resulting in losses to bidders.

Table 8.2 Combined firms daily abnormal returns

[113] Combined firms daily abnormal returns measured from the Mean-Adj model are provided in appendix A table 8.1.

	MM model				Mkt-Adj model			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
-30	0.0002	0.3854	0.3323	0.4620	0.0006	0.3058	0.0364	0.3180
-29	0.0006	0.2997	0.3323	0.8970	0.0011	0.1787	0.5746	0.3880
-28	-0.0002	0.3856	0.7986	0.6390	-0.0001	0.3966	0.5746	0.9790
-27	-0.0007	0.2820	0.6460	0.6020	-0.0001	0.3953	0.1137	0.1170
-26	-0.0009	0.2268	0.1137	0.1230	-0.0008	0.2571	0.8783	0.9470
-25	0.0001	0.3923	0.4440	0.6190	0.0003	0.3738	0.1389	0.6080
-24	-0.0013	0.1108	0.0364	0.0350	-0.0012	0.1436	0.1683	0.2220
-23	0.0010	0.1565	0.5071	0.2410	0.0012	0.1167	0.4440	0.7730
-22	0.0004	0.3410	0.5746	0.8020	0.0005	0.3149	0.2839	0.8280
-21	-0.0011	0.1250	0.1683	0.1380	-0.0010	0.1842	0.1137	0.1880
-20	-0.0011	0.1595	0.4440	0.1160	-0.0010	0.2043	0.9593	0.5970
-19	0.0002	0.3819	0.7986	0.8100	0.0008	0.2178	0.1389	0.4750
-18	0.0001	0.3972	0.4440	0.5590	-0.0001	0.3964	0.4440	0.9210
-17	-0.0013	0.0795	0.0590	0.0550	-0.0008	0.2132	0.0590	0.1040
-16	0.0003	0.3750	0.2020	0.6420	0.0008	0.2129	0.4440	0.6430
-15	0.0007	0.2567	0.3857	0.9420	0.0009	0.1888	1.0000	0.8370
-14	0.0007	0.2684	0.7209	0.3700	0.0014	0.0729	0.3323	0.8880
-13	0.0003	0.3586	0.4440	0.8450	0.0007	0.2464	0.4440	0.9200
-12	0.0005	0.3425	0.5746	0.6930	0.0006	0.3346	0.7986	0.9910
-11	0.0003	0.3693	0.7986	0.4750	0.0000	0.3986	0.7209	0.7650
-10	-0.0005	0.3275	0.9593	0.9250	0.0001	0.3964	0.5071	0.8590
-9	-0.0005	0.3225	0.0741	0.3620	-0.0008	0.2675	0.2839	0.3570
-8	0.0019	0.0226	0.2201	0.0260	0.0022	0.0137	0.2201	0.0340
-7	-0.0003	0.3675	0.3068	0.7490	0.0001	0.3976	0.9186	0.8410
-6	0.0000	0.3986	1.0000	0.9530	0.0011	0.2092	0.2201	0.8800
-5	0.0013	0.0727	0.1525	0.0530	0.0014	0.0839	1.0000	0.3790
-4	0.0012	0.1619	0.9186	0.2980	0.0015	0.1303	1.0000	0.4600
-3	-0.0009	0.2180	0.0278	0.0690	0.0000	0.3980	0.0049	0.0360
-2	0.0020	0.0349	0.9592	0.1490	0.0021	0.0283	0.7981	0.4130
-1	0.0008	0.2721	0.4428	0.4180	0.0012	0.1912	0.5060	0.7720
0	0.0015	0.2778	0.3844	0.8300	0.0019	0.2260	0.0278	0.6430
1	0.0016	0.2274	0.0466	0.3760	0.0018	0.1901	0.0590	0.5530
2	-0.0001	0.3964	0.0364	0.2560	0.0000	0.3987	0.1389	0.4230

3	-0.0009	0.2060	0.4440	0.3480	-0.0008	0.2572	0.0364	0.0440
4	-0.0011	0.1758	0.1683	0.3010	-0.0009	0.2355	0.0165	0.1540
5	0.0011	0.1364	0.3857	0.7630	0.0009	0.2078	1.0000	0.6180
6	-0.0003	0.3597	0.1683	0.3230	-0.0002	0.3906	0.0590	0.5570
7	-0.0001	0.3919	0.2020	0.3300	0.0000	0.3987	0.5071	0.5180
8	-0.0002	0.3774	0.5071	0.6620	0.0003	0.3732	0.7209	0.9040
9	0.0004	0.3471	1.0000	0.9500	0.0004	0.3432	0.3323	0.9710
10	-0.0014	0.0392	0.3323	0.0870	-0.0012	0.0823	1.0000	0.5280
11	0.0007	0.2659	0.5746	0.9250	0.0007	0.2507	0.3857	0.1470
12	0.0003	0.3676	0.2405	0.4740	0.0004	0.3493	0.6460	0.5920
13	-0.0008	0.2102	0.1683	0.3040	-0.0004	0.3314	0.5071	0.9160
14	-0.0015	0.0395	0.0093	0.0150	-0.0012	0.0990	0.0050	0.0280
15	-0.0001	0.3943	1.0000	0.9140	0.0007	0.2981	0.1137	0.7160
16	0.0008	0.2032	0.7986	0.5340	0.0013	0.1011	0.6460	0.3910
17	-0.0004	0.3288	0.0590	0.2100	-0.0006	0.2823	0.0466	0.1110
18	0.0012	0.1136	1.0000	0.4040	0.0017	0.0410	0.5746	0.7410
19	-0.0003	0.3731	0.5746	0.7290	0.0002	0.3828	0.0466	0.0800
20	-0.0003	0.3686	0.5071	0.4620	0.0001	0.3920	0.7209	0.8740
21	-0.0001	0.3944	0.1389	0.9540	0.0002	0.3875	0.1683	0.7070
22	-0.0006	0.2810	0.1389	0.4790	0.0002	0.3916	0.3857	0.1840
23	0.0007	0.2624	0.3857	0.7470	0.0008	0.2599	0.2020	0.9420
24	0.0007	0.2647	0.4440	0.9130	0.0007	0.2616	0.0922	0.5510
25	0.0009	0.2299	0.6460	0.7450	0.0010	0.1928	0.3323	0.5560
26	-0.0003	0.3754	0.2020	0.2750	-0.0001	0.3969	0.2839	0.3100
27	0.0003	0.3632	0.3323	1.0000	0.0005	0.3419	0.5071	0.3830
28	-0.0003	0.3730	0.8783	0.5620	-0.0002	0.3807	0.2020	0.2410
29	-0.0021	0.0065	0.0217	0.0040	-0.0016	0.0391	0.0013	0.0060
30	-0.0009	0.1955	0.1137	0.1880	-0.0006	0.2726	0.0922	0.1490

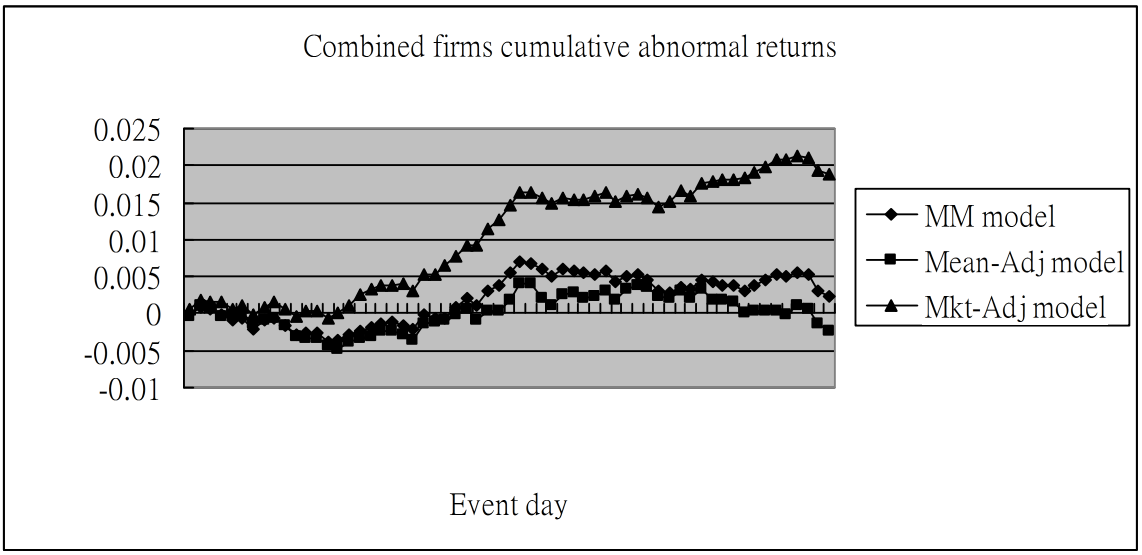
p-value1: t test with assuming cross-sectional independence

Wilcoxon test: Wilcoxon signed rank test

In addition to presenting combined firms daily abnormal returns in table 8.2, this section also shows the development of combined firms cumulative abnormal returns in figure 8.1. This can provide a clear picture to understand the change of combined firms

announcement returns during the test period. As figure 8.1 shows, the movement of combined firms announcement returns measured from the Mkt-Adj model is clearly distinct from that of the MM and Mean-Adj model. This may be attributable to the different assumption of the model as has been discussed in chapter 6 and 7.

Figure 8.1 The movement of combined firms cumulative abnormal returns



While bidders tend to perform well prior to the transactions as has been mentioned in chapter 7, bidders may also have better performance after the transactions. Thus, when computing the announcement returns of combined firms, combined firms announcement returns measured from the Mkt-Adj model can be expected to generate a difference of the announcement returns relative to those from the MM and Mean-Adj model. However, figure 8.1 shows that the movement of combined firms cumulative abnormal returns measured from the MM and Mean-Adj model is in general consistent although a slight difference of combined firms cumulative abnormal returns is observed.

To better understand the change of combined firms cumulative abnormal returns in a certain period, this chapter also presents combined firms cumulative abnormal returns over various event windows. As shows in table 8.3, combined firms earn 0.15% and 0.19%

abnormal returns on day 0 measured from the market (MM) model and the market adjusted (Mkt-Adj) returns model, respectively, neither statistically significant. The difference between the MM and the Mkt-Adj model is not statistically significant, where the p-value is 0.879. Similarly, the results are not statistically significant when performing nonparametric statistics in terms of sign test and wilcoxon signed rank test. Slightly positive abnormal returns to combined firms suggest that bank mergers create marginal value to combined firms.[114]

Table 8.3 Combined firms cumulative abnormal returns

Market model					Market adjusted return model			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4,1)	0.0063	0.0310	0.5060	0.2600	0.0087	0.0050	0.6452	0.0470
(-1,1)	0.0039	0.1590	0.1389	0.8700	0.0050	0.0800	0.3323	0.6410
(-30,30)	0.0022	0.7390	0.7986	0.8730	0.0187	0.0060	0.1137	0.0080
(0)	0.0015	0.3960	0.3844	0.8300	0.0019	0.2880	0.5060	0.8150
(-1,0)	0.0024	0.2590	0.2393	0.8550	0.0031	0.1410	0.2826	0.6780
(-30,-1)	0.0039	0.3340	0.3857	0.1580	0.0127	0.0030	0.0217	0.0000
(0,1)	0.0031	0.2130	0.3857	0.7610	0.0038	0.1360	0.3323	0.9760
(1,30)	-0.0032	0.4820	0.0590	0.0640	0.0041	0.3770	0.8783	0.8300

p-value 1: t test with assuming cross-sectional independence

Wilcoxon test: Wilcoxon signed rank test

With regard to a 3-day (-1,+1) event window, the results show that combined firms earn 0.39% and 0.50% cumulative abnormal returns calculated from the MM and Mkt-Adj model, respectively. The results are statistically significant at the 0.1 level for the Mkt-Adj model only. However, the difference between the MM and Mkt-Adj model is not statistically significant, where the p-value is 0.788. However, the results are not statistically significant when performing nonparametric statistics in terms of sign test and

[114] The results from the Mean-Adj model are provided in the appendix A table 8.2.

wilcoxon signed rank test. Thus, I cannot conclude that there are statistically significant announcement returns to combined firms. As combined firms obtain slightly positive announcement returns, the results are consistent with the study of U.S. bank mergers (e.g., Cornett and Tehranian (1992); Zhang (1995); Becher (2000); Becher and Campbell (2005); DeLong (2003); DeLong and DeYoung (2007)) and the study of EU bank mergers (e.g., Beitel *et al*. (2004); Cybo-Ottone and Murgia (2000); Ismail and Davidson (2005); Ismail and Davidson (2007)).

Looking at a longer 61-day (-30,+30) event window, combined firms cumulative abnormal returns are 0.22% and 1.87% with the MM and Mkt-Adj model, respectively. The results are statistically significant at the 0.01 level for the Mkt-Adj model only. The difference between the MM and Mkt-Adj model is statistically significant, where the p-value is 0.082. A significant difference of combined firms cumulative abnormal returns over a 61-day (-30,+30) event window may be attributable to the fact that bidders tend to perform well relative to the market performance prior to the transactions. When applying the Mkt-Adj model, bidders obtain higher abnormal returns during the pre-announcement period. This viewpoint can be supported when looking at the pre-announcement 30-day (-30,-1) event window in table 8.3. Combined firms cumulative abnormal returns from the Mkt-Adj model are at 1.27% significantly higher than those from the MM model at 0.39% over a 30-day (-30,-1) event window.

Similarly, if bidders have better performance relative to the market performance before the transactions, they may be expected to have a better performance after the transactions. Looking at a 30-day (+1,+30) post-announcement event window, combined firms obtain higher cumulative abnormal returns at 0.41% from the Mkt-Adj model than those at -0.32% from the MM model. Although combined firms announcement returns in table 8.3 vary depending on the event window, the results show that combined firms generally obtain slightly positive announcement returns around bank merger and acquisition announcements. This finding also suggests that bank mergers overall create

value to combined firms. But gains to targets on average exceed overall valuation creation due to negative cumulative abnormal returns to bidders.

Furthermore, in an attempt to explain combined firms announcement returns, this thesis also undertakes cross-sectional regression analysis as will be discussed in section 8.5. The regression analysis focuses on exploring whether investor protection and bank regulation can be important determinants to explain combined firms announcement returns. Similar to the discussion of target and bidder regression analysis in chapters 6 and 7, the regression analysis also controls for the country level specific characteristics and the deal and firm specific characteristics. This can provide additional insights to explore the factors that can affect combined firms announcement returns.

8.4 The analysis of diversifying or focusing deals

As discussed previously, bank mergers allow banks to achieve risk diversification when engaging in activity diversification acquisitions. However, bank managers may have more ability to manage similar bank risks if they engage in focusing deals. While the results show that targets in focusing deals earn higher announcement returns and bidders in diversifying deals obtain higher announcement returns, it is not sure as to whether combined firms obtain higher announcement returns either in focusing deals or in diversifying deals. Thus, this section discusses combined firms announcement returns with regard to activity diversifying and focusing deals in terms of the market (MM) model.[115] The analysis of the abnormal returns to combined firms is based on the sample of 324 and 64 for activity focusing and diversifying deals, respectively.

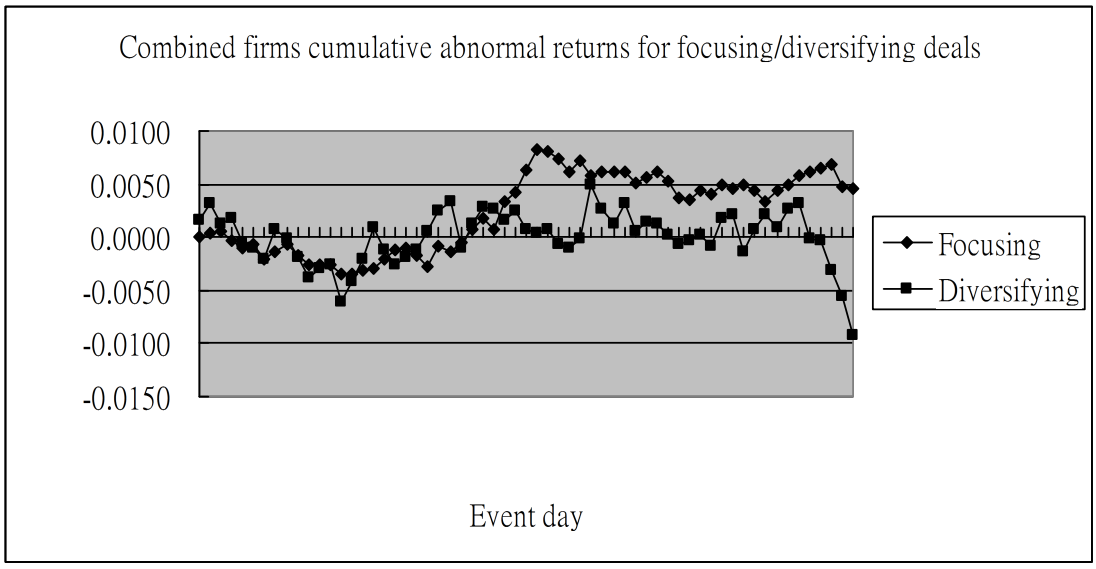
Similar to the discussion of focusing and diversifying deals for targets and bidders in chapter 6 and 7, this chapter also presents the movement of combined firms cumulative abnormal returns for focusing and diversifying deals, as is given in figure 8.2. As can be

[115] The results from the Mkt-Adj and Mean-Adj model are presented in the appendix A table 8.3 and 8.4, respectively.

seen in figure 8.2, the variation of combined firms cumulative abnormal returns in diversifying deals during the test period appears to be significantly different from that in focusing deals.

Figure 8.2 also shows that combined firms cumulative abnormal returns in focusing deals are lower during the pre-announcement period, with a significant increase of combined firms announcement returns around the announcement date. With regard to diversifying deals, the figure shows that combined firms announcement returns vary.

Figure 8.2 The movement of combined firms cumulative abnormal returns for focusing and diversifying deals



When particularly looking at the post-announcement period, combined firms obtain lower announcement returns in diversifying deals than those in focusing deals. The difference of combined firms announcement returns between focusing and diversifying deals is more significant at the end of the test period. Figure 8.2 also reveals that the cumulative abnormal returns of combined firms are very volatile during the test period. However, it remains a puzzle to interpret the volatility of the cumulative abnormal returns to combined firms during the test period.

In addition to showing the movement of combined firms cumulative abnormal returns

during the test period, this section also presents combined firms cumulative abnormal returns over various event windows in order to capture the change of combined firms cumulative abnormal returns in a certain period. As table 8.4 shows, combined firms earn 0.20% and -0.07% abnormal returns on day 0 for focusing and diversifying deals, respectively, neither statistically significant. The difference between focusing and diversifying deals is not statistically significant, where the p-value is 0.959. For a 3-day (-1,+1) event window, combined firms in focusing deals obtain 0.42% cumulative abnormal returns relative to 0.23% for those in diversifying deals, neither statistically significant. The difference between focusing and diversifying deals is not statistically significant, where the p-value is 0.960.

Table 8.4 combined firms cumulative abnormal returns for activity focusing and diversifying deals

Market model								
	Focusing				Diversifying			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4,1)	0.0069	0.0150	0.4331	0.4260	0.0031	0.7120	1.0000	0.4250
(-1,1)	0.0042	0.1670	0.1181	0.6670	0.0023	0.7300	1.0000	0.5910
(-30,30)	0.0022	0.7420	0.9111	0.9900	0.0021	0.9220	0.8011	0.9260
(0)	0.0020	0.3330	0.3703	0.8130	-0.0007	0.8400	1.0000	0.9810
(-1,0)	0.0028	0.2170	0.2628	0.8670	-0.0001	0.9850	0.8011	0.9920
(-30,-1)	0.0041	0.3300	0.5767	0.1800	0.0029	0.8120	0.4497	0.6890
(0,1)	0.0034	0.2230	0.2195	0.5770	0.0016	0.7670	0.6143	0.6490
(1,30)	-0.0038	0.4100	0.0741	0.0850	-0.0001	0.9950	0.6143	0.5180
N	324				64			

p-value 1: t test with assuming cross-sectional independence

wilcoxon test: Wilcoxon signed rank test

As the results in table 8.4 show that combined firms in general obtain higher

announcement returns in focusing deals than in diversifying deals, this suggests that the market is favourable to focusing deals. A possible explanation is that bank managers may have more experience to manage similar bank risks after the transactions when bidding banks acquire other banks in terms of focusing deals. However, the difference is not statistically significant.

However, when looking at the post-announcement 30-day (+1,+30) event window, the results show that combined firms obtain lower announcement returns in focusing deals than those in diversifying deals, at -0.38% and -0.01% cumulative abnormal returns, respectively. The results are both statistically insignificant. A possible explanation is that the market has a reverse expectation after the transactions due to an overreaction of the benefits of risk diversification effects prior to the transactions. An alternative explanation is that the market realised risk diversification effects is not significant to combined firms after the transactions although the cumulative abnormal returns of combined firms are marginally negative.

Overall, the empirical findings for combined firms' cumulative abnormal returns are discussed above. The results show that combined firms obtain slightly positive announcement returns, suggesting that bank mergers overall create value to combined firms.

Further analysis shows that combined firms in general obtain somewhat higher announcement returns in focusing deals than those in diversifying deals although the difference is not statistically significant. In addition to the empirical results for combined firms shareholder wealth presented above, this thesis also undertakes cross-sectional regression analysis to explore factors that may affect combined firms announcement returns. Thus, the following section provides the cross-sectional regression analysis to explain combined firms cumulative abnormal returns.

8.5 Cross-sectional regression analysis

This section discusses the cross-sectional regression analysis in order to explore the determinants that can affect combined firms cumulative abnormal returns. The aim of the regression analysis is to determine whether the country level corporate governance mechanisms in terms of investor protection and bank regulation can be important determinants to explain combined firms cumulative abnormal returns. To explore the relationship between combined firms cumulative abnormal returns and investor protection and bank regulation precisely, the regression analysis also controls for the country level specific characteristics and the deal and firm specific characteristics in a bidder country.[116] This can also offer additional insights to determine the factors that can affect combined firms announcement returns.

Similar to the discussion for target and bidder regression analysis, the cross-sectional regression analysis only includes the clean sample in order to accurately investigate the relationship between combined firms announcement returns in bank mergers and investor protection and bank regulation. In addition, different model specifications are applied in the regression analyses in order to avoid a high correlation among the variables in terms of investor protection and bank regulation in a country that may affect the analysis.[117]

The regression analysis also deletes 1% of observations from the top and bottom of combined firms 3-day (-1,+1) cumulative abnormal returns in order to control for outliers. However, removing a small number of observations may not generate a significant influence for the results in the regression analysis. Thus, this thesis also employs the full 388 sample of bank mergers in the regression analysis in order to identify whether outliers are an issue to be considered in the analysis. So, the results based on the full 388 sample are presented in appendix B table 8.1/8.2/8.3. The dependent variable in the regression

[116] As has been discussed in chapter 7, bidder characteristics appear to have an influence on bidder announcement returns. On the contrary, the results show in chapter 6 that target characteristics seems to have less influence on target announcement returns. In addition, bidders will be the existing companies after the transactions. Thus, the control variables are selected using bidder's characteristics.

[117] The correlation matrix is provided in appendix A table 8.5

analysis uses combined firms 3-day (-1,+1) cumulative abnormal returns.

As table 8.5 shows, combined firms announcement returns are positively and significantly related to investor protection measured as the combination of the antidirector rights index in a target and bidder country in model specification (1).[118] The coefficient is 0.004, statistically significant at the 0.05 level. The results indicate that higher combined firms announcement returns are associated with strong investor protection in a target and bidder country.[119] This indicates that combined firms increase 0.004 cumulative abnormal returns when the level of investor protection in a target and bidder country increases 1 point.

With regard to the control variables, the results in model specification (1) show that combined firms announcement returns are negatively and significantly associated with ROA and the market to book ratio of the bidder. The coefficients are -0.730 and -0.002, respectively, both statistically significant. The results indicate that higher combined firms announcement returns are related to poorer bidder's prior performance and lower growth potential of bidders. The results also show that higher combined firms announcement returns are correlated to smaller bidder size. In addition, the results also find that combined firms announcement returns are high when bidders are in a less competitive banking market.

When investor protection is measured as the combination of the rule of law in a target and bidder country in model specification (2), the results show that combined firms announcement returns are positively, but insignificantly, related to investor protection. Taking into account control variables in model specification (2), the sign of the coefficient is in general consistent with those in model specification (1), showing that higher

[118] The combination of the antidirector rights index in a target and bidder country means that the level of the antidirector rights index in a target country plus the level of the antidirector rights index in a bidder country. The same measurement for investor protection is also applied to the rule of law.

[119] This thesis also applies Djankov *et al.*'s (2006) revised antidirector rights index to explore the relationship with combined firms cumulative abnormal returns. The results indicate that the coefficient is 0.013 between combined firms cumulative abnormal returns and the combination of the revised antidirector rights index in a target and bidder country, where p-value is 0.000.

combined firms announcement returns are associated with lower market to book ratio, smaller bidder size and lower net interest margin.

Overall, the adjusted R square in model specification (1) and (2) is 8.37% and 6.93%, respectively. F-value is 3.59 and 3.12 in model specification (1) and (2), both statistically significant at the 0.01 level.

Turning to the analysis of bank regulation, the results in model specification (3) show that combined firms announcement returns are negatively, but insignificantly, associated with bank regulation measured as the combination of overall activities restrictiveness in a target and bidder country. The results indicate that combined firms obtain higher announcement returns when the combination of overall activities restrictiveness in a target and bidder country is low. The results in model specification (5) and (6) show that combined firms announcement returns are positively, but insignificantly, related to the combination of prompt corrective power and the combination of independence of overall supervisory authority in a target and bidder country, respectively. These findings indicate that combined firms gain more when the level of the combination of bank regulation in a target and bidder is high.

Taking into account control variables in model specification (3)-(6), the results show that higher combined firms announcement returns are associated with smaller bidder size and bidders in a less competitive banking market. In addition, the results in model specification (6) show that higher combined firms announcement returns are related to lower ROA. The results also show that higher combined firms announcement returns are related to lower market to book ratio in model specification (3) and (4). Overall, the results in model specification (3)-(6) show that the adjusted R square is around 6.5% and F-value is around 3 with statistically significant at the 0.01 level. Additional statistical tests of Ramsey test for all model specifications show that there are no omitted variables. Variance Inflation Factor (VIF) shows that the figures in all model specifications are lower than 3.

This suggests that multicollinearity is not a problem for all model specifications.[120]

As has discussed previously, the results show that combined firm cumulative abnormal returns are positively related to investor protection measured as the combination of antidirector rights index in a target and bidder country. The findings suggest that a strong legal and regulation system in a target and bidder country can alleviate the conflicts between managers and shareholders in mergers and acquisitions resulted in higher announcement returns of combined firms.

While the regression analysis is also presented in appendix B table 8.1 with respect to the full 388 sample, the results do not show any significant difference regarding to the variables of investor protection and bank regulation. This suggests that controlling for outliers appears to have no significant influence on the regression analysis. This can also be confirmed that the explanatory power, adjusted R square, in appendix B table 8.1 is in general the same compared to table 8.5 below. However, to obtain precise coefficients to explore the relationship between combined firm cumulative abnormal returns and investor protection and bank regulation, this thesis relies on the results based on the sample, where removes the top and bottom 1% distribution of combined firm 3-day (-1,+1) cumulative abnormal returns.[121]

Table 8.5 The cross-sectional regression analysis for combined firms based on the market (MM) model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.105	***	0.110	***	0.180	***	0.149	***	0.148	***	0. 114	**
Antidirector rights in dex	0.004	**										
Rule of law			0.002									
Overall Activities Restrictiveness					-0.002							

[120] The regression analysis for combined firms measured from the market adjusted (Mkt-Adj) returns model and the mean adjusted (Mean-Adj) returns model is provided in appendix A table 8.6 and table 8.7, respectively.

[121] The results based on the full 388 sample of bank mergers from the market adjusted returns model and the mean adjusted returns model are presented in appendix B table 8.2 and 8.3, respectively.

Official Supervisory Power							0.000					
Prompt Corrective Power									0.001			
Independence of Supervisory Authority - Overall											0.004	
Cross-border	-0.006		-0.003		-0.012		-0.006		-0.004		-0.005	
Cash	-0.006		-0.009		-0.012		-0.010		-0.009		-0.009	
Relative size	0.034		0.045		0.037		0.040		0.040		0.039	
ROA	-0.730	*	-0.587		-0.473		-0.453		-0.522		-0.639	*
MKTV	-0.002	**	-0.003	**	-0.003	*	-0.004	*	-0.003		-0.003	
Capital to assets	-0.004		-0.022		-0.027		-0.022		-0.019		-0.018	
ln (total assets)	-0.004	***	-0.005	***	-0.005	***	-0.005	***	-0.005	***	-0.004	***
Deposit Money Bank Assets / GDP	-0.004		-0.006		-0.010		-0.008		-0.009		-0.013	
Net Interest Margin	-1.264	**	-0.982	*	-0.897	**	-0.943	**	-1.104	*	-1.444	**
Observations	285		285		285		285		285		285	
Adjusted R Square	8.37%		6.93%		6.87%		6.46%		6.55%		6.88%	
F-value	3.59		3.12		3.10		2.96		2.99		3.10	
(p-value)	(0.000)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	

Table 8.5 presents the results to explore the impact of investor protection and bank regulation on combined firms cumulative abnormal returns. The dependent variable is combined firms' 3-day (-1,+1) cumulative abnormal returns based on the market model. Investor protection is measured as the combination of the antidirector rights index and the combination of the rule of law in a target and bidder country from La Porta *et al*. (1998). Bank regulation is measured as the combination of the variables, including overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a target and bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates to use the cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the bidding firms at the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are aimed at the bidder's perspective

collected from the World Banks.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Joint}_{(-1,+1)} = \alpha_0 + \beta_1(\text{The combination of investor protection in a target and bidder country}) + \beta_2(\text{the combination of bank regulation in a target and bidder country}) + \beta_3(\text{Cross-border dummy}) + \beta_4(\text{Cash dummy}) + \beta_5(\text{The relative size of the target to bidder}) + \beta_6(\text{ROA}) + \beta_7(\text{The market to book ratio}) + \beta_8(\text{The capital ratio}) + \beta_9(\text{Size}) + \beta_{10}(\text{The competitiveness of the banking market}) + \beta_{11}(\text{The size of the banking market}) + \varepsilon_i$$

8.6 Conclusion

This chapter contains the discussion of shareholder wealth of combined firms in the current study. As the calculation of combined firms announcement returns requires the data for a pair of the target and bidder, the discussion of combined firms shareholder wealth is based on 388 bank mergers. Consistent with prior studies, this thesis employs the weighted average approach to measure the wealth effects of combined firms.

Similar to the discussion in chapter 6 and 7, the calculation of the cumulative abnormal returns for combined firms takes into account the confounding events. As has been discussed in section 8.2, the confounding events are not an issue to be taken into account in the analysis of combined firms announcement returns due to statistically insignificant results. Thus, the analysis of combined firms announcement returns is based on a full sample of 388 bank mergers. However, it should be noted that this thesis uses the clean sample of combined firms in the regression analysis in order to explore the association between combined firms announcement returns and investor protection and bank regulation accurately.

The results in table 8.3 show that combined firms earn cumulative abnormal returns of 0.39% over a 3-day (-1,+1) event window measured from the MM model. As combined firms obtain slightly positive announcement returns, the results indicate that bank mergers overall create value to combined firms. Slightly positive announcement returns to combined firms are also consistent with the study of U.S. bank mergers (e.g., Cornett and

Tehranian (1992); Zhang (1995); Becher (2000); Becher and Campbell (2005); DeLong (2003); DeLong and DeYoung (2007)) and the study of EU bank mergers (e.g., Beitel *et al*. (2004); Cybo-Ottone and Murgia (2000); Ismail and Davidson (2005); Ismail and Davidson (2007)).

An additional analysis also finds that combined firms obtain 0.42% and 0.23% cumulative abnormal returns over a 3-day (-1,+1) event window for activity focusing and diversifying deals, respectively. The results denote that combined firms earn higher announcement returns in focusing deals than those in diversifying deals. The results may suggest that bank managers may have more experience to manage similar bank risks after the transactions as a result of higher announcement returns to combined firms in focusing deals.

In the regression analysis, the results show that higher combined firms announcement returns are associated with stronger investor protection measured as the combination of the antidirector rights index in a target and bidder country. This illustrates that strong investor protection can be expected to better protect shareholders of combined firms. Thus, combined firms can obtain higher gains in mergers and acquisitions. However, when analysing bank regulation, the results do not show any statistical significant relationship with combined firms' announcement returns. With regard to control variables, the results find that higher combined firms announcement returns are related to smaller bidder size and bidders in a country with less competitive banking market.

Overall, the results suggest that investor protection and bank regulation in a country seem to have less influence on combined firms announcement returns although the antidirector rights index still has a significant and positive impact to combined firms announcement returns. The findings may also suggest that it is important to enhance the legal and regulation system in a target and bidder country in protecting shareholders of combined firms. This can then be expected to increase gains to combined firms.

Chapter 9 Summary and Conclusion

9.1 Introduction

The aim of this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. First, this thesis analyses the impact of shareholder wealth around bank merger and acquisition announcements during the period of 1995-2005. Secondly, this thesis further explores as to whether investor protection and bank regulation can be important determinants to explain shareholder wealth of the firms in bank mergers.

Using event study methodology with different model applications and also undertaking the cross-sectional regression analysis, this thesis has reported the empirical findings in this thesis discussed in chapters 6, 7 and 8. This chapter further discusses the empirical findings and also presents the conclusions of the thesis. Furthermore, this chapter also discusses the limitations and suggestions in this thesis. This can allow the current study to improve and undertake the future research.

9.2 Discussion of the empirical findings

The empirical results have been presented in chapters 6, 7 and 8 for targets, bidders and combined firms, respectively. This section provides discussion of the empirical findings in the current study.

9.2.1 The empirical results for targets

This section discusses the empirical findings for target firms in this thesis. Based on the full 508 sample of bank mergers, the empirical findings in this thesis are reported as follows.

The results show that targets earn 8.73%, 8.75% and 8.71% abnormal returns on the announcement date measured from the market (MM) model, the market adjusted (Mkt-Adj)

returns model and the mean adjusted (Mean-Adj) returns model, respectively. The results are all statistically significant at the 0.01 level. The null hypothesis that targets do not earn positive abnormal returns can thus be rejected, concluding that targets obtain significant positive abnormal returns around bank merger and acquisition announcements.

While applying different event windows, such as a 3-day (-1,+1) event window, the results show that targets earn 13.25%, 13.32% and 13.25% cumulative abnormal returns computed from the MM, Mkt-Adj and Mean-Adj model, respectively. The results are all statistically significant at the 0.01 level. As I find significant positive announcement returns to targets, the results are consistent with prior empirical studies discussed in chapter 2. Significant positive announcement returns to targets also indicate that bank mergers create value to target firms.

Splitting the sample into the subsample based on the market, the results find that U.S. targets earn 11.01% cumulative abnormal returns over a 3-day (-1,+1) event window, compared to 6.22% for EU targets and 0.57% to targets from the market outside the U.S. and EU market. However, the results are statistically significant at the 0.01 level for the U.S. and EU market only.

When performing additional tests, the results show that the difference of target announcement returns between the markets is all statistically significant. Hence, the null hypothesis that there is no difference of target announcement returns between the markets can therefore be rejected, concluding that U.S. targets earn higher announcement returns than EU targets and targets from other markets. The results thus confirm that the U.S. banking takeover market is more competitive, where bidders need to pay more to U.S. targets.

An additional analysis shows that targets in focusing deals obtain 9.06% abnormal returns on day 0 relative to 7.08% for those in diversifying deals. The results are both statistically significant at the 0.01 level. The results indicate that targets in focusing deals earn higher announcement returns than those in diversifying deals. This suggests that

managers in focusing deals do not need to manage more types of risks after the transactions. Thus, bidders may want to pay more to targets in order to complete the transactions. However, it should be noted that the difference of target announcement returns between focusing deals and diversifying deals is not statistically significant. Overall, the results indicate that targets gain significant positive announcement returns around bank merger and acquisition announcements, suggesting that bank mergers create value to targets.

In addition to investigating the impact of shareholder wealth for targets, this thesis further provides the cross-sectional regression analysis in an attempt to explain target announcement returns. The regression analysis also controls for the country level specific characteristics, the deal and firm specific characteristics although the main focus is to determine as to whether investor protection and bank regulation can be important determinants to explain the cumulative abnormal returns of the firms in bank mergers.

The results find that targets gain more when investor protection measured as the antidirector rights index and the rule of law in a target country is strong. These findings illustrate that targets have more bargaining power to negotiate the transactions. Thus, bidders need to pay more to targets. Consequently, when targets in a country with strong investor protection engage in bank mergers and acquisitions, it can be expected that the wealth of the shareholders can be better protected. In other words, managers may have less ability to expropriate minority shareholders. Target managers incline to make the decisions of mergers and acquisitions on the interests of shareholders. Target shareholders can thus earn higher announcement returns when mergers and acquisitions take place in a target country with strong investor protection.

In addition, the results also show that higher target cumulative abnormal returns are correlated to stronger bank regulation measured as overall activities restrictiveness, official supervisory power and prompt corrective power in a bidder country. The results suggest that bank regulation in a bidder country can generate an influence to target announcement

returns.

When bank regulation in a bidder country is strong, managerial decisions can be closely monitored. Thus, managers of bidding banks can be expected to carefully evaluate the transactions. So, the synergy effects could be significant after the transactions. As a consequent, targets obtain higher benefits when bank regulation in a bidder country is strong. With regard to control variables, the results show that targets earn higher announcement returns when target size is small.

Furthermore, this thesis further controls for the difference of investor protection and bank regulation between the bidder and target country in the regression analysis. The results find that targets gain more when bidders come from a country with weaker investor protection relative to the target country, where investor protection is measured as the rule of law. The findings may suggest that target shareholders may require additional premium to compensate their risk to be expropriated if bidders come from a country with weaker investor protection. Similarly, the results also find that targets obtain higher gains when bank regulation in a bidder country is weaker than that in a target country, where bank regulation is measured as the difference of prompt corrective power.

Interestingly, when additionally controlling for the difference of investor protection and bank regulation between the bidder and target country, the results are consistent with my prior empirical findings, showing that targets gain more when investor protection in a target country measured as the antidirector rights index and the rule of law is strong and bank regulation in a bidder country measured as overall activities restrictiveness, official supervisory power and prompt corrective power is strong. These findings too demonstrate that investor protection in a target country and bank regulation in a bidder country can be important determinants to influence target announcement returns around bank merger and acquisition announcements.

Similar to the discussion above, the results show that targets gain more in relation to smaller target size when additionally controlling for the difference of investor protection

and bank regulation between the target and bidder country in the regression analysis. The results also confirm that target size is an important component to explain target announcement returns.

Overall, the empirical findings in this section demonstrate that the country level corporate governance mechanisms in terms of investor protection and bank regulation can be important determinants to influence target announcement returns. Theoretically, the presence of corporate governance mechanisms can be expected to protect shareholders. Thus, managerial decisions can be closely monitored. Their decisions incline to aim at the interests of shareholders.

My findings apparently show that investor protection in a target country and bank regulation in a bidder country play an important role to influence target announcement returns in bank mergers and acquisitions. This implicates that managers may need to take into account the influence of the country level corporate governance mechanisms on the decisions of mergers and acquisitions. Thus, target gains can reflect the expectation of the strength of the country level corporate governance mechanisms.

9.2.2 The empirical results for bidders

This thesis also examines bidder shareholder wealth of bank mergers in order to investigate as to whether target gains are transferred by losses from bidders. The results show that bidders obtain cumulative abnormal returns of -0.63%, -0.56%, -0.63% over a 3-day (-1,+1) event window measured from the MM, Mkt-Adj and Mean-Adj model, respectively. The results are statistically significant at the 0.01 level. While targets earn positive announcement returns, bidders experience negative announcement returns. This can be an indication of wealth transfer from bidders to targets. In addition, negative announcement returns to bidders are also consistent with prior empirical studies, e.g., Neely (1987), Houston and Ryngaert (1994), Siems (1996), Cornett *et al*. (2003), DeLong (2003), Beitel *et al*. (2004), Campa and Hernando (2006), Hagendorff *et al*. (2008).

An additional analysis based on the market shows that U.S. bidders obtain -0.91% cumulative abnormal returns over a 3-day (-1,+1) event window compared to -0.10% of EU bidders and -0.39% of bidders from non-U.S. and EU countries. The results are statistically significant for U.S. bidders only. The results are also statistically significant for the difference of bidder announcement returns between the U.S. and EU market. As U.S. bidders experience more losses relative to EU bidders and bidders from other markets, the results may be attributable to the fact that U.S. banking takeover market is more competitive. So, bidders need to pay more to targets. On the other hand, negative announcement returns to bidders are also consistent with prior empirical studies, such as Siems (1996), Toyne and Tripp (1998), Cornett *et al*. (2003), Beitel *et al*. (2004), Rad and Beek (1999), Campa and Hernando (2006).

Furthermore, a further analysis shows that bidders obtain -0.89% cumulative abnormal returns in focusing deals over a 3-day (-1,+1) event window relative to 0.05% of bidders in diversifying deals. The results are statistically significant for focusing deals only. In addition, the difference between focusing and diversifying deals is statistically significant. As bidders obtain higher announcement returns in diversifying deals than those in focusing deals, this implies that bidders can be expected to obtain gains due to higher risk diversification effects after the transactions. As a consequent, the results find a positive impact of bidder shareholder wealth to be found when bidders engage in diversifying deals relative to focusing deals.

In addition to examining bidder shareholder wealth, this thesis further undertakes regression analysis to explore the factors that can explain bidder announcement returns. The results show that bidders obtain lower announcement returns when investor protection measured as the rule of law in a bidder country is strong. A possible explanation is that stronger investor protection in a bidder country may actually impede managerial ability to pursue risky investment projects through bank mergers and acquisitions in return of higher returns to the firms. This may reduce future gains after the transactions. Thus, strong

investor protection in a bidder country may over protect shareholders resulted in damaging shareholder wealth.

In addition, the results also find that bidders obtain lower announcement returns when bank regulation measured as the restrictiveness of banking activity in a bidder country is strong. Similar to the discussion of investor protection in a bidder country, the presence of stronger bank regulation can actually limit managerial behaviour to look for risky investment projects through bank mergers and acquisitions. Therefore, bidder shareholders obtain smaller gains if bank regulation in a bidder country is strong.

On the contrary, when bank regulation measured as independence of overall supervisory authority in a bidder country is strong, bidders obtain higher gains. This illustrates that bidders obtain higher announcement returns when supervisory authority can be more independent and reduce the external pressure to evaluate the transactions influenced by the political influence, or political consideration and the legal system from the banking industry. The results suggest that the supervisory authority can also be expected to carefully monitor the transactions if they are more independent. The findings also indicate that bidder shareholders may also be well protected if the supervisory authority is more independent.

Interestingly, the results also show that bidders gain more when bidders are located in a country with a less competitive banking market. If bidders are in a country with less competitive banking market, bidders may have more opportunity to enlarge their market power. Thus, bidders can be expected to gain more after the transactions, resulting in higher announcement returns to bidders.

While the regression analysis also controls for the deal and firm specific characteristics, the results show that bidders gain more when the payment is cash, the growth potential and capital ratio is high. However, the results show that bidders obtain higher gains when the relative size of the target to bidder is small, bidder’s prior performance is poor and bidder size is small.

Furthermore, the results find that bidders appear to have higher gains when the difference of prompt corrective power in a bidder and target country is large. This shows that bidders can obtain higher gains when bank regulation in a bidder country can have stronger power to intervene the transactions. The results also illustrate that the shareholders of bidders can be better protected if bank regulation in a bidder country is strong compared to that in a target country.

While additionally controlling for the difference of investor protection and bank regulation in a bidder and target country, the results consistently show that bidders obtain higher gains when investor protection measured as the rule of law in a bidder country is weak and bank regulation measured as overall supervisory authority in a bidder country is strong. These findings also confirm my prior empirical findings that investor protection and bank regulation in a bidder country are important determinants to explain bidder announcement returns.

In addition, the results also find that bidders gain more when the payment is cash, bidder's growth potential and capital ratio is high. On the contrary, bidders obtain higher gains when the relative size of the target to bidder is small, bidder size is small and bidders are in a country with a less competitive banking market.

9.2.3 The empirical results for combined firms

The results discussed above show that targets earn positive announcement returns and bidders experience negative announcement returns. While pairs of targets and bidders are required to measure the announcement returns of combined firms, this thesis uses 388 samples of bank mergers to examine joint abnormal returns to combined firms.

The results find that combined firms obtain 0.39%, 0.50% and 0.36% cumulative abnormal returns over a 3-day (-1,+1) event window measured from the MM, Mkt-Adj and Mean-Adj model, respectively. The results are statistically significant at the 0.1 level for the Mkt-Adj model only. Positive announcement returns are consistent with prior empirical

studies in U.S. studies (e.g., Cornett and Tehranian (1992); Zhang (1995); Becher (2000); Becher and Campbell (2005); DeLong (2003); DeLong and DeYoung (2007)) and in EU studies (e.g., Beitel *et al*. (2004); Cybo-Ottone and Murgia (2000); Ismail and Davidson (2005); Ismail and Davidson (2007)). Positive announcement returns to combined firms also confirm that bank mergers overall create value to combined firms.

An additional analysis shows that combined firms obtain 0.42% and 0.23% cumulative abnormal returns over a 3-day (-1,+1) event window in focusing and diversifying deals. However, the difference between focusing and diversifying deals is not statistically significant. The findings suggest that the market is more favourable of focusing deals, indicating that combined firms gain more when bidding banks acquire other banks. The results suggest that focusing deals can generate higher synergy effects after the transactions due to similar types of bank risks being managed.

In addition to examining combined firms shareholder wealth, this thesis carries out regression analysis to explore the factors that can affect the announcement returns of combined firms. The results show that there is statistically significant impact of investor protection on combined firms announcement returns. The results find that combined firms gain more when investor protection measured as the combination of the antidirector rights index in a bidder and target country is strong.

When investor protection is measured as the combination of the rule of law in a bidder and target country, the results show a positive relationship with combined firms announcement returns although the results is not statistically significant. A positive association between combined firms announcement returns and investor protection indicates that stronger investor protection in a bidder and target country can be expected to better protect combined firms shareholder wealth. This may also suggest that stronger investor protection can reduce the expropriation from managers at the expense of combined firm shareholders.

With regard to the analysis of bank regulation, the results find that combined firms

obtain higher announcement returns when bank regulation measured as the combination of overall activities restrictiveness in a bidder and target country is weak. In contrast, the results show that combined firms obtain higher gains when bank regulation is strong, where bank regulation is measured as the combination of prompt corrective power and the combination of independence of overall supervisory authory in a bidder and target country.

However, the results with respect to the analysis of bank regulation are not statistically significant. As I do not find any statistical significant relationship between combined firms announcement returns and bank regulation, it is not possible to conclude that bank regulation is an important determinant on combined firms announcement returns.

While controlling for other factors in the regression analysis, the results show that combined firms gain more when bidders are in a country with a less competitive banking market. This illustrates that bidders in a country with a less competitive banking market allow bank mergers to generate more synergy to combined firms. Thus, combined firms can obtain higher announcement returns. The results also find that combined firms obtain higher gains when bidder size is small.

Overall, this section highlights the empirical findings for targets, bidders and combined firms, respectively. The results show that targets earn significant positive announcement returns and combined firms obtain slightly positive announcement returns. The results suggest that bank mergers create value to targets and combined firms. However, the results find that bidders experience negative announcement returns, indicating that bank mergers destroy value to bidders.

The results show that investor protection and bank regulation do have an influence on the cumulative abnormal returns of the firms. However, the results vary, depending on the variable applied. This illustrates that different variables appear to generate difference levels of the influence on the announcement returns of the firms. These findings also uncover the importance to protect the shareholders in bank mergers and acquisitions. Furthermore, the

regression analysis also reveals factors that can affect the announcement returns of the firms in bank mergers and acquisitions.

However, it should be acknowledged that this thesis also contains some limitations that may potentially restrict the validity of the analysis in the current study. Thus, the following section discusses the limitations of this thesis. In addition, the suggestions of the future research are also discussed in the following section in order to enhance the academic research in this field.

9.3 Limitations and suggestions

The aim of this thesis is to explore the impact of investor protection and bank regulation on the shareholder wealth around bank merger and acquisition announcements from 1995 to 2005. As the empirical findings presented above, the analysis may also suffer from weaknesses regarding the construction of the sample as well as the choice and the construction of the regression variables. The current study may have room for improvement in this area. Thus, this thesis also provides suggestions for future research. This section aims to discuss the limitations of this thesis and suggest areas for future work.

9.3.1 Limitations of this thesis

This thesis focuses on the cross-country analysis to determine as to whether the country level corporate governance mechanisms in terms of investor protection and bank regulation can be important determinants to explain the announcement returns of the firms in bank mergers and acquisitions. As has been discussed in chapter 5, this thesis analyses shareholder wealth of targets and bidders covering 36 and 39 countries, respectively. However, it should be acknowledged that the sample of bank mergers includes a large proportion of U.S. acquisitions relative to the sample from other countries. However, there is still a substantial number of non-U.S. observations. Thus, it may be argued that the relatively small number of transactions from outside the U.S. market may potentially limit

the validity to interpret the empirical findings with respect to the announcement returns of the firms as this thesis aims to be an international study. Instead, the sample is dominated by the U.S., reflecting the dominance of U.S. firms in bank mergers and acquisitions.

However, when the sample of bank mergers largely covers from the U.S. market, this may also reduce the validity to investigate the relationship between the announcement returns of the firms and investor protection and bank regulation. This may also be attributable to the fact that the results may not generate a strong conclusion due to a small number of samples from the countries outside the U.S. market.

In addition, the final sample may contain state-owned banks in the analysis. The presence of state-owned banks may affect the analysis of abnormal returns of the firms in that the market may be more or less sensitive to the announcements of bank mergers and acquisitions for state-owned banks. If targets are state-owned banks, it may be arguable that the government may want to achieve policy aim encouraging state-owned banks to be private or increasing the efficiency of the state-owned banks. The abnormal returns may be lower if targets are sold in a cheaper price.

On the other hand, if bidders are state-owned banks, it may be argued that state-owned bidding banks may be less efficient in their operation. When state-owned bidding banks intend to acquire targets, the transactions may improve the efficiency of these bidding banks. Accordingly, the market may respond favourably, showing higher abnormal returns. However, due to data unavailability, the current study cannot look into the impact of state-owned banks on the abnormal returns. Thus, this can be another potential limitation to be cautious in this thesis.

Alternative limitations may relate to the choice and construction of the variables in the regression analysis. As this thesis focuses on the country level corporate governance mechanisms in terms of investor protection and bank regulation to explain the announcement returns of the firms, it can be argued that the firm level corporate governance mechanisms, such as the ownership and board structure, may also influence the

announcement returns of the firms. Without controlling for the firm level corporate governance mechanisms, the regression analysis in the current study may not fully reveal the association between the announcement returns of the firms and investor protection and bank regulation in a country. However, due to the large international sample of bank mergers covering a number of countries, it is not possible to control for firm level corporate governance variables in the current study. But the interaction between firm- and country-level corporate governance may be an important area for future research.

On the other hand, it can be argued that there may also have other factors that may have an influence to affect the announcement returns of the firms. The regression analysis in the current study has controlled for a number of variables. Controlling for additional variables may further reduce the observations to be applied in the regression model. Thus, the regression analysis may lose its degree of freedom that may similarly reduce the validity to interpret the regression results.

Furthermore, some limitations are worth being acknowledged. While focusing on the cross-country analysis related to the country level corporate governance mechanisms, the regression model does not include the dummy variable with respect to the country region. As has been discussed in chapter 3, La Porta *et al*. (1998) argue that English-origin countries have the strongest legal protections for investors. This may indicate the importance to control for the country origin in the regression analysis. However, including regional dummy in the regression analysis may possibly exert a high correlation as I use the country level corporate governance variables. Thus, it may be necessary to exercise care to interpret the results as this thesis does not control for this aspect.

A limitation encountered is that firm specific characteristics use accounting data to measure these variables. While carrying out the cross-country analysis, the difference of the accounting standard or the level of tax rate may also have an influence to accounting data for the firms in this thesis. This may also affect the regression analysis.

Additionally, the investigation period in this thesis covers from 1995 to 2005. It

should be noted that the regression analysis may be sensitive to include the dummy variable for the year. However, including the dummy for the year may reduce degrees of freedom in the regression analysis. Thus, I do not control for the dummy for the year. This can also be a limitation to be addressed in this thesis.

Finally, an important limitation may relate to the construction of the variable for investor protection and bank regulation in a country. It is obvious that the variables related to investor protection and bank regulation used in this study are not time-varying. In addition, the variables may also be somewhat out of date. The analysis of the regression model cannot reflect the change of the time period regarding to investor protection and bank regulation. This thesis does not investigate the interaction of investor protection and bank regulation as the variables of investor protection and bank regulation involve in the year of 1998 and 2003, respectively. As a consequent, this limitation should be acknowledged in this thesis. On the other hand, despite these limitations, my findings are still valid as the variables of investor protection and bank regulation are still used in several other papers. In spite of the limitations discussed above, several suggestions can also be provided in this thesis in order to robust the current study and enhance the academic research in this field.

9.3.2 Suggestions for future research

Given the existence of some limitations discussed above, this thesis also offers several suggestions to improve the current study and to undertake future research. As the number of bank mergers in the developing countries in the current study is small, it is worth extending the sample to cover a large scale of developing countries. Including a wide number of developing and developed countries can also be expected to increase the explanatory power in the analysis when engaging in the cross-country analysis.

As has been argued previously, the variables of investor protection and bank regulation are constructed from the year of 1998 and 2003, respectively. The difference of

the period of the variables limits the current study to analyse the interaction of the variables simultaneously. It may be useful to select the variables in the same period.

In addition, while this thesis focuses on the country level corporate governance mechanisms in terms of investor protection and bank regulation, it may be argued that other country level corporate governance mechanisms, such as the country level of the credit rating, may also have an influence to the announcement returns of the firms in bank mergers and acquisitions. It is interesting to investigate whether other country level corporate governance mechanisms can be applied to explain the announcement returns of the firms.

Finally, this thesis investigates the short term announcement returns of bank mergers. The future research may interestingly look at the long term announcement returns of bank mergers. Similarly, it is interesting for future research to investigate the impact of investor protection and bank regulation on the long run post-announcement returns or long term performance in bank mergers and acquisitions. This can accumulate our knowledge to understand how the effectiveness of the country level corporate governance mechanisms in terms of investor protection and bank regulation on the impact of shareholder wealth in bank mergers and acquisitions, regarding to the long term announcement returns or performance.

9.4 Conclusion

This thesis explores the impact of investor protection and bank regulation on the shareholder wealth in bank mergers and acquisitions from 1995 to 2005. The empirical findings in this thesis reveal that investor protection and bank regulation have an influence on the announcement returns of the firms. From the perspective of targets, strong investor protection in a target country allows targets to have higher bargaining power. Target managers can have more ability to negotiate the deals and to create value to the firms and shareholders. In other words, investor protection in a target country can protect target

shareholders and reduce the expropriation by managers. In addition, strong bank regulation in a bidder country enables bidders to carefully evaluate the transactions. Targets can then be expected to obtain higher synergies after the transactions. Thus, targets can earn higher announcement returns.

With respect to bidders, the existence of investor protection in a bidder country may theoretically protect shareholders. However, the empirical findings in the current study reveal that the presence of strong investor protection in a bidder country may actually impede managerial ability to pursue risky investment projects in return of higher returns. This can then reduce future gains to bidders. Thus, bidders obtain lower announcement returns when investor protection in a bidder country is strong. Similarly, when bank regulation has more restriction on bank activity in mergers and acquisitions, this can limit managerial ability to pursue risky investment projects. Thus, bidders can obtain lower announcement returns.

On the contrary, when supervisory authority can be less influence from the external pressure, such political consideration, they can carefully evaluate the transactions. This can then be expected to create higher value to shareholders. Thus, bidders can obtain higher announcement returns.

Interestingly, my results find that strong investor protection in a target and bidder country can result in higher announcement returns to combined firms. This illustrates that investor protection can actually protect shareholders of combined firms. This also demonstrates the importance of investor protection on the influence of combined firms' announcement returns.

Overall, this thesis finds that investor protection and bank regulation in terms of the country level corporate governance mechanisms have an impact on shareholder wealth of bank mergers. My findings reveal that the effectiveness of the legal and regulation system can better protect shareholders. This allows shareholders to have more rights against

managers. Thus, the effectiveness of the legal and regulation system can be expected to protect shareholder wealth in bank mergers. However, my results also suggest that the presence of strong legal system can reduce the incentives that managers can pursue risky investment projects through mergers and acquisitions. This can then damage shareholder wealth in bank mergers.

As the legal and regulation system is controlled by the government, this study indirectly illustrates that the government can monitor managerial behaviour through the effectiveness of the legal and regulation system. When managers make the decisions of mergers and acquisitions, they may look after the shareholders aiming the interests of shareholders. This also suggests the importance of the legal and regulation system on the influence of shareholder wealth. The level of the legal and regulation system can play a role to affect the conflicts between managers and shareholders. Thus, the level of the legal and regulation system can affect shareholder wealth in mergers and acquisitions. As a result, the government should regulate better law and regulation to protect the shareholders in mergers and acquisitions.

This thesis offers several contributions to academic research and relevant users. This thesis provides a more meaningful analysis of the impact of bank mergers on shareholder wealth, by recognising that returns are likely to be affected by the country level corporate governance mechanisms in terms of investor protection and bank regulation. This can board our knowledge to understand the impact of investor protection and bank regulation on shareholder wealth in bank mergers. In addition, my empirical findings also allow this thesis to draw important inferences about the extent to which the importance of the country level corporate governance mechanisms can have an influence on managerial decisions in bank mergers and acquisitions. My results also provide a direct comparison in different markets as bank M&A studies largely focus on the U.S. market. The empirical findings demonstrate that U.S. banking takeover market is more competitive.

Furthermore, my results also make contributions to investors, managers and

policymakers/regulators. According to my findings, investors can understand how investor protection and bank regulation can protect their wealth and then they can establish their investment strategies. When managers make decisions of mergers and acquisitions, they need to take into account the influence of investor protection and bank regulation on shareholder wealth.

With respect to policymakers/regulators, my findings assist them to understand the importance of investor protection and bank regulation in bank mergers and acquisitions. The results allow them to develop and improve the legal system to protect shareholder wealth. When the government wants to improve its investment environment, the legal system can play an important role to increase investor confidence. The effectiveness of the legal system to protect shareholders also prompts the development of the financial market.

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Appendix A

Table 6.1 Correlation matrix

	(-1,+1)	Anti	Law	Ac	Sup	Cor	Inde	CB	Payment	Rel-size	ROA	MKTV	Cap	Size	Dep	Net
(-1,+1)	1															
Anti	.260**	1														
Law	.321**	.566**	1													
Ac	.158**	.242**	.260**	1												
Sup	.204**	.673**	.436**	.552**	1											
Cor	.200**	.605**	.512**	.616**	.745**	1										
Inde	.183**	.655**	.448**	.208**	.608**	.422**	1									
CB	-0.022	-0.155**	-0.202**	-0.374**	-0.349**	-0.345**	-0.120**	1								
Payment	-0.015	-0.288**	-0.194**	-0.296**	-0.364**	-0.319**	-0.262*	.314**	1							
Rel-size	-0.089	.129**	.011	.118*	.125*	.097	.115**	-0.143**	-0.174**	1						
ROA	.097*	.099*	.052	-0.02	-0.059	-0.063	-0.021	.071	.088	-0.024	1					
MKTV	-0.092*	-0.212**	-0.016	-0.107*	-0.130**	-0.164**	-0.039	-0.057	.001	.032	-0.03	1				
Cap	-0.022	-0.204**	-0.109*	-0.167**	-0.243**	-0.272**	-0.154**	.077	.194**	-0.083	.181**	.199**	1			
Size	-0.303**	-.0392**	-0.451**	-0.148**	-0.310**	-0.200**	-0.406**	.142**	-0.009	.068	-0.155**	.083	-0.066	1		
Dep	-0.205**	-0.343**	-0.268**	-0.275**	-0.290**	-0.282**	-0.444**	.079	.142**	-0.124*	-0.099*	.078	-0.05	.501**	1	
Net	.01	.033	-0.108*	.111*	.159**	.117*	.022	.055	.011	.129*	.018	-0.069	-0.058	-0.166**	-0.453**	1

Anti: antidirector rights index, Law: rule of law, Ac: overall activities restrictiveness, Sup: official supervisory power, Cor: prompt corrective power, Inde: independence of supervisory authority-overall ** Correlation is significant at the 0.01 level. * Correlation is significant at the 0.05 level.

Table 6.2 The cross-sectional regression analysis for targets based on the Mkt-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.273	***	0.037		0.317	***	0.266	***	0.366	***	0.386	***
Antidirector rights index	0.019	**										
Rule of law			0.026	***								
Overall Activities Restrictiveness					0.011	*						
Official Supervisory Power							0.009	**				
Prompt Corrective Power									0.007	**		
Independence of Supervisory Authority - Overall											0.004	
Cross-border	0.026		0.034	*	0.039	*	0.044	*	0.038	*	0.024	
Cash	0.005		0.007		-0.002		0.003		0.001		-0.005	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	0.108		0.101		0.115		0.145		0.134		0.136	
MKTV	-0.001		-0.002	*	-0.001		-0.001		-0.001		-0.001	
Capital to assets	0.012		0.020		-0.007		0.008		0.006		-0.002	
ln (total assets)	-0.014	***	-0.011	***	-0.016	***	-0.015	***	-0.015	***	-0.016	***
Deposit Money Bank Assets / GDP	-0.006		-0.006		-0.015		-0.016		-0.017		-0.014	
Net Interest Margin	-0.242		0.354		-0.369		-0.518		-0.579		-0.219	
Observations	376		376		376		376		376		376	
Adjusted R Square	9.98%		12.77%		9.07%		9.52%		9.39%		8.66%	
F-value	5.16		6.49		4.74		4.94		4.89		4.56	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.2 presents the results of targets to explore the impact of investor protection and bank regulation on the shareholder wealth in bank mergers using OLS regression analysis. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the market adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin in a bidder country. The size of the banking market is measured as deposit money bank assets to GDP in a bidder country. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Target}_{(-1,+1)} = \alpha_0 + \beta_1 (\text{Target's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) +$$

β_6 (ROA) + β_7 (The market to book ratio) + β_8 (The capital ratio) + β_9 (Size) + β_{10} (The competitiveness of the banking market) + β_{11} (The size of the banking market) + ε_i

Table 6.3 The cross-sectional regression analysis for targets based on the Mean-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.285	***	0.060		0.339	***	0.304	***	0.386	***	0.399	***
Antidirector rights index	0.019	***										
Rule of law			0.025	***								
Overall Activities Restrictiveness					0.010	*						
Official Supervisory Power							0.008	*				
Prompt Corrective Power									0.007	*		
Independence of Supervisory Authority - Overall											0.005	
Cross-border	0.034		0.042	*	0.047	*	0.048	*	0.045	*	0.033	
Cash	-0.001		0.000		-0.008		-0.004		-0.006		-0.011	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	0.122		0.116		0.131		0.158		0.149		0.151	
MKTV	-0.001		-0.002		-0.001		-0.001		-0.001		-0.001	
Capital to assets	0.010		0.018		-0.010		0.004		0.003		-0.005	
ln (total assets)	-0.014	***	-0.011	***	-0.016	***	-0.015	***	-0.016	***	-0.016	***
Deposit Money Bank Assets / GDP	-0.010		-0.011		-0.018		-0.020		-0.021		-0.016	
Net Interest Margin	-0.500		0.075		-0.608		-0.735		-0.795		-0.455	
Observations	376		376		376		376		376		376	
Adjusted R Square	10.49%		12.98%		9.46%		9.70%		9.69%		9.13%	
F-value	5.40		6.60		4.92		5.03		5.02		4.77	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.3 presents the results of targets to explore the impact of investor protection and bank regulation on the shareholder wealth in bank mergers using OLS regression analysis. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the mean adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates to use the cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin in a bidder country. The size of the banking market is measured as deposit money bank assets to GDP in a bidder country. The country level

specific characteristics are collected from the World Bank.
*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$\text{CAR}^{\,Target}_{(-1,+1)} = \alpha_0 + \beta_1\,(\text{Target's investor protection}) + \beta_2\,(\text{Bidder's bank regulation}) + \beta_3\,(\text{Cross-border dummy}) + \beta_4\,(\text{Cash dummy}) + \beta_5\,(\text{The relative size of bidder to target}) + \beta_6\,(\text{ROA}) + \beta_7\,(\text{The market to book ratio}) + \beta_8\,(\text{The capital ratio}) + \beta_9\,(\text{Size}) + \beta_{10}\,(\text{The competitiveness of the banking market}) + \beta_{11}\,(\text{The size of the banking market}) + \varepsilon_i$$

Table 6.4 The cross-sectional regression analysis for targets controlling for the difference of investor protection and bank regulation in a bidder and target country based on the Mkt-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.284	***	0.064		0.310	***	0.287	***	0.359	***	0.383	***
Antidirector rights index	0.015	*										
Difference(Antidirector rights index)	-0.016											
rule of law			0.022	***								
Difference (Rule of law)			-0.022	*								
Overall Activities Restrictiveness					0.010	*						
Difference (Overall Activities Restrictiveness)					-0.060							
Official Supervisory Power							0.007	*				
Difference (Official Supervisory Power)							-0.022					
Prompt Corrective Power									0.008	**		
Difference (Prompt Corrective Power)									-0.069			
Independence of Supervisory Authority - Overall											0.003	
Difference (Independence of Supervisory Authority - Overall)											0.065	*
Cross-border	0.010		0.041	*	0.031		0.029		0.017		0.000	
Cash	0.003		0.008		-0.002		0.001		0.003		-0.005	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	0.086		0.078		0.132		0.164	*	0.162	*	0.169	*
MKTV	-0.001		-0.002	*	-0.001		-0.001		-0.001		-0.001	
Capital to assets	-0.004		0.008		-0.013		-0.004		-0.001		-0.014	
ln (total assets)	-0.014	***	-0.010	***	-0.016	***	-0.015	***	-0.016	***	-0.016	***
Deposit Money Bank Assets / GDP	-0.008		-0.008		-0.009		-0.010		-0.011		-0.010	
Net Interest Margin	-0.048		0.472		-0.228		-0.289		-0.416		-0.054	

Observations	373		373		372		372		372		372	
Adjusted R Square	9.94%		12.72%		9.31%		9.49%		9.49%		8.75%	
F-value	4.73		5.93		4.46		4.54		4.54		4.24	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.4 presents the results to explore the impact of the difference of investor protection and bank regulation on target shareholder wealth in bank mergers using OLS regression analysis. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the market adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.
*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$\text{CAR}_{(-1,+1)}^{Target} = \alpha_0 + \beta_1(\text{Target's investor protection}) + \beta_2(\text{The difference of target's investor protection}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bidder's bank regulation}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA}) + \beta_9(\text{The market to book ratio}) + \beta_{10}(\text{The capital ratio}) + \beta_{11}(\text{Size}) + \beta_{12}(\text{The competitiveness of the banking market}) + \beta_{13}(\text{The size of the banking market}) + \varepsilon_i$$

Table 6.5 The cross-sectional regression analysis for targets controlling for the difference of investor protection and bank regulation in a bidder and target country based on the Mean-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.296	***	0.086		0.331	***	0.296	***	0.379	***	0.403	***
Antidirector rights index	0.015	*										
Difference (Antidirector rights index)	-0.018	*										
rule of law			0.022	***								
Difference (Rule of law)			-0.027	**								
Overall Activities Restrictiveness					0.010	*						
Difference (Overall Activities Restrictiveness)					0.085							
Official Supervisory Power							0.008	*				

Difference (Official Supervisory Power)							0.056	**				
Prompt Corrective Power									0.007	*		
Difference (Prompt Corrective Power)									-0.088	*		
Independence of Supervisory Authority - Overall											0.002	
Difference (Independence of Supervisory Authority - Overall)											0.085	*
Cross-border	0.018		0.049	*	0.026		0.024		0.024		0.009	
Cash	-0.002		0.004		-0.006		-0.003		-0.004		-0.010	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	0.094		0.084		0.160		0.193	*	0.178	*	0.183	*
MKTV	-0.001		-0.002		-0.001		-0.001		-0.001		-0.001	
Capital to assets	-0.006		0.005		-0.017		-0.007		-0.004		-0.017	
ln (total assets)	-0.014	***	-0.010	***	-0.017	***	-0.015	***	-0.016	***	-0.017	***
Deposit Money Bank Assets / GDP	-0.013		-0.016		-0.012		-0.013		-0.015		-0.013	
Net Interest Margin	-0.302		0.197		-0.440		-0.520		-0.640		-0.311	
Observations	373		373		372		372		372		372	
Adjusted R Square	10.55%		13.09%		9.58%		9.79%		9.84%		9.24%	
F-value	4.99		6.09		4.58		4.66		4.68		4.43	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.5 presents the results to explore the impact of the difference of investor protection and bank regulation on target shareholder wealth in bank mergers using OLS regression analysis. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the mean adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR_{(-1,+1)}^{Target} = \alpha_0 + \beta_1(\text{Target's investor protection}) + \beta_2(\text{The difference of target's investor protection}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bidder's bank regulation}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA})$$

+ β_9 (The market to book ratio) + β_{10} (The capital ratio) + β_{11} (Size) + β_{12} (The competitiveness of the banking market) + β_{13} (The size of the banking market) + ε_i

Table 7.1 Bidder daily abnormal returns

	Mean-Adj model				
day	Mean	p-value 1	p-value 2	Sign test	Wilcoxon test
-30	-0.0005	0.2585	0.2669	0.0001	0.0490
-29	-0.0001	0.3962	0.3961	0.0039	0.2020
-28	0.0004	0.2638	0.2799	0.0278	0.9240
-27	-0.0006	0.2117	0.2071	0.0001	0.1030
-26	0.0009	0.0746	0.0824	0.0850	0.4500
-25	-0.0008	0.1372	0.1379	0.0054	0.2020
-24	0.0006	0.1908	0.1983	0.1060	0.4460
-23	0.0000	0.3978	0.3978	0.0087	0.4670
-22	-0.0004	0.3202	0.3182	0.0000	0.0240
-21	-0.0009	0.0924	0.0984	0.0000	0.0090
-20	-0.0003	0.3275	0.3228	0.0531	0.4250
-19	0.0004	0.2993	0.2952	0.0023	0.9110
-18	-0.0004	0.3080	0.3059	0.0001	0.0830
-17	0.0005	0.2766	0.2663	0.4743	0.4240
-16	-0.0004	0.3020	0.2993	0.0039	0.1740
-15	-0.0002	0.3614	0.3565	0.0046	0.1540
-14	0.0010	0.0649	0.0571	0.0413	0.4460
-13	0.0008	0.1440	0.1358	0.0758	0.6990
-12	-0.0009	0.0961	0.0904	0.0001	0.0230
-11	0.0008	0.1050	0.1087	0.0531	0.5430
-10	-0.0010	0.0985	0.0753	0.0039	0.4030
-9	0.0002	0.3843	0.3827	0.0006	0.2870
-8	-0.0001	0.3920	0.3916	0.0599	0.4810
-7	0.0000	0.3986	0.3984	0.0004	0.5820
-6	-0.0005	0.2492	0.2313	0.0211	0.2360
-5	-0.0003	0.3558	0.3547	0.0118	0.4590
-4	-0.0001	0.3902	0.3898	0.0063	0.1460
-3	-0.0008	0.1279	0.1260	0.0002	0.0470
-2	0.0007	0.1660	0.1580	0.1309	0.6230
-1	-0.0003	0.3609	0.3488	0.0001	0.0660
0	-0.0046	0.0000	0.0000	0.0000	0.0000
1	-0.0014	0.0626	0.0116	0.0000	0.0020
2	-0.0005	0.3007	0.2669	0.0000	0.0320
3	-0.0016	0.0063	0.0048	0.0001	0.0120
4	0.0003	0.3293	0.3211	0.0006	0.3080
5	-0.0001	0.3949	0.3947	0.0278	0.8580

6	-0.0003	0.3318	0.3374	0.0046	0.3380
7	-0.0002	0.3827	0.3820	0.2331	0.9820
8	0.0000	0.3982	0.3982	0.0675	0.7570
9	-0.0001	0.3876	0.3871	0.0004	0.1150
10	-0.0007	0.1729	0.1614	0.0013	0.1030
11	0.0010	0.0617	0.0576	0.2773	0.4400
12	0.0009	0.0854	0.0911	0.9366	0.2680
13	0.0000	0.3988	0.3988	0.0019	0.1880
14	-0.0006	0.2098	0.2152	0.0005	0.0610
15	-0.0003	0.3600	0.3529	0.0102	0.7920
16	-0.0007	0.1818	0.1811	0.0000	0.0010
17	-0.0002	0.3719	0.3726	0.0063	0.1900
18	0.0009	0.0945	0.0909	0.0278	0.8340
19	-0.0007	0.1426	0.1469	0.0001	0.0140
20	0.0000	0.3985	0.3985	0.0074	0.2820
21	0.0000	0.3987	0.3987	0.0278	0.9300
22	-0.0007	0.1388	0.1439	0.0000	0.0330
23	-0.0002	0.3708	0.3745	0.0046	0.3080
24	-0.0003	0.3315	0.3343	0.0006	0.1560
25	-0.0004	0.2741	0.2839	0.0033	0.1260
26	-0.0007	0.1541	0.1500	0.0019	0.0300
27	0.0014	0.0136	0.0132	0.3014	0.1660
28	-0.0012	0.0343	0.0343	0.0000	0.0050
29	-0.0015	0.0044	0.0069	0.0000	0.0000
30	-0.0004	0.3111	0.3165	0.0599	0.6700

p-value 1: t test with assuming cross-sectional independence
p-value 2: t test with assuming cross-sectional dependence
Wilcoxon test: Wilcoxon signed rank test

Table 7.2 Bidder cumulative abnormal returns

Mean-Adj model				
	Mean	p-value1	Sign test	Wilcoxon test
(-4,1)	-0.0065	0.0002	0.0000	0.0000
(-1,1)	-0.0063	0.0000	0.0000	0.0000
(-30,30)	-0.0148	0.0004	0.0011	0.0000
(0)	-0.0046	0.0000	0.0000	0.0000
(-1,0)	-0.0049	0.0000	0.0000	0.0000
(-30,-1)	-0.0021	0.2849	0.8115	0.5410
(0,1)	-0.0060	0.0000	0.0000	0.0000
(1,30)	-0.0082	0.0057	0.5077	0.0390

p-value 1: t test with assuming cross-sectional independence
Wilcoxon test: Wilcoxon signed rank test

Table 7.3 Bidder cumulative abnormal returns for the market

Mkt-Adj model															
	U.S.					EU					Other markets				
	N	Mean	p-value 1	Sign test	Wilcoxon test	N	Mean	p-value 1	Sign test	Wilcoxon test	N	Mean	p-value 1	Sign test	Wilcoxon test
(-4 , 1)	943	-0.0064	0.0000	0.0000	0.0000	164	0.0019	0.6780	0.3904	0.1500	101	0.0005	0.9370	0.5505	1.0000
(-1 , 1)	943	-0.0085	0.0000	0.0000	0.0000	164	-0.0006	0.8860	0.9378	0.5290	101	-0.0035	0.4790	0.1114	0.2210
(-30 , 30)	943	0.0025	0.5430	0.0787	0.5810	164	-0.0146	0.1550	0.8148	0.4460	101	0.0221	0.1650	0.1114	0.0830
(0)	943	-0.0063	0.0000	0.0000	0.0000	164	-0.0022	0.4050	0.6962	0.9910	101	0.0004	0.8830	0.5505	0.5900
(-1 , 0)	943	-0.0068	0.0000	0.0000	0.0000	164	0.0001	0.9670	0.3100	0.3270	101	0.0009	0.8110	1.0000	0.9220
(-30 , -1)	943	0.0068	0.0090	0.0371	0.0160	164	0.0042	0.5100	0.5846	0.9720	101	0.0188	0.1180	0.1636	0.1040
(0 , 1)	943	-0.0080	0.0000	0.0000	0.0000	164	-0.0029	0.4210	0.9378	0.9770	101	-0.0040	0.3670	0.2325	0.2440
(1 , 30)	943	0.0021	0.4890	0.2682	0.8890	164	-0.0166	0.0370	0.1379	0.0860	101	0.0029	0.8040	0.6906	0.7350

p-value 1: t test with assuming cross-sectional independence
Wilcoxon test: Wilcoxon signed rank test

Table 7.4 Bidder cumulative abnormal returns for the market

Mean-Adj model															
	U.S.					EU					Other markets				
	N	Mean	p-value 1	Sign test	Wilcoxon test	N	Mean	p-value 1	Sign test	Wilcoxon test	N	Mean	p-value 1	Sign test	Wilcoxon test
(-4 , 1)	943	-0.0085	0.0000	0.0000	0.0000	164	-0.0038	0.4760	0.8148	0.5710	101	-0.0046	0.5730	0.4260	0.3860
(-1 , 1)	943	-0.0091	0.0000	0.0000	0.0000	164	-0.0016	0.7110	0.1010	0.5790	101	-0.0047	0.3800	0.3197	0.1630
(-30 , 30)	943	-0.0159	0.0010	0.0001	0.0000	164	-0.0190	0.1460	0.5846	0.1930	101	-0.0042	0.8490	1.0000	0.9110
(0)	943	-0.0064	0.0000	0.0000	0.0000	164	-0.0029	0.2920	0.4822	0.6110	101	-0.0008	0.8130	1.0000	0.7600
(-1 , 0)	943	-0.0071	0.0000	0.0000	0.0000	164	-0.0009	0.7830	0.4822	0.6150	101	-0.0021	0.6430	0.2325	0.4320
(-30 , -1)	943	-0.0005	0.8490	0.6023	0.7360	164	-0.0035	0.6860	0.2415	0.2920	101	-0.0024	0.8620	0.5505	0.5580
(0 , 1)	943	-0.0083	0.0000	0.0000	0.0000	164	-0.0036	0.3600	0.1379	0.3650	101	-0.0034	0.4570	0.8423	0.2950
(1 , 30)	943	-0.0089	0.0070	0.4737	0.0290	164	-0.0126	0.1860	0.8148	0.4250	101	-0.0010	0.9450	0.6906	0.7790

p-value 1: t test with assuming cross-sectional independence
Wilcoxon test: Wilcoxon signed rank test

Table 7.5 Bidder cumulative abnormal returns for activity focusing/diversifying deals

Mkt-Adj model								
	Focusing				Diversifying			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4 , 1)	-0.0064	0.0000	0.0000	0.0000	0.0052	0.2270	0.7063	0.2290
(-1 , 1)	-0.0084	0.0000	0.0000	0.0000	0.0011	0.7430	0.8211	0.9090
(-30 , 30)	0.0010	0.8030	0.1272	0.5660	0.0067	0.5360	0.5977	0.4140
(0)	-0.0061	0.0000	0.0000	0.0000	0.0004	0.8640	1.0000	0.7640
(-1 , 0)	-0.0064	0.0000	0.0000	0.0000	0.0017	0.5450	0.9399	0.7780
(-30 , -1)	0.0057	0.0260	0.0499	0.0440	0.0178	0.0170	0.0830	0.0440
(0 , 1)	-0.0081	0.0000	0.0000	0.0000	-0.0003	0.9180	0.7063	0.9350
(1 , 30)	0.0015	0.6140	0.4364	0.9550	-0.0114	0.1400	0.0830	0.1220

N	1032				176			

p-value 1: t test with assuming cross-sectional independence
Wilcoxon test: Wilcoxon signed rank test

Table 7.6 Bidder cumulative abnormal returns for activity focusing/diversifying deals

Mean-Adj model								
	Focusing				Diversifying			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4 , 1)	-0.0095	0.0000	0.0000	0.0000	0.0038	0.4410	0.4070	0.3130
(-1 , 1)	-0.0093	0.0000	0.0000	0.0000	0.0019	0.5890	0.7063	0.6890
(-30 , 30)	-0.0172	0.0000	0.0001	0.0000	-0.0041	0.7630	1.0000	0.6700
(0)	-0.0065	0.0000	0.0000	0.0000	0.0003	0.8940	0.8211	0.6030
(-1 , 0)	-0.0072	0.0000	0.0000	0.0000	0.0018	0.5400	1.0000	0.5730
(-30 , -1)	-0.0028	0.3200	0.7320	0.4050	0.0090	0.3120	0.7063	0.3550
(0 , 1)	-0.0086	0.0000	0.0000	0.0000	0.0004	0.8980	1.0000	0.8150
(1 , 30)	-0.0080	0.0150	0.6857	0.1010	-0.0134	0.1460	0.5977	0.1530
N	1032				176			

p-value 1: t test with assuming cross-sectional independence
Wilcoxon test: Wilcoxon signed rank test

Table 7.7 Correlation matrix

	(-1,+1)	Anti	Law	Ac	Sup	Cor	Inde	CB	Payment	Rel-size	ROA	MKTV	Cap	Size	Dep	Net
(-1,+1)	1															
Anti	-0.064*	1														
Law	-0.037	.563**	1													
Ac	-0.058*	.233**	.275**	1												
Sup	-0.031	.762**	.463**	.495**	1											
Cor	-0.05	.683**	.425**	.516**	.818**	1										
Inde	.003	.735**	.563**	.211**	.706**	.474**	1									
CB	.064*	-0.394**	-0.223**	-0.529**	-0.472**	-0.479**	-0.224**	1								
Payment	.150**	-0.419**	-0.340**	-0.299**	-0.403**	-0.390**	-0.356**	.407**	1							
Rel-size	-0.198**	.098**	.031	.075*	.095**	.075*	.090**	-0.149**	-0.141**	1						
ROA	-0.093**	.378**	.248**	.274**	.366**	.400**	.334**	-0.242**	-0.194**	-0.006	1					
MKTV	.001	-0.071*	-0.159**	.040	-0.036	-0.073*	.016	.097**	.039	-0.012	.072*	1				
Cap	.006	-0.093**	-0.085**	-0.051	-0.023	-0.021	-0.045	.090**	.050	.093**	-0.119**	-0.009	1			
Size	.002	-0.430**	-0.354**	-0.299**	-0.428**	-0.363**	-0.390**	.380**	.261**	-0.288**	-0.176**	.127**	-0.138**	1		
Dep	-0.086**	.275**	.035	.263**	.333**	.435**	.095**	-0.282**	-0.182**	.082**	.409**	-0.023	.518**	-0.436**	1	
Net	.071*	-0.413**	-0.276**	-0.476**	-0.494**	-0.508**	-0.365**	.367**	.278**	-0.093**	-0.432**	-0.033	-0.054	0.504**	-0.615**	1

Anti: antidirector rights index, Law: rule of law, Ac: overall activities restrictiveness, Sup: official supervisory power, Cor: prompt corrective power, Inde: independence of supervisory authority-overall. ** Correlation is significant at the 0.01 level. * Correlation is significant at the 0.05 level.

Table 7.8 The cross-sectional regression analysis for bidders based on the Mkt-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.051	***	0.048	**	0.081	***	0.038	*	0.025		0.046	***
Antidirector rights index	-0.000											
Rule of law			-0.000									
Overall Activities Restrictiveness					-0.006	***						
Official Supervisory Power							0.002					
Prompt Corrective Power									0.002	*		
Independence of Supervisory Authority - Overall											0.006	
Cross-border	-0.005		-0.005		-0.006		-0.004		-0.004		-0.004	
Cash	0.009	***	0.009	***	0.009	***	0.010	***	0.010	***	0.010	***
Relative size	-0.144	***	-0.144	***	-0.149	***	-0.144	***	-0.142	***	-0.144	***
ROA	-0.194		-0.217		-0.166		-0.229		-0.287		-0.293	
MKTV	0.002	**	0.002	**	0.002	***	0.002	**	0.002	**	0.003	***
Capital to assets	0.029	*	0.030	*	0.036	**	0.029	*	0.031	**	0.030	**
ln (total assets)	-0.003	***	-0.003	***	-0.003	***	-0.003	***	-0.003	***	-0.003	***
Deposit Money Bank Assets / GDP	-0.419	**	-0.420	**	-0.361	*	-0.520	**	-0.513	**	-0.525	***
Net Interest Margin	0.004	*	0.005	*	-0.001		0.004		0.007	**	0.004	
Observations	1030		1030		1033		1028		1033		1033	
Adjusted R Square	6.27%		6.26%		7.27%		6.94%		6.87%		6.79%	
F-value	7.88		7.87		9.09		8.66		8.61		8.52	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.8 presents the results of bidder regression analysis. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the market adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR_{(-1,+1)}^{Bidder} = \alpha_0 + \beta_1 (\text{Bidder's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) +$$

β_6 (ROA) + β_7 (The market to book ratio) + β_8 (The capital ratio) + β_9 (Size) + β_{10} (The competitiveness of the banking market) + β_{11} (The size of the banking market) + ε_i

Table 7.9 The cross-sectional regression analysis for bidders based on the Mean-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.065	***	0.105	***	0.076	***	0.074	***	0.062	***	0.039	**
Antidirector rights in dex	-0.001											
Rule of law			-0.003	**								
Overall Activities Restrictiveness					-0.002							
Official Supervisory Power							-0.001					
Prompt Corrective Power									-0.001			
Independence of Supervisory Authority - Overall											0.005	*
Cross-border	-0.006		-0.006		-0.008	*	-0.007	*	-0.007		-0.005	
Cash	0.008	***	0.007	***	0.008	***	0.008	***	0.008	***	0.010	***
Relative size	-0.153	***	-0.157	***	-0.153	***	-0.153	***	-0.153	***	-0.152	***
ROA	-0.227		-0.123		-0.249		-0.222		-0.222		-0.351	*
MKTV	0.001		0.000		0.001		0.001		0.001		0.001	
Capital to assets	0.016		0.018		0.018		0.016		0.017		0.023	*
ln (total assets)	-0.002	***	-0.003	***	-0.002	***	-0.002	***	-0.002	***	-0.002	***
Deposit Money Bank Assets / GDP	-0.004		-0.006		-0.005		-0.004		-0.004		-0.001	
Net Interest Margin	-0.701	***	-0.839	***	-0.682	***	-0.704	***	-0.647	***	-0.574	***
Observations	1079		1079		1081		1079		1081		1081	
Adjusted R Square	5.55%		6.12%		5.65%		5.66%		5.57%		5.83%	
F-value	7.34		8.02		7.47		7.47		7.37		7.69	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.9 presents the results of bidder regression analysis. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the mean adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$CAR^{Bidder}_{(-1,+1)} = \alpha_0 + \beta_1$ (Bidder's investor protection) + β_2 (Bidder's bank regulation) + β_3 (Cross-border dummy) + β_4 (Cash dummy) + β_5 (The relative size of the target to bidder) + β_6 (ROA) + β_7 (The market to book ratio) + β_8 (The capital ratio) + β_9 (Size) + β_{10} (The competitiveness of the banking market) + β_{11} (The size of the banking market) + ε_i

Table 7.10 The cross-sectional regression analysis for bidders controlling for the difference of investor protection and bank regulation in a bidder and target country based on the Mkt-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.047	***	0.094	***	0.076	***	0.062	***	0.052	***	0.032	*
Antidirector rights index	-0.000											
Difference (Antidirector rights index)	-0.000											
rule of law			-0.003	***								
Difference (Rule of law)			0.002									
Overall Activities Restrictiveness					-0.003	*						
Difference (Overall Activities Restrictiveness)					-0.001							
Official Supervisory Power							-0.001					
Difference (Official Supervisory Power)							0.000					
Prompt Corrective Power									-0.001			
Difference (Prompt Corrective Power)									0.002			
Independence of Supervisory Authority - Overall											0.004	
Difference (Independence of Supervisory Authority - Overall)											-0.001	
Cross-border	-0.005		-0.007		-0.010	*	-0.005		-0.004		-0.004	
Cash	0.010	***	0.008	***	0.010	***	0.010	***	0.009	***	0.011	***
Relative size	-0.138	***	-0.145	***	-0.140	***	-0.140	***	-0.139	***	-0.138	***
ROA	-0.106		-0.016		-0.107		-0.089		-0.069		-0.176	
MKTV	0.003	***	0.003	**	0.003	***	0.003	***	0.003	***	0.003	***
Capital to assets	0.042	***	0.044	***	0.041	***	0.041	***	0.041	***	0.045	***
ln (total assets)	-0.003	***	-0.004	***	-0.003	***	-0.003	***	-0.003	***	-0.003	***
Deposit Money Bank Assets / GDP	-0.457	**	-0.610	***	-0.505	***	-0.479	***	-0.494	***	-0.427	**
Net Interest Margin	0.010	*	0.007		0.006		0.009		0.009	*	0.011	**
Observations	1052		1051		1054		1047		1054		1054	
Adjusted R Square	0.07		0.07		0.07		0.07		0.07		0.07	
F-value	7.71		8.61		8.45		8.01		8.24		8.16	

(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.10 presents the results to explore the impact of the difference of investor protection and bank regulation in a bidder and target country on bidder shareholder wealth. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the market adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression analysis also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target and bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to the transactions. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.
*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Bidder}_{(-1,+1)} = \alpha_0 + \beta_1(\text{Bidder's investor protection}) + \beta_2(\text{The difference of investor protection in a bidder and target country}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bank regulation in a bidder and target country}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA}) + \beta_9(\text{The market to book ratio}) + \beta_{10}(\text{The capital ratio}) + \beta_{11}(\text{Size}) + \beta_{12}(\text{The competitiveness of the banking market}) + \beta_{13}(\text{The size of the banking market}) + \varepsilon_i$$

Table 7.11 The cross-sectional regression analysis for bidders controlling for the difference of investor protection and bank regulation in a bidder and target country based on the Mean-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.057	***	0.109	***	0.060	***	0.062	***	0.058	***	0.031	*
Antidirector rights index	-0.000											
Difference (Antidirector rights index)	-0.000											
rule of law			-0.004	***								
Difference (Rule of law)			0.003									
Overall Activities Restrictiveness					-0.001							
Difference (Overall Activities Restrictiveness)					-0.002							
Official Supervisory Power							-0.001					
Difference (Official Supervisory Power)							-0.002					
Prompt Corrective Power									-0.001			
Difference (Prompt Corrective Power)									0.003	*		
Independence of Supervisory Authority - Overall											0.006	**

Difference (Independence of Supervisory Authority - Overall)											-0.003	
Cross-border	-0.008		-0.010	*	-0.012	**	-0.009	*	-0.007		-0.007	
Cash	0.009	***	0.006	**	0.009	***	0.009	***	0.008	***	0.010	***
Relative size	-0.142	***	-0.147	***	-0.141	***	-0.143	***	-0.143	***	-0.141	***
ROA	-0.162		-0.059		-0.175		-0.177		-0.127		-0.264	
MKTV	0.001		0.001		0.001		0.001		0.001		0.001	
Capital to assets	0.027		0.028	*	0.028	*	0.029	*	0.027	*	0.031	**
ln (total assets)	-0.002	***	-0.003	***	-0.002	***	-0.002	***	-0.002	***	-0.002	***
Deposit Money Bank Assets / GDP	-0.701	***	-0.864	***	-0.681	***	-0.690	***	-0.684	***	-0.603	***
Net Interest Margin	-0.003		-0.006		-0.005		-0.003		-0.003		-0.000	
Observations	1053		1052		1055		1048		1055		1055	
Adjusted R Square	0.05		0.06		0.05		0.06		0.06		0.06	
F-value	6.33		7.39		6.52		6.73		6.62		6.70	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.11 presents the results to explore the impact of the difference of investor protection and bank regulation in a bidder and target country on bidder shareholder wealth. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the mean adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression analysis also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target and bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to the transactions. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Bidder}_{(-1,+1)} = \alpha_0 + \beta_1(\text{Bidder's investor protection}) + \beta_2(\text{The difference of investor protection in a bidder and target country}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bank regulation in a bidder and target country}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA}) + \beta_9(\text{The market to book ratio}) + \beta_{10}(\text{The capital ratio}) + \beta_{11}(\text{Size}) + \beta_{12}(\text{The competitiveness of the banking market}) + \beta_{13}(\text{The size of the banking market}) + \varepsilon_i$$

Table 8.1 Combined firms daily abnormal returns

Mean-Adj model				
	Mean	p-value 1	Sign test	Wilcoxon test
-30	-0.0003	0.3823	0.4440	0.9270
-29	0.0015	0.1114	1.0000	0.4130
-28	-0.0002	0.3843	0.2839	0.8020

-27	-0.0013	0.1611	1.0000	0.7800
-26	0.0003	0.3688	0.0364	0.1750
-25	-0.0002	0.3853	0.1137	0.6150
-24	-0.0010	0.1945	0.0466	0.0720
-23	0.0003	0.3727	0.7986	0.1340
-22	0.0004	0.3527	0.7986	0.6330
-21	-0.0012	0.1484	0.2839	0.1740
-20	-0.0012	0.1727	0.0590	0.2180
-19	-0.0004	0.3410	0.7986	0.2260
-18	0.0001	0.3978	0.1137	0.5280
-17	-0.0009	0.2121	0.0741	0.1740
-16	-0.0006	0.3107	0.3857	0.6940
-15	0.0010	0.2076	0.3857	0.7300
-14	0.0005	0.3385	0.4440	0.0760
-13	0.0004	0.3540	0.7986	0.4440
-12	0.0006	0.3349	0.4440	0.9560
-11	0.0001	0.3963	0.4440	0.5340
-10	-0.0005	0.3493	0.9593	0.7790
-9	-0.0010	0.2421	0.3323	0.3100
-8	0.0023	0.0100	0.0410	0.0060
-7	0.0003	0.3755	0.7592	0.8850
-6	0.0003	0.3842	0.7592	0.3300
-5	0.0007	0.2767	0.2610	0.0630
-4	0.0007	0.3086	1.0000	0.1970
-3	-0.0015	0.1119	0.1127	0.4100
-2	0.0012	0.1745	0.8780	0.0930
-1	0.0000	0.3986	1.0000	0.1340
0	0.0013	0.3085	0.5060	0.8150
1	0.0023	0.1445	0.0922	0.4860
2	0.0000	0.3986	0.0466	0.4660
3	-0.0020	0.0316	0.2405	0.4340
4	-0.0009	0.2592	0.0922	0.3100
5	0.0014	0.1369	0.0466	0.8450
6	0.0003	0.3783	0.3857	0.8660
7	-0.0006	0.3131	0.1137	0.5230
8	0.0001	0.3945	0.6460	0.6390
9	0.0008	0.2640	0.3857	0.3590
10	-0.0013	0.1083	0.3857	0.2370
11	0.0015	0.0832	0.8783	0.9650
12	0.0006	0.3217	0.0093	0.4230
13	-0.0003	0.3728	0.1137	0.5970
14	-0.0013	0.1179	0.0922	0.1520

15	-0.0003	0.3787	0.5746	0.3590
16	0.0011	0.1739	0.2839	0.1790
17	-0.0011	0.1591	0.0466	0.1300
18	0.0012	0.1559	0.7209	0.1170
19	-0.0013	0.1284	0.6460	0.9850
20	0.0000	0.3983	0.3857	0.6810
21	-0.0003	0.3769	0.5746	0.5720
22	-0.0014	0.0995	0.5071	0.9510
23	0.0002	0.3920	0.2839	0.8450
24	0.0001	0.3978	0.9593	0.4860
25	-0.0001	0.3941	0.4440	0.2450
26	-0.0005	0.3462	1.0000	0.6000
27	0.0013	0.1422	0.2020	0.7470
28	-0.0006	0.3086	0.2839	0.4500
29	-0.0018	0.0357	0.0466	0.0380
30	-0.0010	0.1911	0.3857	0.4580

p-value 1: t test with assuming cross-sectional independence
Wilcoxon test: Wilcoxon signed rank test

Table 8.2 Combined firms cumulative abnormal returns

Mean-Adj model				
	Mean	p-value 1	Sign test	Wilcoxon test
(-4,1)	0.0042	0.2150	0.2009	0.7460
(-1,1)	0.0036	0.2310	0.2405	0.7590
(-30,30)	-0.0023	0.7560	0.5746	0.7980
(0)	0.0013	0.4750	0.0278	0.6430
(-1,0)	0.0013	0.5470	0.2393	0.6310
(-30,-1)	0.0004	0.9360	0.2839	0.3750
(0,1)	0.0036	0.1790	0.5071	0.8840
(1,30)	-0.0040	0.4260	0.4440	0.2570

p-value 1: t test with assuming cross-sectional independence
Wilcoxon test: Wilcoxon signed rank test

Table 8.3 Combined firms cumulative abnormal returns for activity focusing/diversifying deals

Market-Adj model								
	Focusing				Diversifying			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4 , 1)	0.0091	0.0060	0.8228	0.1350	0.0069	0.4160	0.6143	0.1880
(-1 , 1)	0.0052	0.1010	0.2195	0.9430	0.0039	0.5400	0.8011	0.3470
(-30 , 30)	0.0191	0.0060	0.2195	0.0170	0.0166	0.4520	0.3135	0.1900
(0)	0.0024	0.2390	0.5756	0.7900	-0.0006	0.8740	0.8011	0.9540
(-1 , 0)	0.0035	0.1430	0.3135	0.7450	0.0015	0.7620	0.8011	0.7400
(-30 , -1)	0.0126	0.0040	0.0256	0.0010	0.0131	0.3390	0.6143	0.2300
(0 , 1)	0.0041	0.1450	0.2643	0.8560	0.0019	0.7240	1.0000	0.6200
(1 , 30)	0.0042	0.3870	1.0000	0.8320	0.0040	0.7870	0.6143	0.9920
N	324				64			

p-value 1: t test with assuming cross-sectional independence
Wilcoxon test: Wilcoxon signed rank test

Table 8.4 Combined firms cumulative abnormal returns for activity focusing/diversifying deals

Mean-Adj model								
	Focusing				Diversifying			
	Mean	p-value 1	Sign test	Wilcoxon test	Mean	p-value 1	Sign test	Wilcoxon test
(-4 , 1)	0.0047	0.1800	0.0732	0.9270	0.0014	0.8910	0.4497	0.4700
(-1 , 1)	0.0034	0.3000	0.0445	0.3330	0.0044	0.5400	0.1306	0.2090
(-30 , 30)	-0.0044	0.5320	0.3151	0.5490	0.0085	0.7570	0.4497	0.5540
(0)	0.0018	0.3890	0.0570	0.6060	-0.0010	0.8020	0.3135	0.9750
(-1 , 0)	0.0016	0.4960	0.1455	0.4260	-0.0003	0.9610	0.8011	0.6050
(-30 , -1)	0.0012	0.7880	0.4346	0.4810	-0.0039	0.8230	0.4497	0.5630
(0 , 1)	0.0036	0.2290	0.1804	0.5230	0.0037	0.5430	0.2077	0.2870
(1 , 30)	-0.0075	0.1370	0.2643	0.1570	0.0135	0.4380	0.6143	0.7500
N	324				64			

p-value 1: t test with assuming cross-sectional independence
Wilcoxon test: Wilcoxon signed rank test

Table 8.5 Correlation matrix

	(-1,+1)	Anti	Law	Ac	Sup	Cor	Inde	CB	Payment	Rel-size	ROA	MKTV	Cap	Size	Dep	Net
(-1,+1)	1															
Anti	.096	1														
Law	.105	.605**	1													
Ac	.022	.268**	.340**	1												
Sup	.034	.734**	.575**	.587**	1											
Cor	.021	.698**	.567**	.559**	.784**	1										
Inde	.071	.735**	.487**	.250**	.635**	.439**	1									
CB	-0.081	.0.270**	-0.292**	-0.517**	-0.414**	-0.400**	-0.153**	1								
Payment	-0.042	-0.279**	-0.182**	-0.308**	-0.336**	-0.317**	-0.230**	.303**	1							
Rel-size	.166**	.121*	-0.009	.068	.116*	.075	.125*	-0.130*	-0.185**	1						
ROA	-0.103	.432**	.332**	.185**	.382**	.429**	.442**	-0.160**	-0.122*	0	1					
MKTV	-0.131*	-0.093	-0.195**	.068	.071	-0.088	.052	0	-0.162**	.02	.247**	1				
Cap	.002	-0.187**	-0.147**	-0.088	-0.039	-0.033	-0.092	-0.188**	.113*	.107	-0.055	-0.156**	1			
Size	-0.191**	-0.299**	-0.270**	-0.180**	-0.342**	-0.250**	-0.342**	.237**	.058	-0.280**	-0.170**	.088	-0.256**	1		
Dep	-0.057	-0.432**	-0.379**	-0.376**	-0.415**	-0.406**	-0.474**	.273**	.152**	-0.107	-0.496**	-0.075	-0.103	.470**	1	
Net	.001	.167**	.118*	.173**	.250**	.345**	.094	-0.096	-0.046	.08	.482**	.023	.788**	-0.450**	-0.488**	1

Anti: antidirector rights index, Law: rule of law, Ac: overall activities restrictiveness, Sup: official supervisory power, Cor: prompt corrective power, Inde: independence of supervisory authority-overall

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Table 8.6 The cross-sectional regression analysis for combined firms based on the Mkt-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.131	***	0.135	***	0.206	***	0.174	***	0.179	***	0.138	***
Antidirector rights index	0.005	***										
Rule of law			0.002									
Overall Activities Restrictiveness					-0.002							
Official Supervisory Power							0.000					
Prompt Corrective Power									0.000			
Independence of Supervisory Authority - Overall											0.005	
Cross-border	-0.021	*	-0.017		-0.025	*	-0.019		-0.019		-0.019	
Cash	-0.009		-0.012		-0.015	*	-0.014	*	-0.013	*	-0.012	
Relative size	0.033		0.046		0.037		0.039		0.039		0.038	
ROA	-0.729	*	-0.573		-0.433		-0.434		-0.451		-0.642	
MKTV	-0.004	***	-0.005	**	-0.006	***	-0.007	***	-0.006	***	-0.006	***
Capital to assets	-0.018		-0.039	*	-0.043		-0.037		-0.037		-0.033	
ln (total assets)	-0.004	***	-0.004	**	-0.005	**	-0.005	***	-0.005	**	-0.004	***
Deposit Money Bank Assets / GDP	-0.014		-0.025		-0.020		-0.026		-0.019		-0.012	
Net Interest Margin	-1.852	***	-2.056	***	-1.451	**	-1.514	**	-1.569	**	-1.249	*
Observations	285		285		285		285		285		285	
Adjusted R Square	11.26%		9.69%		9.36%		9.12%		9.13%		9.67%	
F-value	4.60		4.05		3.93		3.85		3.85		4.04	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 8.6 presents the results to explore the impact of investor protection and bank regulation on combined firms cumulative abnormal returns. The dependent variable is combined firms' 3-day (-1,+1) cumulative abnormal returns based on the market adjusted returns model. Investor protection is measured as the combination of the antidirector rights index and the combination of the rule of law in a target and bidder country from La Porta *et al*. (1998). Bank regulation is measured as the combination of the variables, including overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a target and bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates to use the cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the bidding firms at the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are aimed at the bidder's perspective collected from the World Banks.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$CAR^{Joint}_{(-1,+1)}$ = α_0 + β_1 (The combination of investor protection in a target and bidder country) + β_2 (the combination of bank regulation in a target and bidder country) + β_3 (Cross-border dummy) + β_4 (Cash dummy) + β_5 (The relative size of the target to bidder) + β_6 (ROA) + β_7 (The market to book ratio) + β_8 (The capital ratio) + β_9 (Size) + β_{10} (The competitiveness of the banking market) + β_{11} (The size of the banking market) + ε_i

Table 8.7 The cross-sectional regression analysis for combined firms based on the Mean-Adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.110	**	0.114	**	0.194	***	0.152	***	0.152	***	0.110	**
Antidirector rights i ndex	0.004	**										
Rule of law			0.002									
Overall Activities Restrictiveness					-0.003							
Official Supervisory Power							0.000					
Prompt Corrective Power									0.000			
Independence of Supervisory Authority - Overall											0.005	
Cross-border	-0.010		-0.007		-0.017		-0.009		-0.008		-0.009	
Cash	-0.008		-0.011		-0.014	*	-0.012	*	-0.011		-0.010	
Relative size	0.035		0.047		0.038		0.041		0.041		0.040	
ROA	-0.821	**	-0.678	*	-0.567		-0.547		-0.592		-0.773	*
MKTV	-0.002		-0.003		-0.004	*	-0.004	*	-0.004	*	-0.004	*
Capital to assets	0.006		-0.012		-0.019		-0.011		-0.010		-0.006	
ln (total assets)	-0.005	***	-0.005	***	-0.005	***	-0.005	***	-0.005	***	-0.005	***
Deposit Money Bank Assets / GDP	-0.002		-0.011		-0.009		-0.006		-0.006		0.001	
Net Interest Margin	-1.156	*	--0.873		-0.773		-0.839		-0.947		-0.590	
Observations	285		285		285		285		285		285	
Adjusted R Square	11.02%		9.58%		9.77%		9.10%		9.15%		9.76%	
F-value	4.52		4.01		4.08		3.84		3.86		4.07	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 8.7 presents the results to explore the impact of investor protection and bank regulation on combined firms cumulative abnormal returns. The dependent variable is combined firms' 3-day (-1,+1) cumulative abnormal returns based on the mean adjusted returns model. Investor protection is measured as the combination of the antidirector rights index and the combination of the rule of law in a target and bidder country from La Porta *et al*. (1998). Bank regulation is measured as the combination of the variables, including overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a target and bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value

of 1 indicates to use the cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the bidding firms at the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are aimed at the bidder's perspective collected from the World Banks.
*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$CAR^{Joint}_{(-1,+1)}$ = α_0 + β_1(The combination of investor protection in a target and bidder country) + β_2(the combination of bank regulation in a target and bidder country) + β_3(Cross-border dummy) + β_4(Cash dummy) + β_5(The relative size of the target to bidder) + β_6(ROA) + β_7(The market to book ratio) + β_8(The capital ratio) + β_9(Size) + β_{10}(The competitiveness of the banking market) + β_{11}(The size of the banking market) + ε_i

Appendix B

Table 6.1 The cross-sectional regression analysis for targets with the full 508 sample from the Market model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.304	***	-0.004		0.331	***	0.319	***	0.377	***	0.344	***
Antidirector rights index	0.016	*										
Rule of law			0.030	***								
Overall Activities Restrictiveness					0.010							
Official Supervisory Power							0.006					
Prompt Corrective Power									0.007			
Independence of Supervisory Authority - Overall											0.018	
Cross-border	0.022		0.033		0.030		0.031		0.032		0.018	
Cash	0.002		0.010		-0.004		-0.002		0.000		-0.004	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	-0.022		-0.037		0.000		0.017		0.013		0.017	
MKTV	-0.002		-0.002		-0.002		-0.002		-0.002		-0.002	
Capital to assets	-0.069		-0.060		-0.082		-0.073		-0.072		-0.070	
ln (total assets)	-0.014	***	-0.009	**	-0.015	***	-0.015	***	-0.015	***	-0.015	***
Deposit Money Bank Assets / GDP	0.003		0.000		-0.002		-0.003		-0.006		0.009	
Net Interest Margin	-0.350		0.324		-0.388		-0.467		-0.631		-0.065	
Observations	410		409		410		410		410		410	
Adjusted R Square	11.20%		14.50%		10.80%		10.80%		11.10%		10.70%	

F-value	6.179		7.902		5.945		5.940		6.083		5.911	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.1 presents the results of targets to explore the impact of investor protection and bank regulation on the shareholder wealth in bank mergers using OLS regression analysis. The regression is analysed on the basis of the full 508 sample. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the market model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin in a bidder country. The size of the banking market is measured as deposit money bank assets to GDP in a bidder country. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR_{(-1,+1)}^{Target} = \alpha_0 + \beta_1 (\text{Target's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) + \beta_6 (\text{ROA}) + \beta_7 (\text{The market to book ratio}) + \beta_8 (\text{The capital ratio}) + \beta_9 (\text{Size}) + \beta_{10} (\text{The competitiveness of the banking market}) + \beta_{11} (\text{The size of the banking market}) + \varepsilon_i$$

Table 6.2 The cross-sectional regression analysis for targets with the full 508 sample from the Mkt-adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.299	***	-0.018		0.324	***	0.314	***	0.373	***	0.337	***
Antidirector rights index	0.016	*										
Rule of law			0.031	***								
Overall Activities Restrictiveness					0.010							
Official Supervisory Power							0.006					
Prompt Corrective Power									0.008			
Independence of Supervisory Authority - Overall											0.018	
Cross-border	0.018		0.030		0.027		0.027		0.029		0.014	
Cash	0.000		0.008		-0.007		-0.005		-0.003		-0.006	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	-0.036		-0.052		-0.014		0.004		0.000		0.004	
MKTV	-0.002		-0.002		-0.002		-0.002		-0.002		-0.002	
Capital to assets	-0.064		-0.054		-0.078		-0.069		-0.067		-0.065	
ln (total assets)	-0.014	***	-0.009	**	-0.016	***	-0.015	***	-0.015	***	-0.015	***
Deposit Money Bank Assets / GDP	0.007		0.004		0.003		0.001		-0.002		0.014	

Net Interest Margin	-0.233		0.459		-0.275		-0.353		-0.524		0.064	
Observations	410		409		410		410		410		410	
Adjusted R Square	10.80%		14.20%		10.30%		10.30%		10.60%		10.30%	
F-value	5.943		7.753		5.720		5.706		5.860		5.683	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.2 presents the results of targets to explore the impact of investor protection and bank regulation on the shareholder wealth in bank mergers using OLS regression analysis. The regression is analysed on the basis of the full 508 sample. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the market adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin in a bidder country. The size of the banking market is measured as deposit money bank assets to GDP in a bidder country. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$\text{CAR}_{(-1,+1)}^{Target} = \alpha_0 + \beta_1 (\text{Target's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) + \beta_6 (\text{ROA}) + \beta_7 (\text{The market to book ratio}) + \beta_8 (\text{The capital ratio}) + \beta_9 (\text{Size}) + \beta_{10} (\text{The competitiveness of the banking market}) + \beta_{11} (\text{The size of the banking market}) + \varepsilon_i$$

Table 6.3 The cross-sectional regression analysis for targets with the full 508 sample from the Mean-adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.284	***	-0.038		0.325	***	0.313	***	0.378	***	0.345	***
Antidirector rights index	0.019	**										
Rule of law			0.033	***								
Overall Activities Restrictiveness					0.011							
Official Supervisory Power							0.007					
Prompt Corrective Power									0.008	*		
Independence of Supervisory Authority - Overall											0.018	

Cross-border	0.017		0.028		0.026		0.027		0.029		0.013	
Cash	0.000		0.008		-0.008		-0.005		-0.004		-0.008	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	-0.032		-0.044		-0.005		0.014		0.010		0.013	
MKTV	-0.002		-0.002		-0.002		-0.002		-0.002		-0.002	
Capital to assets	-0.062		-0.053		-0.078		-0.068		-0.066		-0.065	
ln (total assets)	-0.014	***	-0.009	**	-0.016	***	-0.015	***	-0.015	***	-0.015	***
Deposit Money Bank Assets / GDP	0.007		0.003		0.001		0.000		-0.004		0.012	
Net Interest Margin	-0.486		0.252		-0.525		-0.611		-0.799		-0.180	
Observations	410		409		410		410		410		410	
Adjusted R Square	11.20%		14.80%		10.50%		10.50%		10.80%		10.40%	
F-value	6.180		8.060		5.810		5.798		5.977		5.745	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.3 presents the results of targets to explore the impact of investor protection and bank regulation on the shareholder wealth in bank mergers using OLS regression analysis. The regression is analysed on the basis of the full 508 sample. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the mean adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin in a bidder country. The size of the banking market is measured as deposit money bank assets to GDP in a bidder country. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$\text{CAR}_{(-1,+1)}^{Target} = \alpha_0 + \beta_1 (\text{Target's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) + \beta_6 (\text{ROA}) + \beta_7 (\text{The market to book ratio}) + \beta_8 (\text{The capital ratio}) + \beta_9 (\text{Size}) + \beta_{10} (\text{The competitiveness of the banking market}) + \beta_{11} (\text{The size of the banking market}) + \varepsilon_i$$

Table 6.4 The cross-sectional regression analysis for targets controlling for the difference of investor protection and bank regulation in a bidder and target country based on the full 580 sample from Market model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.303	***	0.017		0.327	***	0.371	***	0.362	***	0.354	***
Antidirector rights index	0.015											

Difference (Antidirector rights index)	-0.002											
rule of law			0.027	***								
Difference (Rule of law)			-0.019									
Overall Activities Restrictiveness					0.009							
Difference (Overall Activities Restrictiveness)					-0.069							
Official Supervisory Power							0.002					
Difference (Official Supervisory Power)							-0.084	***				
Prompt Corrective Power									0.008	*		
Difference (Prompt Corrective Power)									0.209	***		
Independence of Supervisory Authority - Overall											0.011	
Difference (Independence of Supervisory Authority - Overall)											-0.408	***
Cross-border	0.014		0.037		0.023		0.021		0.012		-0.024	
Cash	0.001		0.011		-0.004		-0.011		-0.002		-0.009	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	-0.008		-0.052		0.018		0.028		0.037		0.065	
MKTV	-0.002		-0.002		-0.002		-0.002		-0.002		-0.002	
Capital to assets	-0.080		-0.072		-0.090		-0.089		-0.072		-0.081	
ln (total assets)	-0.014	***	-0.009	**	-0.015	***	-0.015	***	-0.014	***	-0.014	***
Deposit Money Bank Assets / GDP	0.003		-0.002		0.003		0.002		-0.013		0.002	
Net Interest Margin	-0.239		0.447		-0.243		-0.218		-0.691		-0.095	
Observations	407		406		406		406		406		406	
Adjusted R Square	11.00%		14.40%		11.00%		13.30%		15.50%		16.70%	
F-value	5.551		7.171		5.565		6.640		7.755		8.397	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.4 presents the results to explore the impact of the difference of investor protection and bank regulation on target shareholder wealth in bank mergers using OLS regression analysis. The regression is analysed on the basis of the full 508 sample. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the market model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.
*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$CAR^{Target}_{(-1,+1)}$ = α_0 + β_1 (Target's investor protection) + β_2 (The difference of target's investor protection) + β_3 (Bidder's bank regulation) + β_4 (The difference of bidder's bank regulation) + β_5 (Cross-border dummy) + β_6 (Cash dummy) + β_7 (The relative size of the target to bidder) + β_8 (ROA) + β_9 (The market to book ratio) + β_{10} (The capital ratio) + β_{11} (Size) + β_{12} (The competitiveness of the banking market) + β_{13} (The size of the banking market) + ε_i

Table 6.5 The cross-sectional regression analysis for targets controlling for the difference of investor protection and bank regulation in a bidder and target country based on the full 580 sample from Mkt-adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.299	***	0.002		0.320	***	0.365	***	0.357	***	0.345	***
Antidirector rights index	0.014											
Difference (Antidirector rights index)	-0.003											
rule of law			0.028	***								
Difference (Rule of law)			-0.018									
Overall Activities Restrictiveness					0.009							
Difference (Overall Activities Restrictiveness)					-0.068							
Official Supervisory Power							0.002					
Difference (Official Supervisory Power)							-0.082	***				
Prompt Corrective Power									0.008	*		
Difference (Prompt Corrective Power)									0.205	***		
Independence of Supervisory Authority - Overall											0.012	
Difference (Independence of Supervisory Authority - Overall)											-0.400	
Cross-border	0.008		0.033		0.018		0.016		0.007		-0.029	
Cash	-0.003		0.009		-0.007		-0.014		-0.005		-0.011	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	-0.024		-0.064		0.006		0.017		0.025		0.053	
MKTV	-0.002		-0.002		-0.002		-0.002		-0.002		-0.002	
Capital to assets	-0.076		-0.067		-0.085		-0.084		-0.068		-0.076	
ln (total assets)	-0.014	***	-0.009	**	-0.016	***	-0.015	***	-0.014	***	-0.014	***
Deposit Money Bank Assets / GDP	0.007		0.003		0.008		0.007		-0.008		0.008	
Net Interest Margin	-0.102		0.582		-0.118		-0.091		-0.566		0.053	
Observations	407		406		406		406		406		406	

Adjusted R Square	10.50%		14.10%		10.60%		12.80%		15.00%		16.10%	
F-value	5.348		7.022		5.377		6.400		7.474		8.084	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.5 presents the results to explore the impact of the difference of investor protection and bank regulation on target shareholder wealth in bank mergers using OLS regression analysis. The regression is analysed on the basis of the full 508 sample. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the market adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.
*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR_{(-1,+1)}^{Target} = \alpha_0 + \beta_1(\text{Target's investor protection}) + \beta_2(\text{The difference of target's investor protection}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bidder's bank regulation}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA}) + \beta_9(\text{The market to book ratio}) + \beta_{10}(\text{The capital ratio}) + \beta_{11}(\text{Size}) + \beta_{12}(\text{The competitiveness of the banking market}) + \beta_{13}(\text{The size of the banking market}) + \varepsilon_i$$

Table 6.6 The cross-sectional regression analysis for targets controlling for the difference of investor protection and bank regulation in a bidder and target country based on the full 580 sample from Mean-adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.286	***	-0.008		0.319	***	0.367	***	0.362	***	0.356	***
Antidirector rights index	0.018	*										
Difference (Antidirector rights index)	-0.006											
rule of law			0.029	***								
Difference (Rule of law)			-0.028									
Overall Activities Restrictiveness					0.011							
Difference (Overall Activities Restrictiveness)					-0.071							
Official							0.002					

Supervisory Power												
Difference (Official Supervisory Power)							-0.086	***				
Prompt Corrective Power									0.009	*		
Difference (Prompt Corrective Power)									0.207	***		
Independence of Supervisory Authority - Overall											0.011	
Difference (Independence of Supervisory Authority - Overall)											-0.413	***
Cross-border	0.007		0.036		0.019		0.016		0.007		-0.032	
Cash	-0.002		0.009		-0.008		-0.015		-0.005		-0.013	
Relative size	0.000		0.000		0.000		0.000		0.000		0.000	
ROA	-0.028		-0.073		0.014		0.027		0.035		0.063	
MKTV	-0.002		-0.002		-0.002		-0.002		-0.002		-0.002	
Capital to assets	-0.074		-0.067		-0.085		-0.084		-0.066		-0.077	
ln (total assets)	-0.013	***	-0.008	**	-0.015	***	-0.015	***	-0.014	***	-0.014	***
Deposit Money Bank Assets / GDP	0.006		0.000		0.006		0.006		-0.010		0.005	
Net Interest Margin	-0.345		0.415		-0.371		-0.344		-0.851		-0.205	
Observations	407		406		406		406		406		406	
Adjusted R Square	11.00%		14.90%		10.90%		13.10%		15.20%		16.50%	
F-value	5.572		7.464		5.490		6.563		7.588		8.259	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 6.6 presents the results to explore the impact of the difference of investor protection and bank regulation on target shareholder wealth in bank mergers using OLS regression analysis. The regression is analysed on the basis of the full 508 sample. The dependent variable is target 3-day (-1,+1) cumulative abnormal returns measured from the mean adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a target country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression model also includes a number of control variables. Cross-border is a dummy variable, where the value of 1 indicates the target and bidder in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.
*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR_{(-1,+1)}^{Target} = \alpha_0 + \beta_1(\text{Target's investor protection}) + \beta_2(\text{The difference of target's investor protection}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bidder's bank regulation}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA}) + \beta_9(\text{The market to book ratio}) + \beta_{10}(\text{The capital ratio}) + \beta_{11}(\text{Size}) + \beta_{12}(\text{The competitiveness of the}$$

banking market) + β_{13} (The size of the banking market) + ε_i

Table 7.1 The cross-sectional regression analysis for bidders with the full 1,424 sample from Market model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.016		0.053	*	0.042	*	0.026		0.036		0.014	
Antidirector rights in dex	0.004	**										
Rule of law			-0.001									
Overall Activities Restrictiveness					0.000							
Official Supervisory Power							0.001					
Prompt Corrective Power									0.002	*		
Independence of Supervisory Authority - Overall											0.006	*
Cross-border	-0.004		-0.006		-0.006		-0.004		-0.002		-0.005	
Cash	0.003		0.001		0.001		0.002		0.002		0.003	
Relative size	-0.131	***	-0.135	***	-0.133	***	-0.132	***	-0.130	***	-0.131	***
ROA	-1.006	***	-0.804	***	-0.841	***	-0.903	***	-0.941	***	-0.986	***
MKTV	0.000		0.000		0.000		0.000		0.000		0.000	
Capital to assets	0.035	*	0.028		0.027		0.029		0.030		0.033	
ln (total assets)	-0.001	*	-0.002	**	-0.002	**	-0.002	**	-0.002	**	-0.001	
Deposit Money Bank Assets / GDP	0.012	*	0.011		0.011		0.011		0.011		0.014	*
Net Interest Margin	-0.278		-0.291		-0.280		-0.310		-0.431		-0.143	
Observations	1296		1295		1298		1296		1298		1298	
Adjusted R Square	3.80%		3.50%		3.50%		3.60%		3.70%		3.80%	
F-value	6.066		5.703		5.711		5.780		6.040		6.067	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.1 presents the results of bidder regression analysis. The regression is analysed on the basis of the full 1,424 sample. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the market model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the

banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Bidder}_{(-1,+1)} = \alpha_0 + \beta_1 (\text{Bidder's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) + \beta_6 (\text{ROA}) + \beta_7 (\text{The market to book ratio}) + \beta_8 (\text{The capital ratio}) + \beta_9 (\text{Size}) + \beta_{10} (\text{The competitiveness of the banking market}) + \beta_{11} (\text{The size of the banking market}) + \varepsilon_i$$

Table 7.2 The cross-sectional regression analysis for bidders with the full 1,424 sample from Mkt-adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.013		0.052	*	0.042	*	0.022		0.032		0.009	
Antidirector rights in dex	0.003	*										
Rule of law			-0.002									
Overall Activities Restrictiveness					0.000							
Official Supervisory Power							0.001					
Prompt Corrective Power									0.002	*		
Independence of Supervisory Authority - Overall											0.007	*
Cross-border	-0.005		-0.006		-0.007		-0.004		-0.002		-0.005	
Cash	0.000		-0.002		0.000		0.000		0.000		0.000	
Relative size	-0.122	***	-0.126	***	-0.123	***	-0.122	***	-0.121	***	-0.121	***
ROA	-0.897	***	-0.695	***	-0.743	***	-0.808	***	-0.844	***	-0.889	***
MKTV	0.000		0.000		0.000		0.000		0.000		0.000	
Capital to assets	0.037	*	0.031		0.030		0.032		0.033		0.036	*
ln (total assets)	-0.001		-0.002	**	-0.002	**	-0.002	*	-0.002	*	-0.001	
Deposit Money Bank Assets / GDP	0.016	**	0.014	*	0.013	*	0.014	*	0.014	*	0.017	**
Net Interest Margin	-0.271		-0.298		-0.287		-0.325		-0.440		-0.151	
Observations	1296		1295		1298		1296		1298		1298	
Adjusted R Square	3.30%		3.10%		3.10%		3.10%		3.30%		3.30%	
F-value	5.359		5.100		5.103		5.156		5.398		5.432	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.2 presents the results of bidder regression analysis. The regression is analysed on the basis of the full 1,424 sample. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the market adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory

authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Bidder}_{(-1,+1)} = \alpha_0 + \beta_1 (\text{Bidder's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) + \beta_6 (\text{ROA}) + \beta_7 (\text{The market to book ratio}) + \beta_8 (\text{The capital ratio}) + \beta_9 (\text{Size}) + \beta_{10} (\text{The competitiveness of the banking market}) + \beta_{11} (\text{The size of the banking market}) + \varepsilon_i$$

Table 7.3 The cross-sectional regression analysis for bidders with the full 1,424 sample from Mean-adj model

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.029		0.072	**	0.054	**	0.039		0.046	**	0.022	
Antidirector rights index	0.004	**										
Rule of law			-0.002									
Overall Activities Restrictiveness					0.000							
Official Supervisory Power							0.001					
Prompt Corrective Power									0.002	*		
Independence of Supervisory Authority - Overall											0.007	*
Cross-border	-0.007		-0.008		-0.009		-0.007		-0.005		-0.008	
Cash	0.000		-0.002		-0.001		-0.001		0.000		0.000	
Relative size	-0.136	***	-0.140	***	-0.137	***	-0.136	***	-0.135	***	-0.135	***
ROA	-1.054	***	-0.834	***	-0.886	***	-0.945	***	-0.988	***	-1.044	***
MKTV	0.000		-0.001		0.000		0.000		0.000		0.000	
Capital to assets	0.016		0.009		0.008		0.010		0.011		0.015	
ln (total assets)	-0.001		-0.002	*	-0.001		-0.001		-0.001		0.000	
Deposit Money Bank Assets / GDP	0.008		0.006		0.007		0.008		0.008		0.011	
Net Interest Margin	-0.523	*	-0.548	*	-0.478	*	-0.543	*	-0.632		-0.329	
Observations	1296		1295		1298		1296		1298		1298	
Adjusted R Square	3.80%		3.60%		3.50%		3.60%		3.80%		3.80%	

F-value	6.158		5.832		5.750		5.864		6.054		6.136	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.3 presents the results of bidder regression analysis. The regression is analysed on the basis of the full 1,424 sample. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the mean adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target to bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$\text{CAR}_{(-1,+1)}^{Bidder} = \alpha_0 + \beta_1 (\text{Bidder's investor protection}) + \beta_2 (\text{Bidder's bank regulation}) + \beta_3 (\text{Cross-border dummy}) + \beta_4 (\text{Cash dummy}) + \beta_5 (\text{The relative size of the target to bidder}) + \beta_6 (\text{ROA}) + \beta_7 (\text{The market to book ratio}) + \beta_8 (\text{The capital ratio}) + \beta_9 (\text{Size}) + \beta_{10} (\text{The competitiveness of the banking market}) + \beta_{11} (\text{The size of the banking market}) + \varepsilon_i$$

Table 7.4 The cross-sectional regression analysis for bidders controlling for the difference of investor protection and bank regulation in a bidder and target country based on the Market model with the full 1,424 sample

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.011		0.057	*	0.041		0.026		0.036	*	0.010	
Antidirector rights index	0.004	**										
Difference (Antidirector rights index)	0.000											
rule of law			-0.002									
Difference (Rule of law)			0.004									
Overall Activities Restrictiveness					0.000							
Difference (Overall Activities Restrictiveness)					0.001							
Official Supervisory Power							0.001					
Difference (Official Supervisory Power)							0.000					
Prompt Corrective Power									0.002			
Difference (Prompt Corrective Power)									0.002			
Independence of Supervisory Authority - Overall											0.007	*
Difference											0.001	

(Independence of Supervisory Authority - Overall)												
Cross-border	-0.005		-0.009		-0.005		-0.004		-0.001		-0.006	
Cash	0.003		0.000		0.001		0.002		0.002		0.003	
Relative size	-0.131	***	-0.136	***	-0.133	***	-0.132	***	-0.131	***	-0.131	***
ROA	-0.989	***	-0.769	***	-0.812	***	-0.858	***	-0.879	***	-0.957	***
MKTV	0.000		0.000		0.000		0.000		0.000		0.000	
Capital to assets	0.041	**	0.034		0.032		0.036		0.036	*	0.039	*
ln (total assets)	-0.001		-0.002	**	-0.002	**	-0.002	**	-0.002	**	-0.001	
Deposit Money Bank Assets / GDP	0.014	*	0.011		0.012		0.012		0.012		0.015	*
Net Interest Margin	-0.240		-0.288		-0.247		-0.274		-0.415		-0.107	
Observations	1257		1253		1259		1252		1259		1259	
Adjusted R Square	3.60%		3.40%		3.30%		3.30%		3.60%		3.60%	
F-value	5.274		5.038		4.916		4.899		5.239		5.221	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.4 presents the results to explore the impact of the difference of investor protection and bank regulation in a bidder and target country on bidder shareholder wealth. The analysis is based on the full 1,424 sample. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the market model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression analysis also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target and bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to the transactions. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Bidder}_{(-1,+1)} = \alpha_0 + \beta_1(\text{Bidder's investor protection}) + \beta_2(\text{The difference of investor protection in a bidder and target country}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bank regulation in a bidder and target country}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA}) + \beta_9(\text{The market to book ratio}) + \beta_{10}(\text{The capital ratio}) + \beta_{11}(\text{Size}) + \beta_{12}(\text{The competitiveness of the banking market}) + \beta_{13}(\text{The size of the banking market}) + \varepsilon_i$$

Table 7.5 The cross-sectional regression analysis for bidders controlling for the difference of investor protection and bank regulation in a bidder and target country based on the Mkt-adj model with the full 1,424 sample

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.007		0.056	*	0.043		0.021		0.032		0.005	
Antidirector rights index	0.004	*										

Difference (Antidirector rights index)	0.001											
rule of law			-0.002									
Difference (Rule of law)			0.004									
Overall Activities Restrictiveness					-0.001							
Difference (Overall Activities Restrictiveness)					0.001							
Official Supervisory Power							0.001					
Difference (Official Supervisory Power)							0.001					
Prompt Corrective Power									0.002			
Difference (Prompt Corrective Power)									0.002			
Independence of Supervisory Authority - Overall											0.007	*
Difference (Independence of Supervisory Authority - Overall)											0.001	
Cross-border	-0.007		-0.011		-0.007		-0.004		-0.002		-0.007	
Cash	0.000		-0.003		-0.001		0.000		0.000		0.000	
Relative size	-0.121	***	-0.126	***	-0.123	***	-0.123	***	-0.121	***	-0.121	***
ROA	-0.872	***	-0.652	**	-0.704	***	-0.756	***	-0.774	***	-0.859	***
MKTV	0.000		0.000		0.000		0.000		0.000		0.000	
Capital to assets	0.044	**	0.037	*	0.035		0.039	*	0.039	*	0.042	*
ln (total assets)	-0.001		-0.002	**	-0.002	**	-0.002	*	-0.002	**	-0.001	
Deposit Money Bank Assets / GDP	0.017	**	0.014	*	0.015	*	0.016	**	0.016	**	0.019	**
Net Interest Margin	-0.237		-0.302		-0.258		-0.282		-0.439		-0.113	
Observations	1257		1253		1259		1252		1259		1259	
Adjusted R Square	3.10%		3.00%		2.90%		2.90%		3.20%		3.20%	
F-value	4.707		4.575		4.421		4.424		4.752		4.728	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.5 presents the results to explore the impact of the difference of investor protection and bank regulation in a bidder and target country on bidder shareholder wealth. The analysis is based on the full 1,424 sample. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the market adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression analysis also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target and bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to the transactions. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$CAR_{(-1,+1)}^{Bidder}$ = α_0 + β_1 (Bidder's investor protection) + β_2 (The difference of investor protection in a bidder and target country) + β_3 (Bidder's bank regulation) + β_4 (The difference of bank regulation in a bidder and target country) + β_5 (Cross-border dummy) + β_6 (Cash dummy) + β_7 (The relative size of the target to bidder) + β_8 (ROA) + β_9 (The market to book ratio) + β_{10} (The capital ratio) + β_{11} (Size) + β_{12} (The competitiveness of the banking market) + β_{13} (The size of the banking market) + ε_i

Table 7.6 The cross-sectional regression analysis for bidders controlling for the difference of investor protection and bank regulation in a bidder and target country based on the Mean-adj model with the full 1,424 sample

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.021		0.076	**	0.052	*	0.036		0.046	**	0.014	
Antidirector rights index	0.004	**										
Difference (Antidirector rights index)	0.001											
rule of law			-0.002									
Difference (Rule of law)			0.004									
Overall Activities Restrictiveness					0.000							
Difference (Overall Activities Restrictiveness)					0.001							
Official Supervisory Power							0.001					
Difference (Official Supervisory Power)							0.001					
Prompt Corrective Power									0.002			
Difference (Prompt Corrective Power)									0.003			
Independence of Supervisory Authority - Overall											0.008	**
Difference (Independence of Supervisory Authority - Overall)											-0.001	
Cross-border	-0.010		-0.015	**	-0.011		-0.009		-0.005		-0.011	*
Cash	0.000		-0.003		-0.002		-0.001		-0.001		0.000	
Relative size	-0.134	***	-0.140	***	-0.136	***	-0.136	***	-0.134	***	-0.133	***
ROA	-1.032	***	-0.791	***	-0.842	***	-0.907	***	-0.909	***	-1.020	***
MKTV	-0.001		-0.002		-0.001		-0.001		-0.001		-0.001	
Capital to assets	0.021		0.014		0.013		0.017		0.016		0.020	
ln (total assets)	0.000		-0.002	*	-0.001		-0.001		-0.001		0.000	
Deposit Money Bank Assets / GDP	0.009		0.006		0.008		0.010		0.009		0.012	
Net Interest Margin	-0.487		-0.559	*	-0.444		-0.473		-0.642		-0.285	
Observations	1257		1253		1259		1252		1259		1259	

Adjusted R Square	3.70%		3.60%		3.30%		3.40%		3.70%		3.70%	
F-value	5.403		5.271		4.955		5.057		5.425		5.366	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 7.6 presents the results to explore the impact of the difference of investor protection and bank regulation in a bidder and target country on bidder shareholder wealth. The analysis is based on the full 1,424 sample. The dependent variable is bidder 3-day (-1,+1) cumulative abnormal returns based on the mean adjusted returns model. Investor protection is measured as the antidirector rights index and the rule of law in a bidder country from La Porta *et al*. (1998). The difference of investor protection is measured as the difference of investor protection in a bidder and target country. Bank regulation is measured as overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a bidder country from Barth *et al*. (2003). The difference of bank regulation is measured as the difference of bank regulation in a bidder and target country. The regression analysis also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates cash payment. The relative size is measured as the relative size of the target and bidder proxied as deal value to bidder assets. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the year end prior to the transactions. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are collected from the World Bank.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Bidder}_{(-1,+1)} = \alpha_0 + \beta_1(\text{Bidder's investor protection}) + \beta_2(\text{The difference of investor protection in a bidder and target country}) + \beta_3(\text{Bidder's bank regulation}) + \beta_4(\text{The difference of bank regulation in a bidder and target country}) + \beta_5(\text{Cross-border dummy}) + \beta_6(\text{Cash dummy}) + \beta_7(\text{The relative size of the target to bidder}) + \beta_8(\text{ROA}) + \beta_9(\text{The market to book ratio}) + \beta_{10}(\text{The capital ratio}) + \beta_{11}(\text{Size}) + \beta_{12}(\text{The competitiveness of the banking market}) + \beta_{13}(\text{The size of the banking market}) + \varepsilon_i$$

Table 8.1 The cross-sectional regression analysis for combined firms based on the Market model with the full 388 sample

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.056		0.050		0.094	**	0.083	*	0.093	**	0.061	
Antidirector rights index	0.003	**										
Rule of law			0.002									
Overall Activities Restrictiveness					0.000							
Official Supervisory Power							0.000					
Prompt Corrective Power									0.001			
Independence of Supervisory Authority - Overall											0.003	
Cross-border	-0.015		-0.015		-0.020	*	-0.018		-0.013		-0.017	
Cash	-0.012		-0.013	*	-0.015	**	-0.014	*	-0.012		-0.013	*

Relative size	0.058		0.066	*	0.061		0.062		0.063		0.061	
ROA	-0.488		-0.371		-0.242		-0.244		-0.422		-0.378	
MKTV	-0.004		-0.004	*	-0.005	**	-0.005	**	-0.004	*	-0.005	**
Capital to assets	-0.001		-0.014		-0.013		-0.012		-0.010		-0.010	
ln (total assets)	-0.003	*	-0.003	**	-0.003	**	-0.003	**	-0.003	**	-0.003	*
Deposit Money Bank Assets / GDP	0.024	**	0.024	**	0.023	*	0.024	*	0.019		0.027	**
Net Interest Margin	-0.949	*	-0.731		-0.627		-0.678		-1.150	*	-0.548	
Observations	354		353		354		354		354		354	
Adjusted R Square	7.60%		6.80%		6.60%		6.50%		7.00%		6.70%	
F-value	3.892		3.574		3.492		3.456		3.668		3.529	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 8.1 presents the results to explore the impact of investor protection and bank regulation on combined firms cumulative abnormal returns. The analysis is based on the full 388 sample. The dependent variable is combined firms' 3-day (-1,+1) cumulative abnormal returns based on the market model. Investor protection is measured as the combination of the antidirector rights index and the combination of the rule of law in a target and bidder country from La Porta *et al*. (1998). Bank regulation is measured as the combination of the variables, including overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a target and bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates to use the cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the bidding firms at the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are aimed at the bidder's perspective collected from the World Banks.
*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Joint}_{(-1,+1)} = \alpha_0 + \beta_1(\text{The combination of investor protection in a target and bidder country}) + \beta_2(\text{the combination of bank regulation in a target and bidder country}) + \beta_3(\text{Cross-border dummy}) + \beta_4(\text{Cash dummy}) + \beta_5(\text{The relative size of the target to bidder}) + \beta_6(\text{ROA}) + \beta_7(\text{The market to book ratio}) + \beta_8(\text{The capital ratio}) + \beta_9(\text{Size}) + \beta_{10}(\text{The competitiveness of the banking market}) + \beta_{11}(\text{The size of the banking market}) + \varepsilon_i$$

Table 8.2 The cross-sectional regression analysis for combined firms based on the Mkt-adj model with the full 388 sample

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.068		0.063		0.110	**	0.098	**	0.114	***	0.078	
Antidirector rights index	0.004	**										
Rule of law			0.002									

Overall Activities Restrictiveness					0.000							
Official Supervisory Power							0.000					
Prompt Corrective Power									0.002			
Independence of Supervisory Authority - Overall											0.003	
Cross-border	-0.027	**	-0.028	**	-0.033	**	-0.030	**	-0.026	**	-0.030	**
Cash	-0.013		-0.015	*	-0.017	**	-0.016	**	-0.014	*	-0.015	*
Relative size	0.055		0.064		0.059		-0.060		0.061		0.059	
ROA	-0.493		-0.343		-0.191		-0.209		-0.394		-0.335	
MKTV	-0.006	**	-0.006	**	-0.007	***	-0.007	***	-0.006	**	-0.007	***
Capital to assets	-0.016		-0.031		-0.031		-0.029		-0.027		-0.027	
ln (total assets)	-0.002		-0.003		-0.003	*	-0.003	*	-0.003	*	-0.002	
Deposit Money Bank Assets / GDP	0.023	*	0.023	*	0.022	*	0.022	*	0.017		0.026	*
Net Interest Margin	-1.396	**	-1.126	*	-1.025	*	-1.086	*	-1.599		-0.922	
Observations	354		353		354		354		354		354	
Adjusted R Square	10.30%		9.30%		8.90%		8.90%		9.50%		9.10%	
F-value	5.041		4.590		4.462		4.446		4.689		4.519	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 8.2 presents the results to explore the impact of investor protection and bank regulation on combined firms cumulative abnormal returns. The analysis is based on the full 388 sample. The dependent variable is combined firms' 3-day (-1,+1) cumulative abnormal returns based on the market adjusted returns model. Investor protection is measured as the combination of the antidirector rights index and the combination of the rule of law in a target and bidder country from La Porta *et al*. (1998). Bank regulation is measured as the combination of the variables, including overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a target and bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates to use the cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the bidding firms at the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are aimed at the bidder's perspective collected from the World Banks.
*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$$CAR^{Joint}_{(-1,+1)} = \alpha_0 + \beta_1(\text{The combination of investor protection in a target and bidder country}) + \beta_2(\text{the combination of bank regulation in a target and bidder country}) + \beta_3(\text{Cross-border dummy}) + \beta_4(\text{Cash dummy}) + \beta_5(\text{The relative size of the target to bidder}) + \beta_6(\text{ROA}) + \beta_7(\text{The market to book ratio}) + \beta_8(\text{The capital ratio}) + \beta_9(\text{Size}) + \beta_{10}(\text{The competitiveness of the banking market}) + \beta_{11}(\text{The size of the banking market}) + \varepsilon_i$$

Table 8.3 The cross-sectional regression analysis for combined firms based on the Mean-adj model with the full 388 sample

	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	0.059		0.055		0.104	**	0.084	*	0.098	**	0.057	
Antidirector rights index	0.004	**										
Rule of law			0.002									
Overall Activities Restrictiveness					-0.001							
Official Supervisory Power							0.000					
Prompt Corrective Power									0.001			
Independence of Supervisory Authority - Overall											0.004	
Cross-border	-0.018		-0.019	*	-0.025	**	-0.021	*	-0.017		-0.020	*
Cash	-0.013		-0.015	*	-0.017	**	-0.016	**	-0.014	*	-0.015	*
Relative size	0.058		0.065		0.060		0.062		0.063		0.061	
ROA	-0.575		-0.449		-0.319		-0.338		-0.501		-0.507	
MKTV	-0.004	*	-0.005	*	-0.005	**	-0.005	**	-0.005	**	-0.005	**
Capital to assets	0.008		-0.004		-0.005		-0.002		0.000		0.000	
ln (total assets)	-0.003	**	-0.003	**	-0.003	**	-0.003	**	-0.004	**	-0.003	*
Deposit Money Bank Assets / GDP	0.027	**	0.027	**	0.026	**	0.026	**	0.022	*	0.031	**
Net Interest Margin	-0.898		-0.672		0.541		-0.639		-1.091	*	-0.436	
Observations	354		353		354		354		354		354	
Adjusted R Square	9.30%		8.50%		8.40%		8.20%		8.70%		8.50%	
F-value	4.619		4.262		4.228		4.154		4.364		4.292	
(p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	

Table 8.3 presents the results to explore the impact of investor protection and bank regulation on combined firms cumulative abnormal returns. The analysis is based on the full 388 sample. The dependent variable is combined firms' 3-day (-1,+1) cumulative abnormal returns based on the market model. Investor protection is measured as the combination of the antidirector rights index and the combination of the rule of law in a target and bidder country from La Porta *et al*. (1998). Bank regulation is measured as the combination of the variables, including overall activities restrictiveness, official supervisory power, prompt corrective power and independence of supervisory authority-overall in a target and bidder country from Barth *et al*. (2003). The regression model also includes a number of control variables. Cross-border is a dummy variable that takes the value of 1 if the target and bidder locate in different countries. Cash is a dummy variable, where the value of 1 indicates to use the cash payment. The relative size is measured as the relative size of the target to bidder. ROA is measured as net income to total assets. The market to book ratio is measured as the market value to book value. The capital ratio is measured as total capital to total assets. Size is calculated as ln(total assets). The variables of the firm specific characteristics are gathered from the bidding firms at the year end prior to bank merger and acquisition announcements. The financial data is collected from Datastream database. The competitiveness of the banking market is proxied as net interest margin. The size of the banking market is measured as deposit money bank assets to GDP. The country level specific characteristics are aimed at the bidder's perspective collected from the World Banks.

*** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.1 level.

$\text{CAR}_{(-1,+1)}^{Joint}$ = α_0 + β_1(The combination of investor protection in a target and bidder country) + β_2(the combination of bank regulation in a target and bidder country) + β_3(Cross-border dummy) + β_4(Cash dummy) + β_5(The relative size of the target to bidder) + β_6(ROA) + β_7(The market to book ratio) + β_8(The capital ratio) + β_9(Size) + β_{10}(The competitiveness of the banking market) + β_{11}(The size of the banking market) + ε_i