

The Role of Government Regulation in Cross-Border Bank Acquisitions

G. Andrew Karolyi and Alvaro G. Taboada¹

Abstract

We study how government's involvement in the banking sector through supervision and regulation influences cross-border acquisition flows, share price reactions to cross-border deal announcements, and post-acquisition bank performance. Using a sample of 9,121 domestic and 2,486 cross-border deals announced between 1995 and 2008, we find that cross-border bank acquisitions involve acquirers from countries with better governance, an established deposit insurance scheme, fewer restrictions on bank activities, less powerful regulators, and more limits on foreign bank entry than those of targets. A target's abnormal returns around the deal announcements are higher when acquirers come from countries with more restrictive bank regulatory environments. Surprisingly, however, we find little impact of these differences in bank regulation on the post-acquisition profitability, cost efficiency, asset quality or even risk-taking behavior for targets.

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¹ Professor of Finance and Global Business and Alumni Chair in Asset Management, Johnson Graduate School of Management, Cornell University, 348 Sage Hall, Ithaca, NY, 14853, Email: gak56@cornell.edu, Phone: (607) 255-2153 (Karolyi), and Assistant Professor, Department of Finance, College of Business Administration, University of Tennessee, 434 Stokely Management Center, Knoxville, TN 37996, Email: ataboada@utk.edu, Phone: (865) 974-1704 (Taboada). We received helpful comments from Yuki Masujima of the Bank of Japan, Warren Bailey, Larry Fauver, Edith Liu, Qingzhong Ma, Pamela Moulton, Stefano Rossi, Tracie Woidtke, Chu Zhang and seminar participants at the Universities of Tennessee and Cornell as well as at the 2011 Asian FMA meetings in Queenstown, New Zealand. Ronnie Chen provided helpful research assistance.

1. Introduction

In this paper, we analyze how differences in national bank regulations on activities and ownership affect cross-border bank mergers and acquisitions. Theory and existing empirical evidence have examined how regulatory restrictions on bank activities can and do impact bank sector performance, the likelihood of banking crises and especially risk-taking behavior by banks. But, to the best of our knowledge, no previous research evaluates the effect of different government policies on deposit insurance, capital adequacy, and regulatory restrictions on bank activities on the motives for and consequences of cross-border bank mergers and acquisitions. A cross-border merger is after all a useful setting in which to evaluate the effects of regulatory restrictions because the participating banks strategically contract upon the regulatory system of the new bank, especially when the systems governing the target and acquirer are at odds. Specifically, we evaluate how differences in these regulations and their enforcement influence the overall volume of cross-border bank deals, the flow of deal activity between home countries of the bank acquirers and targets, the shareholder wealth created through the short-run stock price reactions to deal announcements, and the long-run economic consequences for the resulting banks. To this end, we compile new data on 2,468 cross-border deals cumulatively valued in excess of \$290 billion involving acquirers and targets from almost 80 countries over the period from 1995 through 2008.

Policy considerations motivate this research. The recent global financial crisis, caused in part by systemic failures in bank regulation (Levine 2010) has sparked major overhauls in financial regulation throughout the world that will lead to increased government involvement in the financial sector. In the U.S., for example, observers have commented that with the passage of the Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010, the new financial regulatory reform bill, the economy has seen “...*the biggest expansion of government power over banking and markets since the Depression*” (Paletta and Lucchetti 2010). The debates about how to reshape bank regulation are ongoing; the Dodd–Frank Act, for example, calls for stricter capital requirements for large, complex financial institutions, and for increased power of regulators to enforce rules and regulations and protect investors. Some of the commonly cited shortcomings of the Act include the failure to deal with the mispricing of government

guarantees and omissions in reforming and regulating parts of the shadow banking system (Acharya *et al.* 2011). Of course, before the financial crisis, many other alternatives to increased government involvement in the banking sector had been proposed; Barth, Caprio, and Levine (2006), among others, argue in favor of regulation that promotes transparency, ensures that financial institutions have sound incentives, and empowers private-sector monitoring of banks' activities. Further, Barth *et al.* (2004) raised concerns about policies that rely on direct government supervision and regulation of bank activities.

Studies about bank regulation have shown that regulatory restrictions on bank activities and barriers to foreign entry hurt banking sector performance (Barth *et al.* 2006); moreover, the existence of deposit insurance schemes has been shown to increase the likelihood of banking crises, especially when the government runs the deposit insurance fund (Demirgüç-Kunt and Detragiache 2002). In a more recent study, Laeven and Levine (2009) examine how tougher bank regulation reduces a bank's risk-taking behavior. They show that the negative relation between bank risk and capital requirements, deposit insurance policies, and restrictions on bank activities depends critically on each bank's ownership structure: banks with large, controlling blockholders neutralize and even reverse the effects of the regulations. What a study on cross-border bank acquisitions can contribute to this stream of research is unique evidence on the potential economic consequences of *changes* in bank regulation. Cross-border mergers are one mechanism through which banks can change their regulatory environment. Effectively, the target bank adopts the capital requirements, deposit insurance policies, and restrictions on bank activities imposed by the country of the acquiring bank. The regulatory constraints imposed on the new bank may be more or less binding than those imposed on the target bank before the merger. As a result, this cross-border setting allows for an experiment with rich variation in the sign *and* magnitude of the changes in regulatory constraints experienced across the spectrum of cross-border deals we study.

To date, few studies have examined how the government's influence in the banking sector through regulations affects the flows of and outcomes from cross-border bank acquisitions.² The lack of documented evidence on the impact of bank regulation on cross-border bank acquisitions is surprising given that regulatory restrictions are often cited as a reason why cross-border acquisitions are less prevalent in the banking industry (Berger *et al.* 2001; Focarelli and Pozzolo 2001).³ Examining cross-border bank acquisitions is also important because of the increasing number of such deals over the past few years. While the vast majority of M&A activity involves financial institutions from the same country, potentially because of regulatory issues (Amel *et al.* 2004; Buch and DeLong 2004), the number of cross-border deals has steadily increased over the past four years (see Figure 1). The number of cross-border bank acquisitions increased from 128 as of 1995 to 201 in 2008 but, more interestingly, the fraction of all completed deals that are cross-border has doubled in that time from 13.4% to 26.9%.⁴ The mean value of such deals has also increased steadily from \$203 million in 1995 to \$489 million as of 2008, and is consistently larger than the average value of domestic bank acquisitions.

Banks engaged in cross-border deals may be pursuing the very same benefits associated with domestic deals, such as economies of scale, economies of scope, risk and revenue diversification, among others (Cornett and Tehranian 1992; Berger *et al.* 1993; Pilloff and Santomero 1997). Despite the many potential gains from cross-border bank acquisitions, however, there is little empirical support for the argument that banks engaging in such deals attain cost or profit efficiencies. In fact, existing studies fail to find significant gains associated with cross-border bank acquisitions (Vander Venet 2002; Amel *et al.* 2004; Correa 2008). Many studies argue that there exist barriers (e.g. differences in language, culture, and currency; differences in regulatory structure) that prevent the proliferation of cross-border bank deals

² One exception is Buch and DeLong (2008) who examine how supervisory systems affects bank risk taking in cross-border mergers. They find that acquirers from countries with strong supervision lower total risk after cross-border acquisitions.

³ Focarelli and Pozzolo (2001) argue that information asymmetries in banking relationships as well as regulatory restrictions explain why cross-border bank deals are rarer than in other sectors. Berger *et al.* (2001) show that the existence of barriers (like distance, differences in language and culture, differences in regulatory structures, and rules against foreign competitors) undermine consolidation among European financial institutions.

⁴ We define bank acquisitions as those in which the acquirer is a commercial bank, bank holding company, or credit institution, while targets may also be insurance companies, mortgage bankers, and security brokers.

and that impede the full exploitation of potential synergies in such mergers (Berger *et al.* 2001; Focarelli and Pozzolo 2001; Buch and DeLong 2004).⁵ Despite the failure to find significant gains associated with cross-border bank acquisitions, very few studies have examined the role that bank regulation and corporate governance in general play in such deals.⁶ In addition, despite the key role that governments play in the banking industry through regulation of activities and often through direct ownership of banks (La Porta *et al.* 2002; Barth *et al.* 2004; Taboada 2011), no study has investigated the role that a government plays in cross-border bank acquisitions.

Another keystone for our study comes from the corporate finance literature which documents that corporate governance plays an important role in cross-border acquisitions. Studies have shown that the degree of investor protection within target firms is improved through these acquisitions given that acquirers tend to be from countries with stronger investor protections (Rossi and Volpin 2004). Consistent with this idea, some studies document that target premiums in stock-financed cross-border deals are decreasing in the quality of the acquiring firm's home country governance (Starks and Wei 2004). In addition, Bris and Cabolis (2008) find that relative to domestic acquisitions, the merger premium in cross-border deals is higher when the acquirer is from a country with stronger investor protection than the target. Most recently, Ellis, Moeller, Schlingemann, and Stulz (2011) find that acquirers from countries with better governance gain more from cross-border acquisitions, especially when targets are from countries with worse governance. Despite these findings, few studies analyze the impact of corporate governance in cross-border acquisitions in the banking industry, which represents another important contribution of our study.

⁵ Other studies that analyze the share-price reaction to cross-border merger announcements also provide mixed results. Campa and Hernando (2006) find average positive excess returns to targets in cross-border bank deals, although these tend to be lower than those for targets in domestic mergers. By contrast, Amihud, DeLong, and Saunders (2002) find significantly negative abnormal returns to the acquirers. Finally, Cybo-Ottone and Murgia (2000) find that cross-border deals did not capture positive expectations from the market.

⁶ An exception is Hagendorff *et al.* (2008) which analyzes the share-price effects of cross-border bank acquisitions in Europe and the U.S. They document an inverse relationship between the quality of legal protections for minority investors in the target bank's country and the bidder's abnormal returns. Their study is limited in scope examining only 31 cross-border deals.

Finally, the banking sector deserves a special focus because governance mechanisms are different in the banking industry. First, the banking industry is usually one of the most heavily regulated industries in a country, and the government plays a key role in the industry, directly through its ownership of banks, and indirectly through regulation of banks' activities. Second, hostile takeovers, which are typical external governance mechanisms in other industries, are rare in banking because of the need for regulatory approval of such deals. Third, the opaque nature of banks' activities makes it difficult for outsiders to assess banks' risk and value (Booth *et al.* 2002; Morgan 2002; Becher and Campbell 2004; Hagedorff *et al.* 2007), which highlights the importance of analyzing the determinants of bank acquisitions separately. Finally, internal governance mechanisms in the banking industry have been shown to be different. The literature documents significant differences in the banking industry's pay-performance mechanisms (John and Yiming 2003), CEO compensation (Houston and James 1995), and size, function, and compensation of the board of directors (Brickley and James 1987; Adams and Mehran 2003; Becher *et al.* 2005). The government's role in the banking industry may thus have a significant impact on cross-border bank acquisitions.

We test two competing predictions about government involvement in the banking sector for cross-border bank acquisitions. On the one hand, stricter government regulation of the banking sector of the target country may lead to a reduction in the number of cross-border acquisitions in that market as well as in smaller shareholder wealth and longer-run economic gains created by such transactions. Governments may simply be unwilling to allow foreign institutions to have a major presence in such a vital industry. But even if they allow cross-border acquisitions, they may create disincentives with tougher capital requirements, with more restrictions on the activities with which they can be involved, and with more expansive supervisory powers for the bank regulator. Concerns about foreign bank entry having destabilizing effects on the host countries under certain circumstances as documented by Peek and Rosengren (2000) and Morgan and Strahan (2004) can make governments wary about continuing to allow foreign banks to acquire stakes in local banks. The fact that several countries, including China and India, only recently started opening up their borders to foreign bank entry supports this view. In addition,

regulatory reforms stemming from the recent global financial crisis may lead to more restrictions on bank mergers in general, as argued by Federal Reserve Governor Daniel Tarullo, “*The regulatory structure...should discourage systemically consequential growth or mergers unless the benefits to society are clearly significant*” (Solomon and Smith 2011).

On the other hand, increased government involvement in the target country’s banking sector through tougher bank regulation may be a conduit to increased cross-border bank acquisitions. Short-run share price reactions for the target banks around the announcements may be higher, which may, in turn, be validated by greater longer-run target bank profitability, cost efficiency, risk management, and overall asset quality. Indeed, there has been a significant increase in foreign acquisition activity led by sovereign wealth funds (SWFs) and many government-controlled corporations (Morck *et al.* 2008; Bernstein *et al.* 2009; Bortolotti *et al.* 2009; Dewenter *et al.* 2009; Karolyi and Liao 2009; Kotter and Lel 2011). As a result of the financial crisis, many financial institutions are continuing to face financial difficulties; in the U.S., 157 banks failed in 2010, and 44 more have failed through May 2011, as reported by the Federal Deposit Insurance Corporation (FDIC). In Spain, banks continue to experience problems as the bad bank debt surpassed \$129 billion in May 2010 (Bjork 2010). By allowing foreign banks, SWFs, and other financial institutions to acquire stakes in troubled banks, governments may help prevent their collapse and avoid the spread of a crisis. Some evidence already points to a stabilizing effect of foreign bank entry on the host country’s credit supply as foreign banks are less affected by host country conditions (Dages *et al.* 2000; De Haas and van Lelyveld 2006).

We uncover several surprising new results. First, cross-border bank acquisitions are more likely to involve acquirers from countries with more limits on foreign bank entry, less powerful regulators, with an established deposit insurance scheme, and with fewer restrictions on bank activities than those of targets. These factors are important even after controlling for broader measures of corporate governance and transparency that do not have any incremental impact on these cross-border bank acquisitions flows. Second, abnormal returns to target banks are larger when acquirers are from countries with more stringent capital requirements, more limits on foreign bank entry, and with an established deposit insurance

scheme. For these particular kinds of cross-border deals, the cumulative abnormal returns to the target banks are almost as large as those for purely domestic acquisitions (12.2% for a five-day window around merger announcement) compared to those of the typical cross-border deal (only 3.3% for equivalent five-day window). Finally, we uncover puzzling evidence that in spite of these favorable share-price reactions for target banks, their longer-run operational and financial performance is relatively unaffected by these differences in regulation for acquirers and targets. We find some modest evidence of improvements in profitability in cross-border acquisitions in which acquirers come from countries with an established deposit insurance scheme. But, deals involving acquirers from countries with more powerful regulators, more restrictions on bank activities, and even more stringent capital requirements are not associated with any noteworthy improvements in post-acquisition profitability, cost efficiency, asset quality, or bank risk-taking. Our puzzling finding of negligible real economic consequences from changes in regulation that arise in these cross-border acquisitions is robust to many alternative variable definitions, model specifications and testing procedures.

2. Data and summary statistics

We first explore the determinants of cross-border bank acquisitions by building a broad sample of domestic and cross-border bank acquisitions. The initial sample consists of all bank acquisitions announced between January 1995 and December 2008. We define a bank acquisition as one in which the acquirer is a commercial bank, bank holding company, or credit institution, while targets may also be insurance companies, mortgage bankers, and security brokers. Data was obtained from Thomson Financial's Securities Data Corporation (SDC) Platinum database. In line with the literature, we exclude privatizations, leveraged buyouts, spin-offs, recapitalizations, exchange offers, repurchases, and self tender offers. Table 1 provides descriptive statistics of the sample. The initial sample consists of 9,121 (2,486) domestic (cross-border) deals announced between January 1995 and December 2008, out of which 6,391 (1,652) were completed over the period as reported by SDC. Given that SDC does not provide stock price information, we merge this initial sample with Thomson Reuter's DataStream

database. Panel B of Table 1 shows that after merging the initial SDC sample with the DataStream database, the sample size drops to 3,587 (1,012) completed domestic (cross-border) deals. In addition, the “SDC+DataStream” sample includes information on 3,659 (957) acquirers in domestic (cross-border) deals, and 1,156 (300) targets in domestic (cross-border) deals (Panel C). After merging our original SDC sample with DataStream, we collect accounting information on targets and acquirers from Bureau van Dijk’s Osiris database. We restrict what we refer to as our final sample to those deals in which stock price and accounting information is available for both targets and acquirers. Panel C shows the final matched sample consists of 805 (206) domestic (cross-border) deals.

Panels B and C of Table 1 also provide some descriptive statistics of the samples. As expected, the average deal value in the SDC+DataStream sample and in our final sample is significantly larger than in the original SDC sample, as reported in Panel B. The average value of domestic (cross-border) deals is \$364 (\$892) million in our final sample, compared to \$178 (\$388) million in the original SDC sample. Relative to the initial SDC sample, the institutions in the final sample are larger, in terms of total assets. While the median asset size of targets (acquirers) in cross-border deals is \$4.5 (\$227) billion in the initial sample, the median asset size is \$7.1 (\$278) billion in our final sample.

Our sample of bank acquisitions is geographically diverse. Panel A of Table 2 shows our sample includes targets from 77 countries and acquirers from 61 countries. While acquirers and targets from the U.S. and the U.K. dominate the sample of cross-border bank acquisitions, banks from several developing countries, including China and Malaysia, are very active acquirers in cross-border deals. Panel B shows some descriptive statistics of the acquirers and targets. Acquirers tend to be larger and more profitable than targets in both domestic and cross-border deals. While target banks in cross-border deals are larger and more profitable than their domestic counterparts, they have poorer asset quality, with an average non-performing-loans-to-total loans (NPL-to-GL) ratio of 2.12% compared to 0.88% for targets in domestic acquisitions. Finally, acquirers in cross-border deals are larger, but are less profitable (lower ROA) and have poorer asset quality (NPL-to-GL) than acquirers in domestic deals.

To examine whether the government's role in the banking system of the target or acquirer country has any influence on cross-border acquisition flows, target choices, share price reactions to acquisition announcements, and post-acquisition bank performance, we use several measures of bank regulatory quality compiled by Barth, Caprio, and Levine (2006). We focus on those regulations (and their enforcement) that theory and existing empirical evidence highlights as affecting bank behavior and influencing the stability of the bank system. These measures include: 1) an index of official supervisory power that measures whether supervisory entities have authority to take action to prevent and correct problems; 2) an index measuring the stringency of capital regulation regarding how much capital banks must hold, as well as the sources of funds that count as regulatory capital; 3) a bank activity restrictiveness index of regulatory restrictions on the activities of banks;⁷ 4) a foreign entry limits indicator variable that equals one if the country has any restrictions on foreign bank entry through a subsidiary, branch, or acquisition, or if there are limitations placed on the ownership of domestic banks by foreign banks, and 5) an indicator variable identifying countries with an explicit deposit insurance scheme. These and other variables used in our analyses are described in detail in Appendix A.

We also use several measures of country-level governance. Our primary measure is a governance index that is the average of the six governance indicators from Kaufmann et al. (2009): voice and accountability; regulatory quality; political stability; government effectiveness; rule of law, and control of corruption.⁸ We also use the Anti-Self-Dealing Index, a measure of disclosure in periodic filings from Djankov et al. (2008), and the revised anti-director index (La Porta *et al.* 1998). Appendix B shows the various measures of bank regulation and governance for all countries in our sample. Appendix C provides descriptive statistics (Panel A) and the respective correlations for our various measures of governance and bank regulation. The correlations suggest that countries with better governance tend to have less powerful regulators, less stringent capital requirements, fewer restrictions on bank activities and

⁷ It measures regulatory impediments to banks engaging in (1) securities market activities (e.g., underwriting, brokering, dealing, and all aspects of the mutual fund industry), (2) insurance activities (e.g., underwriting and selling), (3) real estate activities (e.g., property investment, development, and management), and (4) the ownership of nonfinancial firms.

⁸ Each of these indicators range in value from -2.5 to +2.5 with higher values indicating better governance.

fewer limits on foreign bank entry. This would suggest that stronger country level governance may be a substitute for stricter regulations in the banking sector. Finally, there is a positive correlation between a country's governance quality and the presence of an established deposit insurance scheme.

3. Determinants of Cross-Border Bank Merger Activity

As a first step in examining the government's influence in cross-border bank acquisitions, in this section, we will follow Rossi and Volpin (2004) and focus on how differences in laws across countries affect the volume and frequency of cross-border acquisitions in the banking industry. If governance plays a role in cross-border bank acquisitions, the probability of cross-border bank deals rather than domestic deals should be higher in target countries with weak governance mechanisms (e.g. poor investor protections), as has been shown for nonfinancial firms. We will first test this hypothesis using a country-level measure of investor protection. But our primary focus in this study is on the impact of various measures of the government's involvement in the banking sector on the volume of cross-border bank acquisition activity. By first incorporating country-level governance measures in our analyses, we will be able to determine whether these bank industry-specific measures are more important than country-level measures of investor protection in determining cross-border bank acquisition flows. We will also be able to learn whether the stringency of these bank regulations inhibit or facilitate cross-border acquisition activity in a given target market and whether differences in these regulations between acquirer and target markets inhibit or facilitate the flow of activity between them.

We test the first hypothesis using the following specification:

$$\text{Cross border ratio}_{\text{target}} = \alpha + \beta \text{REG}_{\text{target}} + \eta \text{GOV}_{\text{target}} + \gamma \text{X}_{\text{target}} + \varepsilon \quad (1)$$

where the cross-border ratio is the number of cross-border bank deals as a percentage of all completed bank acquisitions in the target country from 1995 through 2008. REG is a vector of variables measuring the quality of bank regulation and government influence in the banking sector that includes: an index of official supervisory power that measures whether supervisory entities have authority to take action to prevent and correct problems; a capital stringency index measuring the stringency of capital regulation; an

indicator variable equal to one if the country has any limits on foreign bank entry or ownership and 0 otherwise; an indicator variable equal to one if the country has an explicit deposit insurance scheme, and an index of bank activity restrictiveness that measures regulatory impediments to banks engaging in securities, insurance, real estate activities, and the ownership of nonfinancial firms. All bank regulatory measures are obtained from Barth et al. (2006).⁹ GOV refers to country level governance indicators that include: a governance index that is the average of all six Kauffmann et al. (2009) governance indicators; the revised anti-director index (La Porta *et al.* 1998), the Anti-Self Dealing Index (ASDI), and an index of disclosure in periodic filings (denoted Disclosure) from Djankov et al. (2008), and an indicator variable that equals one if the target country has common law origin of its commercial laws and 0 otherwise. Finally, X is a vector of target country controls that includes the log of GDP per capita as of 1995; the annual growth rate in real GDP; a measure of total credit provided by the banking sector as a percent of GDP, and a proxy for bank concentration of the assets of the top three banks as a share of all commercial banks' assets. All measures are averaged over the period 1995-2005, unless otherwise indicated in Appendix A.

The results from Tobit regressions are shown in Table 3.¹⁰ The results show that cross-border bank acquisitions are more common in countries with better governance (higher governance index), stronger regulators (higher official supervisory power), less stringent capital requirements, and fewer limits on foreign bank entry/ownership. In addition, the probability that a completed bank merger is cross-border is higher in poorer countries with more concentrated, but smaller banking sectors (the latter is measured with lower domestic bank credit as a percentage of GDP). The results are statistically and economically significant. A one standard deviation increase in the governance index (0.84, roughly the difference between the U.S. and Latvia) increases the probability of an acquisition being cross-border by

⁹ We use the 2003 indices (close to the midpoint of our sample), but replicate our results using the most recent data.

¹⁰ Following Rossi and Volpin (2004), we estimate Tobit models because the dependent variable is bounded from zero to one by construction.

about 27%.¹¹ Similarly, a one standard deviation increase in the official supervisory power index (2.62, the difference between Canada and New Zealand) would increase the probability of an acquisition being cross-border by about 14%. In contrast, a one standard deviation increase in the capital stringency index (1.72, the difference between the U.S. and Thailand) would decrease the probability of a cross-border bank acquisition by roughly 9%. Furthermore, the existence of limits on foreign entry reduces the probability of a cross-border acquisition by close to 10%. The index of bank activity restrictiveness has no reliable explanatory power.

Next, we examine whether acquirers in cross-border bank deals come from countries with better governance or with more stringent government regulations of bank activities than the target banks' countries. If the latter holds true, target bank shareholders would benefit from improved governance mechanisms and tougher government regulation of banks adopted from the acquiring bank's country.

If cross-border bank acquisitions play a governance role, there should be a positive correlation in the number of cross-border bank acquisitions between two countries and their differences in governance mechanisms (stringency and effectiveness of laws and regulations, investor protections). To test this hypothesis, we will run the following regressions, following Rossi and Volpin (2004):

$$\text{Cross - border deals}_{t,a} = \beta X_{a-t} + \gamma \Delta \text{REG}_{a-t} + \Psi \Delta \text{GOV}_{a-t} + \delta_a + \vartheta_t + \epsilon_{t,a} \quad (2)$$

where $\text{Cross-border deals}_{t,a}$ is the number of cross-border bank acquisitions where the acquirer comes from country a and the target is in country t ($a \neq t$) as a percentage of all domestic and cross-border bank acquisitions in target country t . X_{a-t} is a vector of controls that includes: the difference in GDP per capita between the target and acquirer's country; a same language binary variable that equals one if both target and acquirer's country share the same language, and zero otherwise; a binary variable indicating whether the target and acquirer's countries are in the same geographical region; differences in the annual real stock market rate and real exchange rate returns (averaged over the period 1995-2008) between the target

¹¹ The average cross-border ratio is 0.544. Given the coefficient on the governance index in column 1 of Table 3 (0.173), the percentage change in the cross border ratio for a one standard deviation change in the governance index would be $(0.173 \times 0.84) / 0.544$, or about 27%.

and acquirer country;¹² differences in the total credit provided by the banking sector as a percent of GDP, and differences in bank concentration. ΔREG refers to differences in the quality of bank regulation and government influence in the banking sector from Barth et al. (2006), including: an index of official supervisory power; a capital stringency index; an indicator variable of limits to foreign bank entry; an indicator variable equal to one if the country has an explicit deposit insurance scheme, and an index of bank activity restrictiveness. ΔGOV refers to differences in country level governance indicators that include: a governance index that is the average of all six Kauffmann et al. (2009) governance indicators; the revised anti-director index (La Porta *et al.* 1998), the Anti-Self Dealing Index, and an index of disclosure in periodic filings from Djankov et al. (2008). Finally, target country fixed effects are included in all regressions to control for other country characteristics.

Table 4 shows that the volume of bank M&A activity between two countries is related in a statistically and economically important way with differences in the quality of bank regulations. Acquirers come from countries with less powerful supervisors, with more limits on foreign bank entry, with fewer restrictions on bank activities, and with established deposit insurance schemes. In addition, acquirers in cross-border bank acquisitions tend to come from countries with larger, but less concentrated banking sectors. Once we incorporate differences in bank regulation, the broader measures of investor protection and governance do not have much explanatory power for cross-border bank acquisition flows. Consistent with prior findings on cross-border mergers of industrial firms, we also document that cross-border bank acquisition activity is more common between countries located in the same region and tends to involve acquirers from richer countries.

The results in Table 4 are economically significant. For example, a one standard deviation increase in the difference in official supervisory power (3.5, the difference between Mali and Japan, for example) for a given country pair reduces the likelihood of a cross-border deal between two countries by

¹² Erel, Liao, and Weisbach (2011) show that differences in real stock market returns and real exchange rate returns are important determinants in cross-border mergers and acquisitions. Firms in countries whose stock market has increased in value, whose currency has recently appreciated tend to be acquirers, they find.

47%.¹³ Similarly, a one standard deviation increase in the difference in limits on foreign bank entry (0.41) increases the expected volume of cross-border deals for the average country pair by 24%.¹⁴ Finally, a one standard deviation increase in the difference in bank activity restrictiveness (2.2, roughly the difference between El Salvador and the US) leads to an expected decrease of close to 30% in the number of cross border acquisitions for the average country pair.¹⁵

Cross-border acquisitions as a proportion of all bank acquisition activity are influenced by the quality of bank regulations in the target and acquirer bank's countries. The relationships are robust to controlling for differences in the level of economic and financial development, geographic proximity, similarities in culture/language, as well as differences in valuations that play an important role. We learn that once we capture these differences in bank regulations, the marginal impact of familiar country-level governance factors, though still in the same direction we saw in previous cross-border M&A studies, becomes negligible.

But we also learn that not all of the different forms of bank regulation matter and the ways in which they do matter are complex. It is surprising, for example, that cross-border activity is less intense in target markets with more capital stringency, but yet do not matter at all for the intensity of acquisition flows between the target and acquirer countries. On the other hand, whether a target market imposes tougher limits on foreign bank entry and whether it has a sound deposit insurance scheme does not impact its attractiveness as a target market, in general, but higher acquisition flows arise when the country of an acquirer has these features of a tougher regulatory regime and that of a target does not. These findings together suggest an asymmetric effect: tougher regulations for a target may be more important for these deals than looser ones for an acquirer. If a tougher regime imposes more restrictions on bank activities

¹³ The average cross-border ratio is 0.0074. The average coefficient on the difference in the official supervisory power from Table 4 is -0.001; thus, the percentage change in the cross-border ratio associated with a one standard deviation increase in the difference in official supervisory power is $(-.001 \times 3.5) / 0.0074$, or -0.47.

¹⁴ Given the average coefficient on the difference in the limits on foreign bank entry from Table 4 (0.004), the percentage change in the cross-border ratio associated with a one standard deviation increase in the difference in limits to foreign bank entry is $(.004 \times 0.45) / 0.0074$, or 0.24.

¹⁵ The average coefficient on the difference in restrictiveness index in Table 4 is -0.001; thus, the percentage change in the cross-border ratio associated with a one standard deviation increase in the difference in the restrictiveness index is $(-.001 \times 2.2) / 0.0074$, or -0.297.

and is associated with an official supervisor with more powers, our inferences are reversed as lower acquisition activity is associated with acquirers from countries with tougher regulations. A potential problem arises from collinearity among these various regulatory measures, but Appendix C shows that the correlations across countries are low and unreported tests confirm that the signs and significance of the variables remain in Tables 3 and 4 when included separately. The results in Table 4 are also robust to specifications with various combinations of the control variables and to excluding target country fixed effects designed to capture unobservable, omitted features of the targets ignored in Table 3.

4. Stock Price Reactions to M&A Announcements and Post Acquisition Performance

The next step in our analysis is to examine how government involvement in the banking industry affects the stock price reaction to cross-border bank acquisition announcements as well as post merger bank performance. To explore stock price reaction to bank acquisition announcements, we calculate buy-and-hold cumulative abnormal returns (BHCAR) around the announcement date for both targets and acquirers using a market model with the world market index as the proxy for the market return:

$$R_{ijt} = \alpha_i + \beta_i^w R_{wt} + \varepsilon_{it} \quad t = -260, \dots, -21 \quad (3)$$

where R_{ijt} refers to the daily stock return for either acquirer or target i in country j ; R_{wt} is the world market index, and ε_{it} represents the daily excess return for bank i . The abnormal returns are then accumulated over five different event windows: (-20, -3); (-1, +1); (-2, +2); (0, 10), and (0, +100) and the BHCAR is computed as follows:

$$\text{BHCAR}_i^{(t_1, t_2)} = \prod_{t=t_1}^{t=t_2} (1 + \widehat{\varepsilon}_{it}) - 1 \quad (4)$$

Our approach to estimating abnormal returns using a world market index facilitates comparison of abnormal returns across countries. We also replicate our results using a two-factor model with both a local market index and the world market index as proxies for the market return. While we accumulate abnormal returns over five event windows, our regression tests will focus primarily on abnormal returns

accumulated over the five days (t_1 equals -2, t_2 equals +2) surrounding the announcement. Results are similar when we use abnormal returns accumulated over the three-day window.

Table 5 shows descriptive statistics of BHCARs for targets and acquirers. Panel A shows that targets in domestic (cross-border) bank acquisitions experience a 12.2 percent (3.3 percent) cumulative abnormal return over the five day period surrounding the announcement. Targets in domestic deals experience significantly larger abnormal returns than targets in cross-border deals. The difference is economically large, at about 8.9 percentage points. The results in Panel A of Table 5 also show significant differences in mean and median BHCARs for targets in cross-border and domestic deals across various windows. Consistent with prior studies, significantly lower (but still positive) abnormal returns for targets in cross-border deals persist across all event windows up to 10 days around deal announcements; however, the post-event longer-run abnormal returns (up to 100 days following announcement) are insignificantly different between cross-border and domestic deals.

Panel B of Table 5 shows descriptive statistics for acquirers' BHCARs. Confirming results from prior studies, insignificant abnormal returns arise for acquirers in both domestic and cross-border bank acquisitions over the five day period surrounding the announcement. Longer-term abnormal returns for acquirers in domestic deals are significantly negative (-2.4 percent over the 100 days after the announcement), but acquirers in cross-border deals actually experience positive long-term abnormal returns (2.9 percent over the 100 days following the announcement). Acquirers' abnormal returns are insignificant in many cases, so our analysis will focus on examining the determinants of target's cumulative abnormal returns. But we will also examine the determinants of combined (both acquirer and target) abnormal returns surrounding bank acquisition announcements.

a. Determinants of BHCARs

We next turn to the determinants of share price reactions to cross-border bank acquisition announcements, focusing on how the government's involvement in the banking sector plays a role in value creation around such deals. We first analyze the determinants of targets' cumulative abnormal returns around the announcement. We would expect target BHCARs to be positively correlated with

differences in the quality of bank regulations between acquirer and target countries. If more active government involvement in the acquirer's banking sector through stronger supervisory authorities, more stringent capital requirements, a sound deposit insurance scheme, and generally tougher regulatory regimes is associated with more cross-border deal activity, as we saw in Table 4, then we might expect target bank shareholders to reward acquisitions in which acquirers come from countries with such regimes. After all, the resulting banks from such combinations are likely to be more profitable, more cost efficient, better at managing risk, and improving their asset quality. To examine this hypothesis, we will run regressions with target BHCAR as the dependent variable as follows.

$$\text{BHCAR}_{it} = \alpha_{it} + \beta\text{CB} + \Psi\Delta\text{REG} + \gamma\Delta\text{GOV} + \varphi\text{C} + \delta\text{B} + \rho_t + \varepsilon_i \quad (5)$$

where BHCAR_{it} is the target's cumulative buy and hold abnormal return for acquisition i in days $t=-2$ to $t=+2$; CB is a binary variable indicating whether the acquisition was cross-border; and, ΔREG is a vector of differences in the proxy variables for the same quality of bank regulation between acquirer and target country as before. ΔGOV is a vector of country level governance indicators that includes: a governance index that is the average of all six Kauffmann et al. (2009) governance indicators; the revised anti-director index (La Porta *et al.* 1998), the Anti-Self Dealing Index, and an index of disclosure in periodic filings from Djankov et al. (2008). C is a vector of country characteristics that includes differences in GDP per capita (in log) to capture differences in economic development between the acquirer and target countries; differences in the annual real stock market return and in the real exchange rate returns between acquirer and target country to control for currency movements and stock market performance that have been shown to be important determinants of cross-border mergers (Erel *et al.* 2011); differences in the total credit provided by the banking sector as a percent of GDP; differences in bank concentration, and, binary variables indicating whether the target and acquirer belong to the same geographical region and share the same language. B is a vector of bank-level controls that includes differences in asset size (log) and return on assets between the acquirer and the target banks given that large differences in size and profitability between target and acquirers may significantly affect the outcome of the deal, and as such, the abnormal

returns obtained from such deals; finally, ρ_t refers to year dummy variables. We include target country fixed effects in all regression specifications.

The results from the estimation of Equation (5) are reported in Table 6. For ease of interpretation, the second column shows the economic significance of those coefficients that are significant in any of the model specifications, where economic significance is measured in units of standard deviations of BHCARs per one standard deviation change in the independent variable and where reported economic significance of the coefficients represents the average of all the model specifications where the coefficients are significant.

The results in Panel A of Table 6 show the importance of differences in the quality of bank regulations between the acquirer and the target countries. Target bank's BHCARs are significantly higher when the acquirer comes from a country with better quality regulatory environment. In particular, the results show that abnormal returns to target banks are larger when acquirers are from countries with more stringent capital requirements, more limits on foreign bank entry, and with an established deposit insurance scheme. The impact is both statistically and economically significant. A one standard deviation increase in the difference in capital stringency (1.1, roughly the difference between China and Germany) is associated with a 1.1 percentage point increase, which constitutes about 6% of the standard deviation of BHCARs. Similarly, a one standard deviation increase in the limits on foreign bank entry (deposit insurance) is associated with a 1.4 (2.1) percentage point increase, which represent 8% (12%) of the standard deviation of BHCARs. The results are robust to controlling for several measures of country-level governance, as shown in models (1) through (4) and even in combination in model (5). Overall, the results show that target bank shareholders reward cross-border acquisitions in which the acquirers come from better regulatory environments, including those with more stringent capital requirements, with more limits on foreign bank entry, and with established deposit insurance schemes. These results suggest that target shareholders view these features of bank regulation as attractive.

It is somewhat surprising that the two of the regulatory factors - namely, those related to differences between acquirer and target countries in the power of the supervisory authorities and the

restrictions on bank activities - have no explanatory power. Recall that not only did both of these factors play an important role in explaining cross-border acquisition flows in Table 4, but they did so in an unexpected way; fewer, not more, cross-border deal activity flowed from acquirers in countries with tougher regulatory regimes (that is, stronger supervisory powers and with more restrictions on bank activities). One possible explanation is that we are now studying only a partial picture of shareholder wealth creation: only the reactions of the target banks and not those of the acquirer banks are observed.

The results in Table 6 also show that after controlling for the quality of bank regulation, country-level measures of governance fail to explain abnormal returns around cross-border deals. This is surprising given the reliability of these governance factors in explaining the share-price reactions in cross-border deals of industrial firms (Starks and Wei 2004; Bris and Cabolis 2008). The disclosure index is the only governance measure that is significant (at the 10% level) in any of the regressions.¹⁶ These results underscore the importance of analyzing cross-border acquisitions in the banking industry separately, given the highly regulated nature of the industry.

In addition to the importance of differences in bank regulation, the results show that target's BHCARs are significantly higher when the acquirers come from richer countries (GDP per capita), countries with less concentrated (potentially more competitive) banking sectors, and from countries whose currency has appreciated relative to the target's country. These results seem to suggest that target shareholders reward cross-border acquisitions when acquirers are from more developed countries. Finally, there is a significant adverse effect of differences in bank size. Target BHCARs are negatively correlated with differences in size: the larger the asset base of the acquirer relative to the target, the smaller the target bank's share-price reaction. A one standard deviation increase in the difference in asset size between the acquirer and target results in a 1.1% lower BHCAR, or 6% of its standard deviation. This latter result could suggest that target shareholders perceive that the synergies from acquisitions may be harder to achieve when there is a large size difference in size between targets and acquirers.

¹⁶ A one standard deviation increase in the difference in disclosure index between acquirer and target country (0.16) is associated with a decrease representing 11% of the standard deviation of BHCARs.

We hypothesized earlier that part of the shareholder wealth creation may arise for the acquirer firms. Indeed, Ellis, Moeller, Schlingemann, and Stulz (2011) offer reliable evidence that cross-border acquirers gain more in deals in which the target firm's country has worse governance, at least for industrial firm mergers. Panel B of Table 6 shows results from regressions using the sum of target and acquirer BHCARs over the window $t=-2$ to $t+2$ as the dependent variable. (We caution that the numbers of deals for which returns data is available for both acquirer and target declines, even though univariate tests in Table 5 showed a significantly larger sample of BHCARs for acquirers than targets.) The results in Panel B once again underscore the importance of the differences in bank regulation in explaining stock price reactions to bank acquisition announcements. Consistent with the results from regressions of targets' BHCARs, the results reveal that combined abnormal returns are significantly higher when acquirers come from countries with more stringent capital requirements, more limits on foreign bank entry, and with established deposit insurance. The economic magnitude of the results is similar to the results for target BHCARs, but the statistical significance drops and is now as reliable across different model specifications. A one standard deviation increase in the difference in capital stringency between the acquirer and target country is associated with a 1.2% increase in BHCARs, or 6% of its standard deviation, very similar to the findings in Panel A. A one standard deviation increase in the difference in deposit insurance, however, is associated with a 1.8% increase in BHCARs, somewhat lower than for targets alone (2.1%). Though somewhat weaker, these findings on combined abnormal returns show that cross-border bank deals involving acquirers from countries with better quality bank regulation generate more positive stock market reactions.

It is also important to note that country-level governance measures are still not significant in explaining stock market reaction to cross-border bank acquisitions after controlling for regulatory differences. Only the anti-self-dealing index and the disclosure index are significant, but only in one of the specifications. Further, Panel B shows that aggregate BHCARs are significantly higher when the acquirer is from a richer country, with a strong currency, relative to the target. Differences in bank size

have an adverse effect on aggregate BHCARs, but banking sector concentration is no longer significant in explaining aggregate BHCARs.

The results in Panels A and B of Table 6 include size (log of total assets) and profitability as the only bank-level controls because of limited data availability. In unreported results, we incorporate other measures of profitability (ROE), cost efficiency (cost-to-income ratio) and asset quality (non-performing loans-to-total loans) as additional controls to test the robustness of our results. While the sample size drops significantly when these other measures are used, the main results continue to hold. Better quality bank regulation in the acquirer's country relative to the target's country continues to have a positive impact on target's (and aggregate) BHCARs.

The results in this section point to the importance of examining and controlling for differences in the regulatory environment when analyzing the outcomes of cross-border bank acquisitions. The government's presence in the banking sector through the regulation and supervision of bank activities appears to significantly affect target's (and aggregate) abnormal returns around the announcement of bank acquisitions. All else equal, cumulative abnormal returns are higher when the acquirers are from countries with more stringent capital requirements, more limits on foreign bank entry, and an established deposit insurance scheme. The results show that governments can have a positive impact on stock price reactions to bank acquisitions through better regulation. Having analyzed stock price reactions to acquisition announcements, we now examine longer-run post-acquisition bank performance.

b. Changes in Post-Acquisition Bank Performance

We now examine how differences in the quality of bank regulation between target and acquirer countries affect post acquisition bank performance. Given the positive stock price reaction associated with cross-border deals in which acquirers come from countries with better regulatory environments, we expect to find a similar impact on post-acquisition bank performance. Target banks acquired by banks from countries with tougher bank regulations should observe an improvement in performance. This improved performance may be revealed in terms of improved profitability, greater cost efficiency, improved asset quality, or better risk management (less risk-taking).

To examine this hypothesis, we will use bank data from Bureau van Dijk's OSIRIS database. We collect annual bank performance measures of profitability (return on average assets, ROAA, and return on average equity, ROAE), operational efficiency (net interest margin, NIM, and cost-to-income ratio), and asset quality (non-performing loans-to-total loans, NPL-to-GL, and loan loss-reserves-to-nonperforming loans, LLR-to-NPL) for all banks in our sample with available data from OSIRIS.¹⁷ We also examine changes in risk-taking behavior using three measures of risk: 1) Z-score (in logs) which is computed as the return on assets plus capital asset ratio divided by standard deviation of asset returns; 2) earnings volatility, or the average standard deviation of the ratio of earnings before taxes to average total assets, and 3) equity volatility, which is the volatility of bank's returns computed from weekly data.¹⁸ We compute the Z-score and the earnings volatility measures using data for the three years before and after the acquisition. For consistency, we compute changes in each performance measure during the same period: three years before and after the acquisition.¹⁹ Thus, to be included in the final sample, we require at least three years of available data pre and post-acquisition. For those banks in our sample that underwent more than one merger or acquisition during the period, we take the most recent merger as the event of interest, so that in the final sample we only have one event per bank.²⁰ After imposing these restrictions, our final sample consists of 123 banks out of which 74 (49) are targets in domestic (cross-border deals). Because of data limitations, this final sample is only a small subset of the sample of banks used in the prior section.

We will use the following regression framework:

$$\Delta\text{PERF}_{ic} = \alpha_{it} + \beta_1\text{CB} + \beta_2\Delta\text{REG}_{a-t} + \gamma\text{C}_{a-t} + \delta\text{B}_{a-t} + \varepsilon_i \quad (6)$$

where ΔPERF_{ic} refers to changes in the various performance measures for target bank i in country c . CB is a binary variable indicating whether the acquisition was cross-border and ΔREG refers to the various

¹⁷ Net interest margin is computed as interest income less interest expense as a percent of average earning assets.

¹⁸ Laeven and Levine (2009) examine how tougher bank regulation reduces a bank's risk-taking behavior using these same three measures of risk.

¹⁹ In some robustness tests, we use different windows to compute changes in bank performance (e.g. -1 to +1 and -2 to +2 years), and obtain qualitatively similar results. The sample sizes are larger for the shorter even windows.

²⁰ In unreported robustness tests, we drop all banks with more than one M and A during the period and obtain similar results.

measures of the quality of bank regulation defined earlier. C is a vector of country characteristics that have been shown to impact bank performance and include: the log of GDP per capita; bank concentration (share of assets of the top three banks); several governance measures, including the governance index that is the average of the six governance indicators from Kaufmann et al. (2009), the revised anti-director index (La Porta *et al.* 1998), the Anti-Self Dealing Index, and an index of disclosure in periodic filings from Djankov et al. (2008); a proxy for the size and importance of the banking sector (bank credit-to-GDP), the average annual real stock market return; the average annual real bilateral US dollar exchange rate return; and, binary variables indicating whether the acquirer and target country share the same language, or are from the same region.²¹ B is a vector of bank level controls that includes a proxy for bank's size (the log of bank's assets) and profitability (ROA). All independent variables are measured as differences between the acquirer and target. Finally, all standard errors are clustered at the country level.

Table 7, Panel A shows results for changes in bank profitability (ROAA); Panel B shows results for changes in other performance measures, and Panel C shows results for changes in measures of bank risk. There is a positive impact on profitability associated with cross-border acquisitions involving acquirers from countries with an established deposit insurance scheme. A one standard deviation increase in the difference in deposit insurance (0.32) is associated with a 57 basis point increase in ROAA, or about 17% of its standard deviation. There is a statistically weak positive relationship with the difference in the acquirer and target countries' capital stringency indexes, but only in one of the five specifications. Surprisingly, we do not observe any significant impact of the other regulatory variables on post-acquisition profitability. Part of the problem may stem from the fact that the sample size has eroded so dramatically from our earlier analysis of acquisition flows and BHCARs.²² In fact, none of the

²¹ The macroeconomic country level variables (such as GDP) are obtained from the World Bank's World Development Indicators. See Appendix A for details.

²² To gauge the power problems in our long-run performance analysis, we repeated our panel regressions of BHCARs in Table 6 for the subset of firms for which we have fundamental data from OSIRIS. The earlier reliable findings on differences in limits on foreign bank entry, capital stringency and deposit insurance schemes for BHCARs disappear for the smaller sample of banks. As a further supplementary test, we included the BHCARs from the deal announcement as explanatory variables for the post-acquisition change in ROAA in Panel A of Table 7. The coefficients were positive, but none were statistically reliably different from zero.

governance-related factors have any explanatory power, nor do the country-level and bank-specific control variables.

Panel B of Table 7 shows results for other measures of bank performance. Consistent with the results in Panel A, acquirers from countries with an established deposit insurance scheme have a positive impact on post-acquisition profitability (ROAE). This is very similar to what we saw in Panel B for ROAA. In addition, there is evidence of improvements in cost efficiency associated with acquirers with an established deposit insurance scheme. The results in Panel B also show some weak evidence of a positive impact on operational efficiency in terms of net-interest margins (NIM) associated with acquisitions in which acquirers are from countries with more stringent capital requirements, but lower restrictions on bank activities. In addition, more restrictions on bank activities in the acquirer's country are associated with a modest improvement in asset quality (lower non-performing loans-to-total loans). The results are not economically large and the signs of the relationships are not always consistent with those observed for the share-price reactions in Table 6.

The results in Table 7 also show that post acquisition asset quality deteriorates when acquirers are from countries with larger and more concentrated banking sectors. On the other hand, asset quality improves when acquirers come from countries with better performing stock markets, and from countries that share the same language and are located in the same region.

The most relevant performance metric to evaluate these cross-border bank mergers may, in fact, be the change in risk-taking behavior of the target banks once the deals go into effect. The array of regulations that we evaluate, after all, are designed to shape bank risks (Laeven and Levine 2009). In Panel C of Table 7, the results show that differences in bank regulation do not appear to significantly impact post-acquisition bank-risk taking. There is only weak, unreliable evidence that more stringent capital requirements in the acquirer country are associated with lower risk-taking (higher Z-score). The results show, however, that broader country governance measures do matter more in explaining post-acquisition risk-taking behavior, but in a somewhat unexpected manner. Target banks' post-acquisition risk-taking actually increases when acquirers are from countries with better governance. The coefficients

on ASDI in Model (2), on anti-director index in Model (3) are both significant and negative. Better investor protection in the acquirer country, say with a one standard deviation higher anti-director rights index score for acquirers over target banks, is associated with more post-acquisition risk-taking in the form of a 0.375% lower Z-score, which represents about 19% of its standard deviation. The results also show that risk-taking is mitigated in acquisitions in which acquirers are from higher GDP per capita countries and from countries that share the same language. On the other hand, acquirers from countries with more concentrated banking sectors appear to exacerbate risk-taking behavior.

Our findings for alternative measures of risk taking – changes in earnings volatility and in equity return volatility – are less reliable than those for changes in Z-scores with much lower adjusted R^2 . The sample diminishes even more for the equity return volatility tests (only 68 deals remain), but there is some modest evidence that tougher limits on foreign bank entry and in powers of the supervisory authority, unlike the governance variables in Models (2) and (3), are associated with less risk-taking (lower equity return volatility).

While our main results in this section are based on changes in bank performance, we also estimate panel regressions using annual bank performance measures as the dependent variable. This approach allows us to use all available data for all banks in our sample. Our results (unreported) are similar when this approach was used.

Overall, the results in this section point to a very limited impact of differences in bank regulation on post-acquisition bank performance. The existence of a deposit insurance scheme in the acquirer country is associated with improvements in profitability, but no other measures of the quality of bank regulation appear to significantly affect post-acquisition bank performance. The results in this section are based on a small subset of banks, which may explain why we do not observe any significance impact of regulatory differences on post-acquisition bank performance.

c. Robustness Tests

We perform several tests to verify the robustness of our results. First, in unreported results we replicate our results with BHCARs from a two-factor model using the local market index as an additional

market proxy. The results using these abnormal returns are qualitatively similar to the ones presented here. In addition, we replicate our results using abnormal returns over the three-days surrounding the announcement date.

In our multivariate analyses, adequately controlling for differences between target and acquirer characteristics is extremely important. Differences in size, profitability, and asset quality between acquirer and target banks can significantly affect the terms of the deal as well as the outcome of bank acquisitions. In our results, we report results controlling for differences in asset size (log of assets) and profitability (ROA). In unreported results, we incorporate other bank-level controls, including measures of cost efficiency (cost-to-income) and asset quality (non-performing loans-to-total loans). The sample size is reduced when such measures are used, but the results are qualitatively similar.

The M&A literature has documented the importance of deal characteristics, such as the percentage of the transaction that is in cash versus stock, in explaining merger premium (Starks and Wei 2004). In unreported results, we incorporate several variables that control for deal characteristics such as the percentage of the transaction that was financed by stock, and whether the transaction was an all cash transaction. Including such controls does not alter the main results. In addition, none of the coefficients for deal characteristic variables were significant in any of the regressions. Given that our sample size includes a very large number of acquisitions involving U.S. targets or acquirers, we test whether our results are driven mainly by transactions involving U.S. institutions. In unreported results, we replicate our results excluding U.S. institutions. The sample size is vastly reduced, but the main results hold.

Finally, there may be some concern in our sample selection, given that it includes acquisitions of not only banks, but also other financial institutions, such as insurance companies. When we repeat our tests restricting our sample to commercial banks only, our results hold.

5. Conclusion

This paper explores an important, yet understudied aspect of cross-border bank acquisitions: the impact of differences in national bank regulations on the level of deal activity, on the shareholder wealth

created around deal announcements and on the longer-run economic consequences following deal closure. We focus on banks because of the unique nature of banks' governance mechanisms which stems primarily from the relative opaqueness of banks' activities; the prevalence of deposit insurance schemes that may lower shareholders' incentives to monitor management; the existence of implicit and explicit bail-out provisions, and the virtual absence of mechanisms of market discipline such as hostile takeovers in the industry. Our focus on the impact of bank regulation on cross border bank acquisitions is also motivated by the ongoing debates about the future of bank regulation stemming from the systemic failures in bank regulation that many believe contributed to the recent global financial crisis.

Using a sample of 9,121 domestic and 2,486 cross-border deals announced between 1995 and 2008 we show that differences in bank regulation affects cross-border bank acquisition flows and share price reactions to acquisition announcements. Somewhat surprisingly, we find little impact of these differences on post-acquisition performance. The results show that the volume of bank M&A activity between two countries is correlated with differences in the quality of bank regulations. In particular, acquirers are typically from countries with less powerful supervisors, more limits on foreign bank entry, less restrictions on bank activities, and with established deposit insurance schemes. In addition, the results show that acquirers in cross-border bank acquisitions tend to come from countries with larger, but less concentrated banking sectors. The quality of bank regulation plays a more important role in explaining cross-border acquisition flows and share price reaction to cross-border deal announcements than more general country level measures of investor protection and governance. The uniqueness of the banking industry, especially its heavily-regulated nature, helps explain these findings and underlines the importance of a separate study of cross-border bank acquisitions.

We find that target banks' (and aggregate) cumulative abnormal returns around the announcement date are correlated with differences in the quality of bank regulation between the acquirer and target countries. Target (and aggregate) abnormal returns are higher when acquirers are from countries with a tougher bank regulatory environment. In particular, target BHCARs are higher when acquirers are from countries with stricter capital requirements, an established deposit insurance scheme, and more limits on

foreign bank entry. More importantly, once we control for differences in the quality of bank regulation, broader measures of investor protection and governance do not significantly explain abnormal returns around bank acquisition announcements. These results are in contrast with the findings in the cross-border merger literature for industrial firms that document how differences in investor protection affect merger premiums. The results underscore the importance of accounting for differences in industry-specific governance mechanisms when exploring determinants of cross-border bank acquisitions.

Finally, we perform an analysis of post-acquisition performance for a subset of banks in our sample with available data. We document that post-acquisition performance is relatively unaffected by the differences in bank regulation. Acquirers from countries with an established deposit insurance scheme do appear to have a positive impact on post-acquisition profitability. However, overall, we find very little impact of differences in regulation on post-acquisition cost efficiency, asset quality, or even bank risk-taking. This is a puzzling finding, but one that is resilient and robust to many different variable definitions, model specifications, and sub-samples of banks. Lack of power does not seem to be able to explain this result.

Our research is particularly important given the dramatic changes that have taken place in the global banking sector as a result of the recent global financial crisis. Indeed, the increased importance of governance mechanisms in the banking industry is highlighted in the recent Basel Committee's Report on Strengthening the Resilience of the Banking Sector, which stresses the vital role those enhancing governance mechanisms, transparency and disclosure can play in promoting stability in the banking sector. The impact of these rules and other proposed regulatory changes that will lead to increased government oversight of financial institutions throughout the world will certainly have an impact on banks and on the financial sector as a whole. Our research acknowledges that these changes in regulatory policy will undoubtedly shape the strategic choices banks make and may even influence the reactions of the markets to those choices in the short-run; however, the key takeaway from our findings is that these regulatory changes may have smaller longer-term economic consequences.

Appendix A. Variable definitions.

Variable	Definition
Bank Credit/GDP	Domestic credit provided by the banking sector as a percent of GDP. Averaged over the period 1995-2005. Source: World Development Indicators.
Banking Concentration	Assets of the three largest banks as a share of all commercial banks' assets. This ratio was averaged over the 1995-2005 period. Variable was obtained from Ross Levine's website.
GDP Growth	Annual growth in real GDP (1995-2008). Source: World Development Indicators.
Average Log GDP per capita	Average logarithm of real GDP (U.S. \$) divided by the average population (1995-2008). Source: World Development Indicators.
Average Annual Exchange Rate Returns	Average annual real bilateral U.S. dollar exchange rate return from 1995-2008. Exchange rates (WMR/Reuters) and 2000 constant dollar Consumer Price Index data are obtained from Thomson Financial's DataStream.
Average Annual Real Stock Market Return	The average annual real stock market return from 1995-2008. The DataStream local currency country level stock market return indices are deflated using the Consumer Price Index (base 2000).
Restrict	An index of regulatory restrictions on the activities of banks. It measures regulatory impediments to banks engaging in securities market activities, insurance activities, real estate activities, and the ownership of nonfinancial firms. Index value ranges from three to twelve (higher values indicate more restrictiveness). Data obtained from Barth et al. (2006).
Official Supervisory Power	An index that measures whether supervisory entities have authority to take action to prevent and correct problems. Index ranges from four to 14 with higher values indicating greater power. Data obtained from Barth et al. (2006).

Appendix A. Variable definitions. Continued

Variable	Definition
Capital Stringency Index	Index measuring the stringency of regulatory regulations regarding how much capital banks must hold, as well as the sources of funds that count as regulatory capital. Index ranges from zero to 10 with higher values indicating greater stringency. Data obtained from Barth et al. (2006).
Limits to Foreign Bank Entry	Indicator variable that equals one if the country has any restrictions on foreign bank entry through a subsidiary, branch, or acquisition, or if there are limitations placed on the ownership of domestic banks by foreign banks. Variable constructed using data from Barth et al. (2006) obtained from Ross Levine's website.
Deposit Insurance	An indicator variable that is equal to one if the country has an explicit deposit insurance scheme and zero otherwise. Variable constructed using data from Barth et al. (2006) obtained from Ross Levine's website.
Anti-Self Dealing Index (ASDI)	Average of ex-ante and ex-post private control of self-dealing. This variable was obtained from Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008).
Anti-Director Index	The revised Anti-Director's Rights Index, which is a measure of shareholder rights. The index ranges from 0 to 6. Source La Porta et al. (1998). Revised index obtained from Rafael La Porta's website.
Governance Index	The average of all six Kaufmann et al. (2009) governance indicators: political stability; voice and accountability; government effectiveness; regulatory quality; control of corruption, and rule of law. Each of the indices ranges from -2.5 to 2.5, with higher values indicating better governance.
Disclosure	An index of disclosures required in periodic disclosures (e.g., annual reports). Index ranges from 0 to 1. Source: Djankov et al. (2008).
Z-score	Following Laeven and Levine (2009), the Z-score is computed as the return on assets + capital asset ratio divided by standard deviation of asset returns: $(ROA + \text{Equity-to-Assets}) / \sigma(ROA)$. The log of the Z-score is used in the regressions. Data obtained from Bureau van Dijk's OSIRIS database.

Appendix B. Indicators of bank regulatory quality and governance.

Listed below are measures of bank regulation and governance. The official supervisory power index measures whether supervisory entities have authority to take action to prevent and correct problems; the capital stringency index measures the stringency of capital regulation; the limits to foreign bank entry is an indicator variable that is equal to one if there are any restrictions on foreign ownership of domestic banks or if there are limitations on foreign bank entry, and 0 otherwise; restrict is an index of bank activity restrictiveness that measures regulatory impediments to banks engaging in securities, insurance, real estate activities, and the ownership of nonfinancial firms, and deposit insurance is an indicator variable that is equal to one if the country has an explicit deposit insurance scheme and 0 otherwise. . These bank regulatory indices were obtained from Barth et al. (2006). Finally, the governance index is the average of the six Kauffmann et al. (2009) governance indicators averaged across the full sample period 1996-2008. Higher values of the indices indicate more official supervisory power, more stringent capital requirements, more restrictions on bank activities, and better governance, respectively.

Country	Official Supervisory Power	Capital Stringency Index	Limit to Foreign Entry	Restrict	Deposit Insurance	Governance Index
Albania	12	.	0	7	1	-0.44
Algeria	14	4	0	6	0	-0.99
Argentina	8	7	0	7	1	-0.08
Australia	10	7	1	6	0	1.54
Austria	13	10	0	6	1	1.60
Bahrain	14	7	0	6	1	0.15
Belarus	8	.	1	6	0	-0.97
Belgium	10	6	0	6	1	1.32
Bolivia	10	5	1	6	1	-0.37
Bosnia	14	6	0	7	1	-0.48
Botswana	14	8	1	5	0	0.70
Brazil	13	9	0	3	1	0.00
Bulgaria	11	8	0	6	1	0.11
C. African Rep	14	4	0	4	1	-1.28
Canada	10	4	1	8	0	1.59
Chile	11	6	0	8	1	1.13
China	.	5	1	9	0	-0.47
Colombia	13	6	1	7	0	-0.52
CostaRica	13	6	1	6	1	0.67
Croatia	12	5	0	6	1	0.16
Cyprus	8	5	0	9	1	1.03
CzechRepublic	8	7	0	7	0	0.83
Denmark	9	8	0	7	0	1.76
Egypt	14	5	0	7	0	-0.44
ELSalvador	10	5	0	10	0	-0.24
Estonia	14	4	0	6	1	0.90
Fiji	13	6	0	.	1	-0.21
Finland	6	5	0	6	1	1.80
France	7	4	0	5	1	1.22
Germany	9	6	0	6	1	1.51
Ghana	12	.	0	6	1	-0.09
Greece	12	7	0	4	1	0.76
HongKong	11	7	0	7	0	1.13
Hungary	14	5	0	7	1	0.91
Iceland	5	6	0	5	1	1.60
India	10	8	1	9	1	-0.17
Ireland	11	4	0	6	1	1.49
Isle of Man	12.5	9	0	8	1	.
Israel	7	7	0	9	1	0.66
Italy	7	5	0	7	1	0.77
Japan	12	6	0	7	1	1.07
Jordan	14	8	0	7	1	0.07

Appendix B. Indicators of bank regulatory quality and governance. Continued

Country	Official Supervisory Power	Capital Stringency Index	Limit to Foreign Entry	Restrict	Deposit Insurance	Governance Index
Kazakhstan	11	7	1	9	1	-0.66
Kenya	13	8	1	10	1	-0.75
Korea	12	3	0	7	1	0.60
Kuwait	10	8	0	5	0	0.29
Latvia	13	7	0	4	0	0.53
Lebanon	10	8	0	6	1	-0.44
Libya	13	.	0	9	0	-1.13
Lithuania	11	4	0	6	0	0.62
Luxembourg	13	7	0	7	1	1.68
Macedonia	12	4	1	6	1	-0.34
Malaysia	11	3	1	9	1	0.39
Mali	8.5	7	0	7	0	-0.25
Malta	14	6	0	7	0	1.06
Mauritius	10	7	1	8	0	0.71
Mexico	.	8	1	9	1	-0.07
Moldova	12	10	1	6	1	-0.38
Morocco	12	7	0	7	0	-0.15
Namibia	12	5	0	7	0	0.32
Netherlands	5	7	0	5	1	1.69
NewZealand	7.5	4	0	3	0	1.72
Norway	9	.	0	7	1	1.66
Oman	14	7	0	9	1	0.34
Pakistan	13	7	1	7	1	-0.93
Panama	11	5	0	6	1	0.12
Paraguay	14	5	0	9	0	-0.74
Peru	12	6	1	6	1	-0.31
Philippines	11	5	1	8	1	-0.25
Poland	8	4	0	4	1	0.70
Portugal	14	7	0	7	1	1.18
Puerto Rico	11	.	0	10	1	0.92
Qatar	10	.	0	9	0	0.39
Romania	9	4	0	7	1	0.03
Russia	10	7	1	6	0	-0.68
SaudiArabia	14	4	1	6	0	-0.39
Senegal	8.5	7	0	7	0	-0.19
Serbia	5	7	1	6	1	.
Singapore	13	8	1	8	0	1.42
Slovakia	14	8	0	7	1	0.64
SouthAfrica	6	7	0	5	1	0.29
Spain	9	10	0	5	1	1.10
SriLanka	7	7	0	9	1	-0.37
Sweden	8	3	0	5	1	1.70
Switzerland	14	.	0	4	1	1.70
Taiwan	14	6	0	9	1	0.82
Thailand	10	4	0	9	1	0.11
Tonga	9	4	0	5	.	-0.24
Trinidad	10	3	1	6	1	0.37
Tunisia	13	8	0	7	0	0.01
Turkey	14	6	0	6	1	-0.20
UAE	14	8	0	5	1	0.44
UK	11	6	0	3	1	1.51
Ukraine	12	6	1	8	0	-0.57
Uruguay	12	4	0	8	0	0.70
USA	13	6	0	8	1	1.36
Venezuela	11	5	0	7	1	-0.81
Average	11.02	6.11	0.26	6.72	0.68	0.39
Std. Deviation	2.48	1.68	0.44	1.60	0.47	0.82

Appendix C. Descriptive statistics

The table shows summary statistics of the main regression variables. The official supervisory power index (OSPOWER) measures whether supervisory entities have the authority to take action to prevent and correct problems; the limits to foreign bank entry (LIMITFB) is an indicator variable equal to one if there are any restrictions on foreign ownership of domestic banks or if there are limitations on foreign bank entry and zero otherwise; restrict is an index of bank activity restrictiveness that measures regulatory impediments to banks engaging in securities, insurance, real estate activities, and the ownership of nonfinancial firms; the capital stringency index (CRINDEX) measures the stringency of capital regulation; deposit insurance is an indicator variable equal to one if there is an explicit deposit insurance scheme and 0 otherwise; the governance index (WDIGOV) is the average of the six Kauffmann et al (2009) indicators; the Anti-Self-Dealing Index (ASDI) and the index of disclosures required in periodic filings (DISC) are from Djankov et al. (2008); the revised anti-director index (ADIR) is from La Porta et al. (1998), GDP per capita (log) and GDP growth were obtained from the World Development Indicators. The real stock market return (RMKTAVG) is the average annual real stock market return from 1995-2008; the real exchange rate return (EXR12AVG) is the average annual real bilateral U.S. dollar exchange rate return from 1995-2008; bank credit/GDP is domestic credit provided by the banking sector as a percent of GDP; concentration refers to the assets of the three largest banks as a share of all commercial banks' assets. Bank level controls for acquirers (a) and targets (t) are the size (log of total assets), return on average assets, and Z-score (ratio of the bank's return on assets plus the capital to assets ratio divided by the standard deviation of asset returns over the period 1995-2008). Panel B shows the correlations matrix.

Panel A- Descriptive Statistics					
Variable	N	Mean	Std. Dev.	Maximum	Minimum
<i>Country Level Variables</i>					
Official Supervisory Power	95	11.02	2.48	14.00	5.00
Limits to Foreign Bank Entry	89	6.11	1.68	10.00	3.00
Restrict	97	0.26	0.44	1.00	0.00
Capital Stringency Index	96	6.72	1.60	10.00	3.00
Deposit Insurance	96	0.68	0.47	1.00	0.00
Governance Index	95	0.39	0.82	1.80	-1.28
ASDI	66	0.45	0.24	1.00	0.08
Anti-director Index	66	3.36	1.16	5.00	1.00
Disclosure	66	0.57	0.34	1.00	0.00
GDP per capita	97	8.25	1.33	10.36	4.59
GDP Growth	97	2.85	27.66	272.42	-0.02
Real Stock Market Return	52	0.14	0.14	0.77	0.00
Real Exchange Rate Return	46	-0.02	0.07	0.06	-0.30
Bank Credit/GDP	94	22.88	178.98	1727.41	0.16
Bank Concentration	91	0.70	0.17	1.00	0.27
<i>Bank Level Variables</i>					
Size _a	327	10.08	2.32	15.14	-0.42
ROA _a	325	0.01	0.01	0.21	-0.10
Z-score _a	118	2.67	1.24	5.85	-1.23
Size _t	356	7.73	2.21	14.26	-0.41
ROA _t	353	0.01	0.05	0.78	-0.66
Z-score _t	212	2.93	1.09	5.89	-1.21

Appendix C Descriptive statistics. Continued

Panel B- Correlations																
	OSPOWER	LIMITFB	RESTRICT	CRINDEX	DEPINS	WDIGOV	ASDI	ADIR	DISC	LOGGDP	GDPGROWTH	RMKTAVG	EXR12AVG	BKCREDIT	CONCENTRATION	
OSPOWER	1	0.04	0.09	0.10	-0.07	-0.28	-0.13	-0.21	-0.11	-0.16	0.18	0.05	-0.19	-0.18	-0.15	
LIMITFB	0.04	1	0.18	0.03	-0.15	-0.29	0.11	0.09	-0.09	-0.32	0.11	-0.09	-0.17	-0.25	-0.06	
RESTRICT	0.09	0.18	1	0.01	-0.10	-0.23	0.07	-0.15	0.08	-0.13	0.18	-0.08	-0.10	-0.08	-0.02	
CRINDEX	0.10	0.03	0.01	1	0.03	0.00	-0.13	0.05	-0.11	-0.01	0.04	0.07	-0.06	0.03	-0.06	
DEPINS	-0.07	-0.15	-0.10	0.03	1	0.13	-0.16	0.01	0.10	0.09	-0.05	0.02	-0.06	0.17	-0.24	
WDIGOV	-0.28	-0.29	-0.23	0.00	0.13	1	0.21	0.19	0.40	0.79	-0.29	-0.21	0.73	0.66	0.11	
ASDI	-0.13	0.11	0.07	-0.13	-0.16	0.21	1	0.56	0.69	0.11	0.18	-0.02	0.26	0.32	0.05	
ADIR	-0.21	0.09	-0.15	0.05	0.01	0.19	0.56	1	0.48	0.05	0.01	-0.05	0.14	0.19	0.02	
DISC	-0.11	-0.09	0.08	-0.11	0.10	0.40	0.69	0.48	1	0.23	0.13	-0.06	0.48	0.38	-0.02	
LOGGDP	-0.16	-0.32	-0.13	-0.01	0.09	0.79	0.11	0.05	0.23	1	-0.24	-0.20	0.53	0.63	-0.01	
GDPGROWTH	0.18	0.11	0.18	0.04	-0.05	-0.29	0.18	0.01	0.13	-0.24	1	0.11	-0.15	-0.30	0.08	
RMKTAVG	0.05	-0.09	-0.08	0.07	0.02	-0.21	-0.02	-0.05	-0.06	-0.20	0.11	1	-0.19	-0.21	0.14	
EXR12AVG	-0.19	-0.17	-0.10	-0.06	-0.06	0.73	0.26	0.14	0.48	0.53	-0.15	-0.19	1	0.60	0.21	
BKCREDIT	-0.18	-0.25	-0.08	0.03	0.17	0.66	0.32	0.19	0.38	0.63	-0.30	-0.21	0.60	1	-0.25	
CONCENTRATION	-0.15	-0.06	-0.02	-0.06	-0.24	0.11	0.05	0.02	-0.02	-0.01	0.08	0.14	0.21	-0.25	1	

Variable	Name
Official Supervisory Power	OSPOWER
Limits to Foreign Bank Entry	LIMITFB
Restrict	RESTRICT
Capital Stringency Index	CRINDEX
Deposit Insurance	DEPINS
Governance Index	WDIGOV
ASDI	ASDI
Anti-director Index	ADIR
Disclosure	DISC
GDP per capita _{a,t}	LOGGDP
GDP Growth	GDPGROWTH
Real Stock Market Return	RMKTAVG
Real Exchange Rate Return	EXR12AVG
Bank Credit/GDP	BKCREDIT
Bank Concentration	CONCENTRATION

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Table 1. Bank acquisitions around the world.

This table describes all acquisitions in which the acquirer is a commercial bank, bank holding company, or credit institution, while targets may also be insurance companies, mortgage bankers, and security brokers. The year represents the year in which the deal was announced. Acquisitions in which the target institution or the acquiring institution's country of origin was not identified are excluded. The initial sample, broken down by year in Panel A consists of all bank acquisitions announced between January 1995 and December 2008. Data was obtained from Thomson Financial's SDC Platinum database. All recapitalizations, spinoffs, LBOs, divestitures, share repurchases, and privatizations are excluded. We then construct a sample of domestic and cross-border bank acquisitions with stock price information available in Thomson Financial's DataStream (SDC+ DataStream sample in Panel B). The SDC+DataStream sample consists of all deals for which we can compute abnormal returns for either acquirers or targets. The final matched sample consists of all deals in which cumulative abnormal returns and accounting information is available for both the target and the acquirer. This information was obtained from Bureau van Dijk's Osiris database. The final sample consists of 805 domestic deals (757 completed) and 206 cross-border deals with stock price and accounting information available for both acquirers and targets. The tests of differences are based on the Kolmogorov-Smirnov nonparametric test. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A - Full Sample by Year												
<u>Year</u>	Domestic Bank Mergers & Acquisitions						Cross-Border Bank Mergers & Acquisitions					
	Total Mergers Announced	# Completed	Majority Acquisitions	Total Value (US\$M)	Mean Value (US\$M)	# reporting value	Total Mergers Announced	# Completed	Majority Acquisitions	Total Value (US\$M)	Mean Value (US\$M)	# reporting value
1995	864	597	521	\$20,927	\$118.23	177	128	92	36	\$8,132	\$203.29	40
1996	692	515	433	\$19,853	\$125.65	158	114	73	37	\$8,034	\$251.06	32
1997	675	550	478	\$26,381	\$158.92	166	154	115	64	\$11,138	\$202.51	55
1998	861	595	520	\$22,627	\$154.98	146	187	136	70	\$26,068	\$389.07	67
1999	794	541	460	\$38,384	\$255.89	150	209	148	66	\$36,122	\$539.13	67
2000	742	483	406	\$36,547	\$195.44	187	226	156	97	\$37,175	\$516.31	72
2001	594	410	336	\$27,139	\$176.23	154	162	112	71	\$16,965	\$332.66	51
2002	587	403	334	\$31,264	\$197.87	158	139	85	52	\$7,577	\$210.46	36
2003	539	405	350	\$28,626	\$156.42	183	120	81	58	\$7,594	\$189.86	40
2004	568	410	344	\$37,152	\$198.68	187	154	100	65	\$12,535	\$236.50	53
2005	568	436	377	\$41,170	\$220.16	187	185	127	85	\$23,630	\$421.96	56
2006	572	408	354	\$31,431	\$178.59	176	243	155	103	\$39,352	\$614.88	64
2007	581	361	297	\$26,732	\$169.19	158	264	170	106	\$39,121	\$477.08	82
2008	484	277	202	\$14,889	\$186.11	80	201	102	54	\$21,006	\$488.51	43
TOTAL (Mean)	9,121	6,391	5,412	\$403,122	\$178	2,267	2,486	1,652	964	\$294,447	\$362	758

Table 1. Bank acquisitions around the world. Continued.

Panel B- Sample Comparison - Completed Mergers									
	<u>Initial SDC sample</u>			<u>SDC + DataStream sample</u>			<u>Final matched sample</u>		
	Domestic	Cross-Border	t-test (Difference)	Domestic	Cross-Border	t-test (Difference)	Domestic	Cross-Border	t-test (Difference)
Mean Value (US\$ million)	\$178	\$388	5.50***	\$200	\$490	5.74***	\$364	\$892	3.62***
Total value (US\$ million)	\$403,122	\$294,447		\$296,160	\$263,350		\$115,482	\$131,150	
Total Deals Announced	9,121	2,486		3,953	1,044		805	206	
Total Deals Completed	6,391	1,652		3,587	1,012		757	206	
# reporting value	2,267	758		1,480	537		317	147	
Test of differences with original SDC sample (p-value)				0.180*** (0.000)	0.343*** (0.000)		0.315*** (0.000)	0.365*** (0.000)	
Test of differences with SDC+DataStream sample (p-value)							0.281*** (0.000)	0.274*** (0.000)	

Panel C- Descriptive Statistics by Sample									
<i>Domestic Mergers</i>									
	<u>Initial SDC sample</u>		<u>SDC + DataStream sample</u>		<u>Final matched sample</u>				
	<u>Targets</u>	<u>Acquirers</u>	<u>Targets</u>	<u>Acquirers</u>	<u>Targets</u>	<u>Acquirers</u>			
# of deals announced		9,121		3,953		805			
# of completed deals		6,391		3,587		757			
# with available information			1,156	3,659		805	805		
Assets (US\$ million at t=0)									
Mean	\$11,268	\$67,370	\$41,631	\$71,841	\$27,412	\$92,148			
Median	\$395	\$6,779	\$1,186	\$7,125	\$1,023	\$14,895			
Test of differences with original SDC sample (p-value)			0.303*** (0.000)	0.208*** (0.000)	0.433*** (0.000)	0.191*** (0.000)			
Test of differences with SDC+DataStream sample (p-value)					0.414*** (0.000)	0.171*** (0.000)			

<i>Cross-Border Mergers</i>									
	<u>Initial SDC sample</u>		<u>SDC + DataStream sample</u>		<u>Final matched sample</u>				
	<u>Targets</u>	<u>Acquirers</u>	<u>Targets</u>	<u>Acquirers</u>	<u>Targets</u>	<u>Acquirers</u>			
# of deals announced		2,486		1,044		206			
# of completed deals		1,652		1,012		206			
# with available information			300	957		206	206		
Assets (US\$ million at t=0)									
Mean	\$38,356	\$403,149	\$40,422	\$395,502	\$47,542	\$456,816			
Median	\$4,514	\$226,725	\$4,016	\$212,035	\$7,121	\$278,012			
Test of differences with original SDC sample (p-value)			0.368*** (0.000)	0.394*** (0.000)	0.282*** (0.000)	0.157*** (0.002)			
Test of differences with SDC+DataStream sample (p-value)					0.228*** (0.000)	0.150*** (0.004)			

Table 2. Domestic and cross-border bank acquisitions by country.

This table reports descriptive statistics on all completed domestic and cross-border bank acquisitions with available information on the total value of the deal. Bank acquisitions are defined as those in which the acquirer is a commercial bank, bank holding company, or credit institution, while targets may also be insurance companies, mortgage bankers, and security brokers. The deals are listed by country of origin of the target and acquirer. The data was obtained from Thomson Financial's SDC Platinum database for all acquisitions announced between 1995 and 2008. Reported values are in constant (2008) U.S. dollars. Panel B shows descriptive statistics of the acquirers and targets for the subset of deals for which financial information is available for both targets and acquirers. Financial information on targets and acquires was obtained from Bureau van Dijk's Osiris database. Tests of differences in Panel B are based on the Wilcoxon matched-pairs signed rank test.

Panel A - Bank Acquisitions by Country													
Country of Target	Cross-border deals			Domestic Deals			Country of Acquirer	Cross-border deals			Domestic Deals		
	#	Value (US\$ M)	Total Value (US\$ M)	#	Value (US\$ M)	Total Value (US\$ M)		#	Value (US\$ M)	Total Value (US\$ M)	#	Value (US\$ M)	Total Value (US\$ M)
USA	75	\$91,687	\$236,606	869	\$144,919	\$236,606	USA	38	\$29,720	\$174,640	869	\$144,919	\$174,640
UK	28	\$19,680	\$50,561	37	\$30,881	\$50,561	UK	46	\$21,435	\$52,316	37	\$30,881	\$52,316
Japan	5	\$1,977	\$29,913	98	\$27,936	\$29,913	Japan	14	\$9,826	\$37,762	98	\$27,936	\$37,762
Italy	24	\$12,113	\$28,754	78	\$16,640	\$28,754	Germany	46	\$28,193	\$37,405	9	\$9,212	\$37,405
France	15	\$5,348	\$21,422	28	\$16,074	\$21,422	France	42	\$21,175	\$37,249	28	\$16,074	\$37,249
Brazil	15	\$10,692	\$14,740	11	\$4,047	\$14,740	Spain	67	\$33,094	\$36,257	22	\$3,163	\$36,257
Turkey	15	\$12,870	\$12,927	1	\$57	\$12,927	Canada	35	\$21,272	\$26,065	23	\$4,793	\$26,065
China	22	\$11,935	\$12,247	1	\$312	\$12,247	Italy	23	\$8,926	\$25,566	78	\$16,640	\$25,566
Germany	4	\$1,399	\$10,610	9	\$9,212	\$10,610	Australia	20	\$6,283	\$14,273	41	\$7,990	\$14,273
Spain	24	\$7,393	\$10,556	22	\$3,163	\$10,556	Switzerland	13	\$12,568	\$14,227	4	\$1,660	\$14,227
Australia	10	\$1,566	\$9,556	41	\$7,990	\$9,556	China	5	\$11,528	\$11,840	1	\$312	\$11,840
Hong Kong	14	\$7,401	\$8,217	7	\$816	\$8,217	Netherlands	19	\$10,459	\$11,213	3	\$754	\$11,213
Mexico	12	\$6,652	\$7,896	6	\$1,244	\$7,896	Belgium	21	\$8,571	\$8,648	2	\$77	\$8,648
South Africa	3	\$5,669	\$7,217	7	\$1,548	\$7,217	Greece	15	\$7,040	\$8,498	11	\$1,458	\$8,498
Russia	17	\$6,427	\$6,427	0	\$0	\$6,427	Austria	8	\$7,215	\$7,760	2	\$545	\$7,760
Argentina	18	\$4,184	\$5,657	10	\$1,473	\$5,657	Singapore	13	\$3,813	\$5,150	3	\$1,337	\$5,150
Portugal	12	\$3,799	\$5,508	10	\$1,710	\$5,508	Brazil	2	\$384	\$4,432	11	\$4,047	\$4,432
Ukraine	10	\$5,320	\$5,320	0	\$0	\$5,320	Portugal	8	\$2,280	\$3,990	10	\$1,710	\$3,990
Canada	1	\$3	\$4,795	23	\$4,793	\$4,795	Malaysia	9	\$2,435	\$3,799	21	\$1,364	\$3,799
Korea	6	\$3,047	\$4,192	9	\$1,144	\$4,192	Sweden	13	\$1,530	\$3,597	10	\$2,067	\$3,597
Thailand	14	\$2,532	\$3,854	44	\$1,322	\$3,854	Ireland	9	\$3,458	\$3,486	1	\$28	\$3,486
Chile	10	\$2,721	\$3,637	8	\$916	\$3,637	Hong Kong	4	\$1,601	\$2,418	7	\$816	\$2,418
Taiwan	5	\$1,972	\$3,568	4	\$1,597	\$3,568	Kuwait	2	\$1,729	\$2,177	3	\$448	\$2,177
Greece	8	\$1,930	\$3,388	11	\$1,458	\$3,388	Denmark	3	\$127	\$1,983	7	\$1,856	\$1,983
Malaysia	3	\$1,706	\$3,069	21	\$1,364	\$3,069	Qatar	6	\$1,968	\$1,968	0	\$0	\$1,968
Rest of countries (52)	167	\$33,330	\$48,873	125	\$15,544	\$48,873	Rest of countries (36)	56	\$6,718	\$22,792	179	\$16,074	\$22,792
TOTAL (77 countries)	2	\$46	\$46	0	\$0	\$46	TOTAL (61 countries)	537	\$263,350	\$559,510	1,480	\$296,160	\$559,510

Panel B - Description of Sample - Acquirer & Target Characteristics										
	Targets				Difference (p-value)	Acquirers				Difference (p-value)
	N	Cross-Border	N	Domestic		N	Cross-Border	N	Domestic	
Total Assets (US\$ million)	206	\$7,121	757	\$1,022	(0.000)	206	\$278,012	757	\$14,895	(0.000)
ROA	196	1.55%	747	1.00%	(0.000)	203	1.00%	751	1.18%	(0.064)
ROE	197	13.56%	749	10.80%	(0.000)	205	15.80%	753	13.72%	(0.000)
NPL-to-GL	120	2.12%	592	0.88%	(0.000)	185	1.70%	684	0.75%	(0.000)

Difference Acquirer-Target (p-values)		
	Cross-Border	Domestic
Total Assets	(0.000)	(0.000)
ROA	(0.129)	(0.000)
ROE	(0.000)	(0.000)
NPL-to-GL	(0.000)	(0.043)

Table 3. Cross-border bank acquisitions as a proportion of all bank acquisitions.

The table shows results from Tobit regressions on a sample of target countries in cross-border bank acquisitions. The cross-border ratio is calculated as the total number of cross-border bank acquisitions that were completed between 1995 and 2008 in the target country, divided by the total number of all bank mergers that occurred in the target country over the same period. The independent variables include an index of official supervisory power that measures whether supervisory entities have authority to take action to prevent and correct problems; a capital stringency index measuring the stringency of capital regulation; an indicator variable equal to one if there are any restrictions on foreign ownership of domestic banks or if there are limitations on foreign bank entry and 0 otherwise; an indicator variable equal to one if the country has an explicit deposit insurance scheme and zero otherwise; an index of bank activity restrictiveness that measures regulatory impediments to banks engaging in securities, insurance, real estate activities, and the ownership of nonfinancial firms; the log of GDP per capita as of 1995; the average growth rate in real GDP; a measure of total credit provided by the banking sector as a percent of GDP; a proxy for bank concentration -the assets of the top three banks as a share of all commercial banks' assets; a common law dummy; the revised anti-director index (La Porta *et al.* 1998), the Anti-Self Dealing Index, and an index of disclosure in periodic filings from Djankov *et al.* (2008), and a governance index that is the average of all six Kauffmann *et al.* (2009) governance indicators. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Independent Variables	Dependent Variable: Cross-Border Ratio					
	(1)	(2)	(3)	(4)	(5)	(6)
Limits to Foreign Entry		-0.160*	-0.088	-0.070	-0.068	-0.113
		(-1.89)	(-1.12)	(-0.90)	(-0.91)	(-1.38)
Capital Stringency Index		-0.034*	-0.032*	-0.030*	-0.032**	-0.030*
		(-1.94)	(-1.99)	(-1.87)	(-2.09)	(-1.93)
Deposit Insurance		-0.099	-0.081	-0.096	-0.075	-0.100*
		(-1.54)	(-1.34)	(-1.62)	(-1.31)	(-1.67)
Official Supervisory Power		0.031**	0.029**	0.023*	0.026**	0.023**
		(2.60)	(2.29)	(1.78)	(2.21)	(2.09)
Restrict		-0.017	-0.004	-0.008	0.001	-0.024
		(-0.81)	(-0.24)	(-0.47)	(0.07)	(-1.25)
Governance Index	0.173**	0.148*				
	(2.10)	(1.91)				
ASDI			-0.019			
			(-0.15)			
Anti-director Index				-0.038		
				(-1.37)		
Disclosure					-0.177*	
					(-1.99)	
Common Law						-0.102
						(-1.43)
Bank Concentration		0.410**	0.105	0.097	0.120	0.702***
		(2.11)	(0.61)	(0.57)	(0.71)	(3.85)
Bank Credit/GDP	-0.003***	-0.002**	-0.002**	-0.001*	-0.001*	-0.000
	(-3.40)	(-2.09)	(-2.23)	(-1.75)	(-1.90)	(-0.16)
Log GDP per capita	-0.130***	-0.136***	-0.002	-0.006	0.013	-0.102***
	(-2.65)	(-3.01)	(-0.08)	(-0.19)	(0.41)	(-3.62)
GDP Growth	0.672	1.732	-1.147	0.235	0.109	1.018
	(0.39)	(1.13)	(-0.46)	(0.09)	(0.05)	(0.71)
Constant	1.780***	1.466***	0.569	0.720*	0.424	1.033***
	(4.46)	(2.98)	(1.49)	(1.83)	(1.12)	(2.95)
Observations	95	91	62	62	62	80
Pseudo R-squared	0.267	0.477	0.461	0.444	0.343	0.724

Table 4. The role of government regulation in cross-border bank acquisitions.

This table presents results from OLS regressions for a sample of matched country pairs (acquirers and targets). Following Rossi and Volpin (2004), the dependent variable is the number of cross-border bank acquisitions where the target is from country t and the acquirer is from country a , as a proportion of all bank mergers in the target country, t . The number of bank acquisitions is aggregated across our full sample period, 1995-2008. Independent variables are computed as the differences between the acquirer country (a) and the target country (t). These include an index of official supervisory power measuring the ability of supervisory authorities to take specific actions to correct problems; an indicator variable equal to one if there are any restrictions on foreign ownership of domestic banks or if there are limitations on foreign bank entry and 0 otherwise; an index of bank activity restrictiveness that measures regulatory impediments to banks engaging in securities, insurance, real estate activities, and the ownership of nonfinancial firms; a capital stringency index measuring the stringency of capital regulation; an indicator variable equal to one if the country has an explicit deposit insurance scheme and zero otherwise; a governance index that is the average of all six Kauffmann et al. (2009) governance indicators; the log of GDP per capita as of 1995; the average real stock market return and the average annual real bilateral U.S. dollar exchange rate return over the full sample period; binary variables indicating whether the acquirer and target country share the same language, or are from the same region; a measure of total credit provided by the banking sector as a percent of GDP; a proxy for bank concentration -the assets of the top three banks as a share of all commercial banks' assets; the revised anti-director index (La Porta *et al.* 1998), the Anti-Self Dealing Index, and an index of disclosure in periodic filings from Djankov et al. (2008); Target country fixed effects (not shown) are included in all regressions. All bank regulatory variables were obtained from Barth et al. (2006). Robust t-statistics are shown in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Independent Variables	Dependent Variable: Cross-Border Deals _{a,t}			
	(1)	(2)	(3)	(4)
$\Delta(\text{Limits on Foreign Bank Entry})_{a,t}$	0.004*** (3.68)	0.004*** (3.37)	0.003*** (2.79)	0.004*** (3.28)
$\Delta(\text{Capital Stringency Index})_{a,t}$	0.001 (0.81)	0.001 (0.67)	0.002 (0.52)	0.001 (0.69)
$\Delta(\text{Deposit Insurance})_{a,t}$	0.003** (2.04)	0.003** (2.03)	0.004** (2.40)	0.003* (1.92)
$\Delta(\text{Official Supervisory Power})_{a,t}$	-0.001*** (-3.09)	-0.001*** (-3.75)	-0.001*** (-3.54)	-0.001*** (-3.77)
$\Delta(\text{Restrict})_{a,t}$	-0.001*** (-2.82)	-0.001 (-1.63)	-0.001* (-1.69)	-0.001 (-1.53)
$\Delta(\text{Governance Index})_{a,t}$	-0.001 (-0.46)			
$\Delta(\text{ASDI})_{a,t}$		0.001 (0.25)		
$\Delta(\text{Anti-director Index})_{a,t}$			0.001* (1.76)	
$\Delta(\text{Disclosure})_{a,t}$				0.001 (0.53)
$\Delta\text{GDP per capita}_{a,t}$	0.002*** (3.32)	0.002*** (3.28)	0.002*** (3.82)	0.002*** (3.31)
$\Delta(\text{Real Stock Market Return})_{a,t}$	-0.005 (-1.32)	-0.000 (-0.08)	-0.003 (-0.63)	-0.001 (-0.21)
$\Delta(\text{Real Exchange Rate Return})_{a,t}$	-0.010 (-0.89)	-0.014* (-1.70)	-0.018** (-2.14)	-0.016* (-1.75)
$\Delta(\text{Bank Credit/GDP})_{a,t}$	0.003*** (3.67)	0.004*** (3.37)	0.003** (2.47)	0.004*** (3.72)
$\Delta(\text{Bank Concentration})_{a,t}$	-0.008*** (-2.63)	-0.008*** (-2.65)	-0.008*** (-2.73)	-0.008*** (-2.67)
Same language	0.009* (1.78)	0.009* (1.80)	0.009* (1.81)	0.009* (1.79)
Same region	0.007*** (3.33)	0.006*** (3.15)	0.006*** (3.11)	0.006*** (3.16)
Constant	0.005*** (7.78)	0.006*** (8.01)	0.006*** (8.07)	0.006*** (8.05)
Observations	1,560	1,482	1,482	1,482
R-squared	0.065	0.070	0.072	0.070
Year Fixed Effects	Yes	Yes	Yes	Yes
Target Country Fixed Effects	Yes	Yes	Yes	Yes

Table 5. Cumulative buy and hold abnormal returns for targets and acquirers.

The table shows descriptive statistics of buy and hold cumulative abnormal returns (BHCARs) for targets and acquirers in domestic and cross-border (CB) deals announced between 1995 and 2008. To compute abnormal returns, we estimate the following market model for each target (acquirer):

$$R_{ijt} = \alpha_i + \beta_i^w R_{wt} + \varepsilon_i; \quad t = -260, \dots, -21$$

where R_{ijt} refers to the daily stock return for target (acquirer) i in country j ; R_{wt} is the world market index, and the residual ε_i is the excess return for each bank. All returns for international banks are obtained from DataStream, while the returns for U.S. institutions are obtained from CRSP. Abnormal returns are accumulated over five event windows: (-20, -3), (-1, +1), (-2, +2), (0, +10), and (0, +100), as follows:

$$BHCAR_i^{(T_1, T_2)} = \prod_{t=T_1}^{t=T_2} (1 + \hat{\varepsilon}_{it}) - 1$$

where BHCAR in period (T1, T2) is the buy and hold cumulative abnormal return. Panel A (B) shows descriptive statistics for buy and hold cumulative abnormal returns for targets (acquirers) in domestic and cross-border M and A deals. The t-statistics (Wilcoxon Z-statistics) for differences in mean (median) BHCARs between domestic and cross-border deals are shown in the last column of each panel. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A- Cumulative Abnormal Returns for Targets in Domestic & Cross-Border Bank Mergers									
CAR Window	CAR _{DOMESTIC}				CAR _{CROSS-BORDER}				t-stat/ [Z-statistic]
	Mean/(tstat)	Median	Maximum	Minimum	Mean/(tstat)	Median	Maximum	Minimum	Domestic vs. CB
(-20, -3)	0.0331*** (8.06)	0.016	1.167	-0.697	0.0152* (1.85)	0.003	0.763	-0.379	1.95* [2.25**]
(-1,+1)	0.1120*** (21.03)	0.067	1.873	-0.357	0.0242*** (4.94)	0.013	0.370	-0.225	12.14*** [8.83***]
(-2,+2)	0.1221*** (21.32)	0.077	2.188	-0.524	0.0329*** (5.82)	0.015	0.544	-0.246	11.10*** [8.25***]
(0,+10)	0.0372*** (9.37)	0.007	0.946	-0.364	0.0023 (0.36)	0.003	0.403	-0.411	4.63*** [3.00***]
(0,+100)	0.0204*** (2.86)	0.004	1.967	-0.947	0.0027 (0.18)	-0.012	1.524	-0.884	1.07 [1.23]
# of deals:	1,158				300				

Table 5. Cumulative buy and hold abnormal returns for targets and acquirers. Continued.

Panel B - Cumulative Abnormal Returns for Acquirers in Domestic & Cross-Border Bank Mergers									
CAR Window	CAR_{DOMESTIC}				CAR_{CROSS-BORDER}				t-stat/ [Z-statistic]
	Mean/(tstat)	Median	Maximum	Minimum	Mean/(tstat)	Median	Maximum	Minimum	Domestic vs. CB
(-20, -3)	0.0013 (0.82)	-0.005	2.117	-0.397	-0.0033 (-1.28)	-0.003	0.678	-0.365	1.52 [0.25]
(-1,+1)	-0.0008 (-1.04)	-0.003	0.323	-0.241	0.0012 (0.97)	0.000	0.256	-0.199	-1.37 [2.64***]
(-2,+2)	-0.0012 (-1.30)	-0.003	0.430	-0.314	0.0009 (0.59)	-0.002	0.436	-0.219	-1.19 [1.96*]
(0,+10)	-0.0022* (-1.87)	-0.004	0.697	-0.266	0.0023 (1.11)	-0.005	0.544	-0.462	-1.89* [2.06**]
(0,+100)	-0.0242*** (-6.81)	-0.032	1.404	-1.025	0.0285*** (5.09)	-0.032	0.936	-0.711	-7.95*** [5.91***]
# of deals:	3,659				957				

Table 6. Panel regressions of cumulative buy and hold abnormal returns.

The table shows results from OLS regressions of buy and hold cumulative abnormal returns for targets and acquirers in domestic and cross-border bank acquisitions over the period 1995-2008. The dependent variable represents cumulative buy and hold abnormal returns (BHCAR) for targets over the period $t=-2$ to $t=+2$ around the announcement day. BHCARs are estimated from the following market model:

$$R_{ijt} = \alpha_i + \beta_i^w R_{wt} + \varepsilon_i; \quad t = -260, \dots, -21$$

where R_{ijt} refers to the daily stock return for target (acquirer) i in country j and R_{wt} is the world market index. All returns for international banks are obtained from DataStream, while the returns for U.S. institutions are obtained from CRSP. The independent variables are calculated as differences between acquirers and targets. These include an index of official supervisory power measuring the ability of supervisory authorities to take specific actions to correct problems; an indicator variable equal to one if there are any restrictions on foreign ownership of domestic banks or if there are limitations on foreign bank entry and 0 otherwise; an index of bank activity restrictiveness that measures regulatory impediments to banks engaging in securities, insurance, real estate activities, and the ownership of nonfinancial firms; a capital stringency index measuring the stringency of capital regulation; an indicator variable equal to one if the country has an explicit deposit insurance scheme and zero otherwise; a governance index that is the average of all six Kauffmann et al. (2009) governance indicators; the log of GDP per capita as of 1995; the annual real stock market return; the annual real bilateral U.S. dollar exchange rate return; binary variables indicating whether the acquirer and target country share the same language, or are from the same region; a measure of total credit provided by the banking sector as a percent of GDP; a proxy for bank concentration -the assets of the top three banks as a share of all commercial banks' assets; the revised anti-director index (La Porta *et al.* 1998), the Anti-Self Dealing Index, and an index of disclosure in periodic filings from Djankov et al. (2008). Bank level controls include the difference in size (log assets) and return on assets between acquirer and target measured as of the year-end prior to the acquisition. The bank level controls are obtained from Bureau van Dijk's Osiris database. Year and target country fixed effects are included in all regressions. In Panel A we report results using the target's BHCARs as the dependent variable. In Panel B we report results using the cumulative BHCARs for targets and acquirers as the dependent variable. Economic significance is measured in units of standard deviations of the dependent variable per one standard deviation change in the independent variable. The reported economic significance represents the average of all models where the coefficient is significant. Robust t-statistics are shown in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 6. Panel regressions of cumulative buy and hold abnormal returns. Continued.

Panel A - Full Sample Period (1995-2008) - Target CARs						
	Economic	Dependent Variable: Targets' BHCARs (-2, +2)				
	Significance	(1)	(2)	(3)	(4)	(5)
Cross-Border		-0.0150 (-0.91)	-0.0145 (-0.86)	-0.0158 (-0.93)	-0.0184 (-1.19)	-0.0101 (-0.69)
$\Delta(\text{Limits on Foreign Bank Entry})_{a-t}$	8%	0.0674** (2.51)	0.0674** (2.13)	0.0619** (2.24)	0.0519* (1.74)	0.0819** (2.17)
$\Delta(\text{Capital Stringency Index})_{a-t}$	6%	0.0093*** (3.61)	0.0096** (2.63)	0.0089*** (2.75)	0.0069** (2.24)	0.0098** (2.29)
$\Delta(\text{Deposit Insurance})_{a-t}$	12%	0.0889** (2.68)	0.0953** (2.18)	0.0852** (2.68)	0.0739** (2.23)	0.1140** (2.43)
$\Delta(\text{Official Supervisory Power})_{a-t}$		0.0052 (1.32)	0.0037 (0.62)	0.0050 (1.38)	0.0069 (1.68)	0.0026 (0.44)
$\Delta(\text{Restrict})_{a-t}$		-0.0006 (-0.11)	0.0001 (0.01)	-0.0008 (-0.10)	0.0004 (0.07)	0.0046 (0.58)
$\Delta(\text{Governance Index})_{a-t}$		-0.0158 (-0.36)				-0.0269 (-0.58)
$\Delta(\text{ASDI})_{a-t}$			0.0204 (0.36)			0.1521 (1.21)
$\Delta(\text{Anti-director Index})_{a-t}$				-0.0006 (-0.04)		-0.0081 (-0.48)
$\Delta(\text{Disclosure})_{a-t}$	-11%				-0.0366 (-1.23)	-0.1243* (-1.79)
$\Delta\text{GDP per capita}_{a-t}$	19%	0.0506 (1.63)	0.0458** (2.43)	0.0433** (2.06)	0.0420** (2.42)	0.0559* (1.81)
$\Delta(\text{Real Stock Market Return})_{a-t}$		-0.0717 (-0.52)	-0.0725 (-0.54)	-0.0707 (-0.60)	-0.0458 (-0.32)	0.0521 (0.52)
$\Delta(\text{Real Exchange Rate Return})_{a-t}$	10%	0.2592 (1.16)	0.1755 (0.70)	0.2163 (1.23)	0.3572 (1.51)	0.5733** (2.05)
$\Delta(\text{Bank Credit/GDP})_{a-t}$		-0.0408 (-1.42)	-0.0416 (-1.38)	-0.0409 (-1.14)	-0.0439 (-1.44)	-0.0366 (-1.17)
$\Delta(\text{Bank Concentration})_{a-t}$	-5%	-0.0524 (-1.18)	-0.0600 (-1.33)	-0.0659 (-1.68)	-0.0882** (-2.09)	-0.0753* (-1.77)
Same language		-0.0151 (-0.78)	-0.0138 (-0.69)	-0.0152 (-0.77)	-0.0160 (-0.90)	-0.0061 (-0.39)
Same region		0.0139 (0.69)	0.0130 (0.66)	0.0125 (0.64)	0.0093 (0.51)	0.0086 (0.48)
$\Delta(\text{Asset size})_{a-t}$	-6%	-0.0318* (-1.78)	-0.0323* (-1.75)	-0.0321* (-1.77)	-0.0328* (-1.76)	-0.0338* (-1.89)
$\Delta(\text{ROA})_{a-t}$		0.0475 (0.41)	0.0487 (0.41)	0.0489 (0.41)	0.0435 (0.36)	0.0299 (0.27)
Constant		0.0389 (0.58)	0.0784** (2.34)	-0.1743** (-2.69)	-0.1550** (-2.43)	0.0729 (1.24)
Observations		1051	1050	1051	1051	1050
R-squared		0.218	0.218	0.218	0.218	0.219
Year Fixed Effects		Yes	Yes	Yes	Yes	Yes
Target Country Fixed Effects		Yes	Yes	Yes	Yes	Yes

Table 6. Panel regressions of cumulative buy and hold abnormal returns. Continued.

Panel B - Full Sample Period (1995-2008) - Aggregate CARs						
	Economic	Dependent Variable: Aggregate BHCARs (-2, +2)				
	Significance	(1)	(2)	(3)	(4)	(5)
Cross-Border		-0.0083 (-0.34)	-0.0113 (-0.50)	-0.0071 (-0.29)	-0.0187 (-0.95)	-0.0041 (-0.20)
$\Delta(\text{Limits on Foreign Bank Entry})_{a-t}$	8%	0.0752** (2.04)	0.0629 (1.33)	0.0706* (1.84)	0.0400 (0.93)	0.0821 (1.45)
$\Delta(\text{Capital Stringency Index})_{a-t}$	6%	0.0099** (2.08)	0.0086 (1.49)	0.0105* (2.00)	0.0043 (0.80)	0.0103 (1.58)
$\Delta(\text{Deposit Insurance})_{a-t}$	9%	0.0841* (1.89)	0.0700 (1.15)	0.0724 (1.58)	0.0420 (0.81)	0.0898 (1.42)
$\Delta(\text{Official Supervisory Power})_{a-t}$	6%	0.0043 (0.83)	0.0058 (0.77)	0.0050 (0.89)	0.0101** (2.09)	0.0035 (0.57)
$\Delta(\text{Restrict})_{a-t}$		-0.0023 (-0.34)	-0.0030 (-0.43)	-0.0051 (-0.53)	-0.0001 (-0.01)	0.0043 (0.56)
$\Delta(\text{Governance Index})_{a-t}$		-0.0201 (-0.41)				-0.0403 (-0.89)
$\Delta(\text{ASDI})_{a-t}$	15%		-0.0216 (-0.27)			0.2491** (2.26)
$\Delta(\text{Anti-director Index})_{a-t}$				-0.0084 (-0.44)		-0.0229 (-1.19)
$\Delta(\text{Disclosure})_{a-t}$	-21%				-0.1015 (-1.58)	-0.2474*** (-3.37)
$\Delta\text{GDP per capita}_{a-t}$	18%	0.0630* (1.92)	0.0515*** (2.80)	0.0452* (1.76)	0.0461** (2.61)	0.0539** (2.16)
$\Delta(\text{Real Stock Market Return})_{a-t}$		-0.1504 (-0.75)	-0.1449 (-0.73)	-0.1096 (-0.63)	-0.0489 (-0.23)	0.1775 (1.25)
$\Delta(\text{Real Exchange Rate Return})_{a-t}$	11%	-0.1315 (-0.31)	-0.1042 (-0.24)	-0.0768 (-0.19)	0.3339 (0.79)	0.7251** (2.21)
$\Delta(\text{Bank Credit/GDP})_{a-t}$		-0.0182 (-0.56)	-0.0200 (-0.58)	-0.0098 (-0.24)	-0.0257 (-0.79)	-0.0006 (-0.02)
$\Delta(\text{Bank Concentration})_{a-t}$		0.0202 (0.23)	-0.0091 (-0.09)	-0.0045 (-0.05)	-0.0762 (-0.93)	-0.0595 (-0.73)
Same language		0.0043 (0.17)	0.0019 (0.08)	0.0038 (0.15)	-0.0018 (-0.10)	0.0118 (0.70)
Same region		0.0135 (0.48)	0.0114 (0.40)	0.0129 (0.48)	0.0042 (0.18)	0.0019 (0.09)
$\Delta(\text{Asset size})_{a-t}$	-8%	-0.0381 (-1.54)	-0.0384 (-1.51)	-0.0378 (-1.52)	-0.0406 (-1.62)	-0.0424* (-1.73)
$\Delta(\text{ROA})_{a-t}$		-0.0065 (-0.05)	-0.0077 (-0.06)	-0.0069 (-0.05)	-0.0246 (-0.17)	-0.0415 (-0.30)
Constant		0.0816 (1.16)	0.0643 (1.67)	0.0671 (1.62)	0.0397 (0.99)	0.1242* (1.86)
Observations		927	926	927	927	926
R-squared		0.162	0.161	0.162	0.163	0.165
Year Fixed Effects		Yes	Yes	Yes	Yes	Yes
Target Country Fixed Effects		Yes	Yes	Yes	Yes	Yes

Table 7. Post-acquisition bank performance.

The table shows results from OLS regressions of changes in bank performance measures. In Panel A, the dependent variable is the change in the return on average assets during the three years before and after the acquisition. Panel B shows results using other measures of profitability (return on equity), operational efficiency (net interest margin and cost-to-income), and asset quality (non-performing loans-to-gross loan and loan loss reserves to non-performing loans). In Panel C, the dependent variables are changes in three measures of bank risk: the Z-score (ratio of the bank's return on assets plus the capital to assets ratio divided by the standard deviation of asset returns over the three years before and after the acquisition); earnings volatility (average standard deviation of earnings before taxes and loan loss provisions to average total assets), and equity volatility – the volatility of banks' returns computed from weekly data. Independent variables include an indicator variable for cross-border acquisitions; an index of official supervisory power measuring the ability of supervisory authorities to take specific actions to correct problems; an indicator variable equal to one if there are any restrictions on foreign ownership of domestic banks or if there are limitations on foreign bank entry and 0 otherwise; an index of bank activity restrictiveness that measures regulatory impediments to banks engaging in securities, insurance, real estate activities, and the ownership of nonfinancial firms; a capital stringency index measuring the stringency of capital regulation; an indicator variable equal to one if the country has an explicit deposit insurance scheme; a governance index that is the average of all six Kauffmann et al. (2009) governance indicators; the log of GDP per capita as of 1995; the average annual real stock market return; the average annual real bilateral US dollar exchange rate return; binary variables indicating whether the acquirer and target country share the same language, or are from the same region; a measure of total credit provided by the banking sector as a percent of GDP; a proxy for bank concentration -the assets of the top three banks as a share of all commercial banks' assets; the revised anti-director index (La Porta *et al.* 1998), the Anti-Self Dealing Index, and an index of disclosure in periodic filings from Djankov et al. (2008) The bank regulatory variables are measured as differences between the acquirer and target country. Bank controls include differences in size (log of assets) and profitability (ROA) between the acquirer and target. Economic significance is measured in units of standard deviations of the dependent variable per one standard deviation change in the independent variable. The reported economic significance represents the average of all models where the coefficient is significant. Robust t-statistics are shown in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 7. Post-acquisition bank performance. Continued.

Panel A - Changes in Profitability						
VARIABLES	Economic Significance	Dependent Variable: $\Delta ROAA_{target}$				
		(1)	(2)	(3)	(4)	(5)
Cross-Border		-0.003 (-0.64)	-0.008 (-1.38)	-0.007 (-1.28)	-0.008 (-1.37)	-0.009 (-1.20)
$\Delta(\text{Limits on Foreign Bank Entry})_{a-t}$		-0.001 (-0.09)	0.002 (0.29)	0.002 (0.22)	0.003 (0.47)	0.001 (0.15)
$\Delta(\text{Capital Stringency Index})_{a-t}$	5%	0.001 (1.14)	0.001 (0.92)	0.001* (1.93)	0.001 (0.91)	0.001 (1.47)
$\Delta(\text{Deposit Insurance})_{a-t}$	17%	0.015** (2.24)	0.018** (2.23)	0.018* (2.03)	0.021*** (2.78)	0.019** (2.27)
$\Delta(\text{Official Supervisory Power})_{a-t}$		-0.000 (-0.31)	-0.000 (-0.40)	-0.000 (-0.71)	-0.000 (-0.53)	-0.000 (-0.61)
$\Delta(\text{Restrict})_{a-t}$		-0.000 (-0.20)	0.000 (0.12)	-0.000 (-0.20)	0.001 (0.78)	0.000 (0.13)
$\Delta(\text{Governance Index})_{a-t}$		0.003 (0.43)				-0.006 (-0.54)
$\Delta(\text{ASDI})_{a-t}$			-0.007 (-0.78)			0.005 (0.38)
$\Delta(\text{Anti-director Index})_{a-t}$				-0.002 (-1.15)		-0.001 (-0.64)
$\Delta(\text{Disclosure})_{a-t}$					-0.007 (-1.03)	-0.006 (-0.81)
$\Delta\text{GDP per capita}_{a-t}$		0.000 (0.17)	0.004 (0.94)	0.002 (0.43)	0.004 (1.22)	0.004 (0.85)
$\Delta(\text{Real Stock Market Return})_{a-t}$		0.004 (0.23)				
$\Delta(\text{Real Exchange Rate Return})_{a-t}$		0.023 (0.29)	0.058 (1.30)	0.061 (1.25)	0.068 (1.39)	0.092 (1.31)
$\Delta(\text{Bank Credit/GDP})_{a-t}$		-0.412 (-0.59)	-0.763 (-1.24)	-0.584 (-0.89)	-0.839 (-1.42)	-0.517 (-0.67)
$\Delta(\text{Bank Concentration})_{a-t}$		0.004 (0.31)	0.001 (0.09)	0.000 (0.04)	0.002 (0.20)	0.007 (0.39)
Same language		-0.004 (-0.46)	-0.004 (-0.73)	-0.004 (-0.75)	-0.003 (-0.61)	-0.006 (-0.73)
Same region		0.002 (0.33)	-0.004 (-0.64)	-0.004 (-0.55)	-0.006 (-0.83)	-0.005 (-0.70)
$\Delta(\text{Asset size})_{a-t}$		0.000 (0.24)	0.000 (0.09)	0.000 (0.08)	0.000 (0.10)	0.000 (0.13)
$\Delta(\text{ROA})_{a-t}$		0.349 (0.86)	0.276 (0.72)	0.279 (0.73)	0.279 (0.73)	0.294 (0.73)
Constant		0.001 (0.07)	0.007 (0.87)	0.006 (0.81)	0.008 (0.91)	0.009 (0.91)
Observations		123	126	126	126	126
R-squared		0.037	0.033	0.034	0.034	0.035

Table 7. Post-acquisition bank performance. Continued.

Panel B - Other Performance Measures					
VARIABLES	Dependent Variable:				
	ΔROAE	ΔNIM	ΔCost-to-Income	ΔNPL-to-GL	ΔLLR-to-NPL
	(1)	(2)	(3)	(4)	(5)
Cross-Border	-0.141** (-2.16)	0.004 (0.39)	0.196** (2.22)	-0.043** (-2.50)	0.256 (0.86)
Δ(Limits on Foreign Bank Entry) _{a-t}	0.048 (0.70)	-0.009 (-1.32)	-0.063 (-0.72)	-0.004 (-0.28)	-2.101*** (-5.20)
Δ(Capital Stringency Index) _{a-t}	0.004 (0.47)	0.002* (1.95)	-0.005 (-0.72)	-0.001 (-0.66)	-0.045* (-1.88)
Δ(Deposit Insurance) _{a-t}	0.206*** (2.83)	-0.008 (-0.96)	-0.189** (-2.18)	-0.015 (-1.35)	-1.181*** (-3.03)
Δ(Official Supervisory Power) _{a-t}	-0.009 (-1.15)	0.001 (1.13)	0.006 (0.87)	0.001 (0.43)	0.021 (0.81)
Δ(Restrict) _{a-t}	0.004 (0.26)	-0.004*** (-2.91)	0.007 (0.60)	-0.005* (-1.77)	-0.133* (-1.81)
Δ(Governance Index) _{a-t}	0.090 (1.61)	0.008 (1.61)	0.087 (1.10)	-0.044*** (-3.73)	-0.451 (-1.35)
ΔGDP per capita _{a-t}	0.012 (0.45)	-0.003 (-0.63)	-0.124** (-2.66)	-0.005 (-1.04)	-0.621*** (-3.33)
Δ(Real Stock Market Return) _{a-t}	-0.304** (-2.64)	-0.112 (-1.69)	-0.036 (-0.27)	-0.078*** (-4.02)	4.022*** (8.35)
Δ(Real Exchange Rate Return) _{a-t}	-1.081** (-2.50)	-0.010 (-0.17)	-0.224 (-0.45)	-0.023 (-0.23)	14.285*** (6.94)
Δ(Bank Credit/GDP) _{a-t}	-5.442 (-0.94)	-0.519 (-0.65)	9.385 (1.34)	4.223** (2.28)	57.371 (1.62)
Δ(Bank Concentration) _{a-t}	0.066 (0.53)	-0.026 (-1.57)	0.010 (0.07)	0.076** (2.74)	0.824 (1.24)
Same language	-0.058 (-0.93)	0.008 (0.89)	0.117 (1.59)	-0.045*** (-3.42)	-0.365 (-1.08)
Same region	-0.064 (-1.01)	0.020 (1.65)	0.028 (0.46)	-0.029*** (-3.87)	0.815*** (3.73)
Δ(Asset size) _{a-t}	-0.003 (-0.26)	-0.000 (-0.48)	-0.003 (-0.92)	0.001 (0.67)	0.019 (1.24)
Δ(ROA) _{a-t}	0.922 (1.01)	-0.030 (-0.23)	0.193 (0.12)	-0.380 (-1.27)	12.060** (2.36)
Constant	0.193 (1.55)	-0.029 (-1.48)	-0.212 (-1.61)	0.060** (2.30)	-0.411 (-1.12)
Observations	123	120	122	94	91
R-squared	0.114	0.484	0.080	0.086	0.226

Table 7. Post-acquisition bank performance. Continued.

Panel C - Risk Measures							
Economic Significance	Dependent Variable:						
	ΔZ -score (1)	ΔZ -score (2)	ΔZ -score (3)	ΔZ -score (4)	ΔZ -score (5)	Δ Earning Volatility (6)	Δ Equity Volatility (7)
Cross-Border	0.414 (1.14)	0.134 (0.29)	0.532 (1.29)	0.240 (0.58)	0.414 (1.15)	-0.006 (-0.44)	-0.377 (-1.57)
Δ (Limits on Foreign Bank Entry) _{a-t}	0.614 (1.05)	0.564 (0.73)	0.720 (1.13)	0.806 (1.19)	0.393 (0.66)	0.005 (0.49)	-0.178** (-2.09)
Δ (Capital Stringency Index) _{a-t}	13% 0.050 (0.86)	0.004 (0.05)	0.118* (1.91)	0.021 (0.29)	0.042 (0.57)	0.001 (0.99)	-0.007 (-0.44)
Δ (Deposit Insurance) _{a-t}	1.188 (1.57)	0.621 (0.71)	0.463 (0.63)	1.253 (1.65)	0.476 (0.73)	-0.006 (-0.52)	-0.064 (-1.28)
Δ (Official Supervisory Power) _{a-t}	-0.081 (-1.29)	0.018 (0.24)	-0.031 (-0.59)	-0.029 (-0.34)	0.018 (0.24)	0.001 (0.41)	-0.021*** (-2.81)
Δ (Restrict) _{a-t}	0.080 (0.63)	-0.013 (-0.11)	-0.115 (-0.98)	0.134 (1.40)	0.032 (0.26)	-0.001 (-0.35)	-0.023** (-2.37)
Δ (Governance Index) _{a-t}	52% 0.808 (1.24)				1.168** (2.47)	-0.010 (-1.34)	-0.261*** (-6.61)
Δ (ASDI) _{a-t}	-24%	-1.760** (-2.44)			-0.673 (-0.85)	0.003 (0.23)	-0.255 (-1.68)
Δ (Anti-director Index) _{a-t}	-25%		-0.368*** (-3.26)		-0.312** (-2.75)	-0.002 (-0.55)	-0.021 (-0.64)
Δ (Disclosure) _{a-t}				-1.143 (-1.56)	-0.722 (-1.04)	0.001 (0.10)	0.153 (1.22)
Δ GDP per capita _{a-t}	32% 0.301 (1.03)	0.590** (2.15)	0.199 (0.70)	0.693*** (2.82)	0.070 (0.31)	0.003 (0.59)	0.120*** (3.84)
Δ (Real Stock Market Return) _{a-t}	-0.042 (-0.02)	0.324 (0.23)	0.231 (0.13)	0.900 (0.61)	0.331 (0.27)	-0.023 (-1.17)	-0.260 (-0.57)
Δ (Real Exchange Rate Return) _{a-t}	-4.939 (-1.48)	1.837 (0.66)	1.189 (0.49)	2.645 (0.72)	-0.661 (-0.18)	-0.010 (-0.15)	-0.002 (-0.00)
Δ (Bank Credit/GDP) _{a-t}	-31.422 (-0.63)	-21.651 (-0.46)	19.414 (0.41)	-27.209 (-0.59)	-27.377 (-0.56)	0.253 (0.38)	-0.295 (-0.08)
Δ (Bank Concentration) _{a-t}	-16% -0.380 (-0.37)	-0.191 (-0.22)	-0.384 (-0.52)	0.128 (0.14)	-1.479* (-1.74)	0.009 (0.55)	0.219 (1.00)
Same language	25% 0.624 (1.49)	0.517 (1.24)	0.663 (1.58)	0.693* (2.02)	0.802** (2.19)	0.010 (1.45)	-0.089 (-1.06)
Same region	0.006 (0.01)	-0.102 (-0.24)	0.095 (0.23)	-0.179 (-0.47)	-0.230 (-0.66)	0.003 (0.57)	-0.052 (-0.90)
Δ (Asset size) _{a-t}	0.038 (0.78)	0.050 (1.04)	0.060 (1.29)	0.042 (0.86)	0.066 (1.43)	0.002 (0.99)	0.020 (0.91)
Δ (ROA) _{a-t}	-1.738 (-1.52)	-1.582 (-1.35)	-1.465 (-1.23)	-1.578 (-1.25)	-1.516 (-1.37)	-0.009 (-0.26)	0.757 (1.28)
Constant	-0.695 (-1.10)	-0.492 (-0.69)	-0.846 (-1.36)	-0.583 (-0.91)	-0.668 (-1.23)	-0.008 (-0.68)	0.258 (0.98)
Observations	102	102	102	102	102	102	68
R-squared	0.108	0.122	0.130	0.116	0.155	0.024	0.021

Figure 1. Bank acquisitions around the world over time.

The figure shows the total value (in constant U.S. \$ million) of completed domestic and cross-border bank acquisitions around the world from 1995-2008.

