Financial Deepening, Banking Stability and Cross-border M&A Activity - Evidences from Emerging Countries

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Abstract: This study investigates the effect of financial deepening, banking stability and market structure on cross-border M&A activity in 13 emerging countries with data covering the period, 2003-2010. We show the empirical results of panel regression by sub grouping portfolio based on whether the firms are acquirer or target to cross-border M&A activity. For acquiring countries, the results show a significantly positive effect of the deepening indicator in cross-border M&A activity. Moreover, bank stability on the acquiring firms investing in the cross-border M&As shows a significantly positive effect. For targeting countries, the results show a significantly positive impact of the deepening indicator in cross-border M&A activity. A positive relation between the ratio of the amount of credit provided by banks and other financial institutions to the private sector to GDP in cross-border M&A activity is found as well. These findings imply that not only financial depth but also banking stability promotes cross-border M&A activity for emerging economies.

Keywords: Foreign direct investment, Financial deepening, Banking stability, Mergers and acquisitions, Cross-border M&As

1. Introduction

For a multinational corporation, there are different modes of foreign direct investment (FDI). It can choose “Greenfield” investment, i.e., invest in new assets or firm in the host country from scratch; or, it can choose merger or acquisition of a local pre-existing firm (mergers and acquisitions, M&A). Since 1990s, there has been merger wave and has become important part of foreign direct investment globally. Calculating from the Securities Data Corporation (SDC) Mergers and Acquisitions database, Table 1 captures the M&A activity around the world and shows that in 2003 the value of completed M&A deals was US$ 1.32 trillion, US$ 2.6 trillion in year 2005, and US$ 3.9 trillion in year 2007 right before subprime crisis hit the global economy in 2007-2008. In 2003, the value of cross-border M&A deals was about US$ 325 billion, with 24.6% of the total value of M&As. In 2005, cross-border M&A deals value was increased to US$ 882 billion (34% of the total value of M&A deals), and reached to the highest US$1.7 trillion in 2007 (43% of the total value of M&A deals). According to the data from United Nations Conference on Trade and Development (UNCTAD, 2012), cross-border M&As constitute a quite large portion of global
FDI flows. In 2007, it reached the highest share with about 80% in the years of merger waves. Even after the 2007-2008 financial crisis, the ratio of cross-border M&As and global FDI flows was reaching about 60% though in the year of 2011.

In traditional literature wisdom, financial development plays a key role in our understanding of sustainable economic development. More deep financial market mainly measured by liquidity could provide firms necessary capital to invest. To a large extent, it supports the view that the development in financial sectors, both of financial institution and financial market, which enhances the investment activity and leads to sustainable development of the whole economy. Thus it implies that the financial market deepening should be encouraged. However, the 2007-2008 financial crises raise the question: whether the financial deepening helps the development of the economy? The cross-border M&A activity, one of the mechanisms that enhance economic growth, needs financial source from the financial market. Therefore the stability of the financial system with respect to banking sector remains one of important issues. This study illustrates how the financial depth and banking stability might provide further insight into the cross-border M&A activity for the emerging countries. We contribute to the existing literature by investigating whether the increase of financial deepening affect flows of cross-border M&As. The structure of the paper is organized as follows. Section 1 reviews the literature regarding financial deepening and mergers and acquisitions. Section 2 describes the data and depicts the empirical methodology. Section 3 reports econometric results. Section 4 provides some preliminary conclusions and outlines directions for future research.

2. Literature Review

In the relative financial deepening literature, Beck & Demirguc-Kunt (2006, 2009, 2010) introduce the updated version of the Financial Development and structure Database and depict trends in development of financial markets and financial institutions across countries. They show that financial systems across the world deepened over the past decades with much of the deepening, concentrated in high-income countries though. This financial deepening has taken place as much as in stock market, bond market, and in banking as well. The Financial Development and Structure Database collects many indicators covering several categories: indicators of the size of the financial system, the banking system - size, structure, efficiency and stability, indicators of capital markets and insurance sector, indicators of financial globalization, and indicators of financial structure. Klein & Olivei (2008) examine the impact of the capital account liberalization on financial deepening and economic growth, and they find developed countries which chose opening capital accounts had greater increase in financial deepening and greater economic growth for over the periods 1986-1995 and 1976-1995.

In the M&A literature, Harford (2005) uses a sample of industry-lever merger waves in the 1980s and 1990s and compares directly two general classes of viewpoints, the neoclassical model and the behavioral
model, in explaining what causes merger waves. Neoclassical hypothesis of M&A waves argue that mergers waves result from economic disturbance, such as technological or industrial change, that leads to industry reorganization and assets reallocation (see, for example, Mitchell & Mulherin, 1996; Jovanovic & Rousseau, 2002; Jovanovic & Rousseau, 2008). Meanwhile, behavioral explanations of M&A waves argue that M&A merger waves are driven mostly by stock market valuations. When managers use timing of market overvaluations of their stock to buy the lower-values firms leads the merger waves (see, for example, Shleifer & Vishny, 2003; Rhodes-Kropf & Viswanathan, 2004; Rhodes-Kropf et al., 2005; Ang & Cheng, 2006; Bouwman et al., 2009). Harford (2005) modifies the neoclassical model with considering a role for capital liquidity, in which this macro-level capital liquidity offering relative low transaction costs to support a large volume of M&A activity. The empirical findings in Harford paper support the neoclassical viewpoints, namely, causes of industry merger waves are economic, technological, or regulatory, rather than market-timing.

Alexandridis et al. (2011) depict the sixth merger wave that started in 2003 and came to an end about in mid-2007 by using the U.S. sample. During the sixth merger wave, their empirical results show that acquirers continue to realize significant losses around announcements with cash financed deals no longer create value for acquiring firm shareholdes, and stock-swap deals continue to result in extensive losses. They also find that acquirers are less overvalued relative to the 1990s, with more cash financing rather than equity financing. Thus, they support the drivers of the sixth merger wave are more consistent with neoclassical explanations of merger waves. That is, low financing rate and plenty cash balances result in sufficient capital liquidity to back up the booming period. By examining merger patterns for both listed and unlisted firms in the United Kingdom, the United States and Continental Europe from 1991 to 2004, Gugler et al. (2012) demonstrate that the causes of merger waves are as predicted by behavioral theories. The mergers wave literature gives fruitful discussion about the causes and characteristics on the mergers activity, and point out the important of capital liquidity, in which that support the industry-lever merger waves.

Another branch of the major mergers and acquisitions literature compare domestic and cross-border M&A activities, especially cross-border M&A involving the capital flow across border and corporate control reallocation at the international level. For example, di Giovanni (2005) raises the question: how financial deepening within a country can aid its firms in investing abroad? He finds that one financial deepening variable, the stock market capitalization to GDP ratio, has a positive significant relationship with domestic firms investing abroad via mergers and acquisitions. His finding highlights the importance of financial market deepening appears to be encouraging. The literature suggests that financial depth seems to play a significant role in outflows of M&As. However, since the global economy hit by the 2007-2008 financial crisis, it raises the important issue of the stability of the financial system, especially of the banking sector. The increasing inflows or outflows of cross-border M&As usually incur with greater financial deepening (for instance, the size of financial markets measured by the stock market
capitalization to GDP) might not convey transaction effectively without considering the stability of the financial institution.

3. Methodology

**Data:** We retrieve the firm-level mergers and acquisitions data from Securities Data Corporation (SDC) Mergers and Acquisitions database, which provides a more complete coverage on the international M&As activity. Data on financial depth and banking risk are obtained from Financial Development and Structure Database. We also construct the country-level market structure of the banking industry index from Bankscope database. There are four indicators conducted in this paper in measuring financial deepening of the acquiring firm’s country in the M&A procedure. The first measure is a traditional indicator of financial depth provided by King & Levine (1993), liquidity liabilities to GDP (LIL). It is the value of the currency plus demand and interest-bearing liabilities of all financial intermediaries divided by GDP. This index is a typical measure of financial deepening because of its reflecting the overall size of the financial intermediary institutions. The second one is a measure of stock market capitalization to GDP (STOCKCA). It is value of listed shares divided by GDP and captures the size of the stock market relative to the size of the economy. The third measure is stock market total value traded to GDP (STOCKTR), and equals total shares traded on the stock market exchange divided by GDP. In the developing world, the banking sector plays the important role in providing funds for private sector to invest domestically and abroad. Therefore we also employ the forth measure of financial deepening indicator PRICREDIT, which equals the ratio of the amount of credit provided by banks and other financial institutions to the private sector to GDP.

In order to depict the stability of the banking industry, the ZINDEX is employed. It is the ratio of return on assets plus capital-asset-ratio to the standard deviation of return on assets. That is, a higher ZINDEX value means that the banking sector is more stable. These data are from Financial Development and Structure Database, and available at http://econ.worldbank.org/programs/finance. Two measures of M&A activity are the value of the completed M&A deals (MA), and the value of the cross-border M&A (CBMA). These indicators are collected from Securities Data Corporation (SDC) Mergers and Acquisitions database based on the perspective of acquirer firms and target firms respectively. We construct the panel data based on whether the ZINDEX data are completed or not, and then 13 emerging countries meet the requirements. Additionally, two variables which depict the characters of banking industry are considered. One is Herfindahl-Hirschman index (HHIA) which is defined as 10,000 times the square of the ratio of asset of bank i divided by total amount of assets for all banks in one specific country. The variable HHIA is country-level indicator of bank industry concentration and the higher value the greater market concentration is. The variable CAP denotes the Tier 1 capital ratio which is defined as Tier 1 capital divided by total risk weighted assets and used to measure the financial health of a bank. The 1988 Basle Accord established an international definition of bank capital that divides bank capital into two tiers: Tier 1 capital and Tier 2 capital. In order to conduct more meaningful cross-country comparisons, we here use
Tier 1 capital rather than Tier 2 as the analytical basis. Since the measurement of Tier 2 capital across countries is quite different.

**Empirical Model Design:** In order to examine the effect of financial deepening on the cross-border M&A activity, we first estimate the model (1) expressed as the following:

\[
CBMA_{i,t}^{ACQ} = \beta_0 + \sum_{i=1}^{N} \beta_i FD_{i,t} + \sum_{j=1}^{M} \beta_j BANK_{j,t} + \mu_{i,t} \tag{1}
\]

\(CBMA_{i,t}^{ACQ}\) is outflows of cross-border M&As for acquiring country \(i\) in time \(t\). \(FD_{i,t}\) is the financial depth variables for country \(i\) at year \(t\). \(BANK_{j,t}\) is the banking stability and market structure variables for country \(i\) in time \(t\). This model allows us to investigate how the variables of financial depth, stability and market structure affect M&A activity. Model (2) is expressed in the following. It allows us to examine whether the financial deepening variables and banking stability affect inflows of cross-border M&As.

\[
CBMA_{i,t}^{TAR} = \beta_0 + \sum_{i=1}^{N} \beta_i FD_{i,t} + \sum_{j=1}^{M} \beta_j BANK_{j,t} + \varepsilon_{i,t} \tag{2}
\]

where the dependent variable \(CBMA_{i,t}^{TAR}\) is transaction value of cross-border M&A deals for targeting firms in country \(i\) at year \(t\). With an effort to pool time-series and cross-section data, we utilize the materials to analyze the sample by using the panel data approach. The panel data analysis, involving at least two dimensions of cross-sectional and time series, provides a more accurate inference of model parameters and the possibility of uncovering dynamic relationships for aggregate data analysis. (See, for example, Hsiao 2003, 2007; Baltagi 2008).

**4. Empirical Results**

A summary of total and cross-border M&A transaction value, broken down by the country and year, is shown in the Table 2. We also partition the data into two portfolios for 13 emerging countries: the acquiring country in which the firms are acquirers in the M&A activity; the targeting countries in which the firms are targets. The data set comprises of 17,061 acquiring deals with 3,221 of cross-border M&As deals and 20,542 targeting deals with 6,159 of cross-border deals in those emerging economies over the period 2003-2010. During the period the total value of acquiring deals is US$1.356 trillion with US$439.985 billion of cross-border M&As. The total value of targeting deals is US$1.601 trillion with US$673 billion of cross-border M&As. The majority of M&As and cross-border M&As occurred in China, Korea, India, Malaysia and Thailand with sharp decline M&A activity accompanied by the 2009 global financial crisis.

Table 3 presents descriptive statistics for the variables employed in this study. The mean of LIL (the ratio of the currency plus demand and interest-bearing liabilities of all financial intermediaries to GDP) is 65.451 with a range from 24.809 (Mexico) to 145.791 (China). The mean of STOCKCA (the ratio of listed shares to GDP) is 53.929 with a range from 24.756 (Hungary) to 131.782 (Malaysia). The mean of
STOCKTR (the ratio of the total share traded on the stock market exchange to GDP) is 37.825 with a range from 3.423 (Argentina) to 137.412 (Korea). The mean of the last financial deepening variable, PRICREDIT (the ratio of the amount of credit provided by banks and other financial institutions to the private sector to GDP) is 55.902 with a range from 12.430 (Argentina) to 108.962 (China). Regarding bank stability, the mean of the ZINDEX (the ratio of return on assets plus capital-asset-ratio to the standard deviation of return on assets) is 16.935 with a range from 3.764 (Thailand) to 24.816 (Indonesia). The sample mean of market structure variable, HHIL (the Herfindahl-Hirschman index) is 1410.421 with a range from 749.301 (Malaysia) to 5585.336 (Chile). Except for Chile, the average numbers of HHIL for countries are below 1,600 with which indicating a quite competitive market structure for the banking sectors in those emerging countries. The sample mean of variable CAP (Tier 1 capital ratio) is 27.336 with standard deviation 24.944, denoting all countries meet 8 percent of the minimum capital base mandated by the Basle Accord.

Table 4 shows the empirical results on the effect of financial deepening, banking stability and banking market structure on cross-border M&A activity. We present results of panel regressions of cross-border M&A activity by breaking down the sample according to whether the firms in the specific country are acquirer or target. We first discuss the position that cross-border M&As of acquiring countries with the firms are acquirers in the M&A activity. Given empirical results in model 1-1 to model 1-3, it shows a significantly positive effect of one of the financial depth indicators, STOCKTR (total shares traded on the stock market exchange divided by GDP), on cross-border M&A activity. This suggests that the financial depth in the country enhances the acquiring firms’ investment for the cross-border M&As. The finding also shows that significantly positive effect of bank stability enhances the acquiring firms’ investment on the cross-border M&As. The sign on ZINDEX that indicates the stability of the bank system is positive as expected. The stable banking system is likely to matter because the acquiring firm may want to raise funds from the domestic financial system in which the banks play an essential role. A more developed stock market and a more stable banking system facilitate fundraising process and obtain valuable information for the acquiring firm. To sum up, the empirical results show the financial deepening and stability of the banking system significantly influences cross-border M&As in emerging markets.

We now discuss the panel results from targeting country’s perspective. The findings given in model 2-1 to model 2-3 in Table 4 show a significantly positive effect of STOCKCA (value of listed shares divided by GDP) on cross-border M&A activity. This suggests that the development of stock market in the targeting country encourages the foreign company’s investment domestically via M&A activity. We also find a positive relation between PRICREDIT (ratio of the amount of credit provided by banks and other financial institutions to the private sector to GDP) and cross-border M&As. The result indicates that with more available credit provided by banks and financial institutions in the target countries, the motivation of raising funds with cross-border M&As by taking advantage of reducing the foreign exchange rate exposure is warranted. Therefore, the deepening financial market exerts profound effect. More importantly, as our
empirical results show that the stability of banking system inevitably remains an essential ingredient when corporations implement financial activity.

5. Conclusion

This study investigates the effect of financial deepening, banking stability on cross-border M&A activity in 13 emerging countries with the data covering the period 2003-2010. In this paper we develop an empirical framework that investigates the influence of the financial deepening and bank stability on the outflows and inflows of cross-border M&As. For acquiring countries in which the firms are acquirers in the M&A activity, the empirical findings show that there is a positive and significant impact of the financial deepening indicator (the ratio of total shares traded on the stock market exchange to GDP) on cross-border M&A activity. It also shows that the acquiring firms are encouraged by bank stability to invest on cross-border M&As. For targeting countries in which the firms are targets, the results show a significantly positive impact of the deepening indicator (value of listed share to GDP) on cross-border M&A activity. There exists positive relation between the ratio of the amount of credit provided by banks and other financial institutions to the private sector to GDP in cross-border M&A activity is found in the empirical results as well. The results of the study highlights the fact that financial depth and banking stability promotes cross-border M&A activity in our sample.

To a large extent, cross-border M&A is a tool taken by firms to foster the development of the economy. The cross-border M&A activity has become a highly popular form of corporate investment activity as well. The findings in this paper consist in the traditional literature wisdom in which financial development plays a key role with economic development. The data set used in this study offers the opportunity to address several other interesting questions for further research. One important issue is the consequence of the inflows of M&As on the target country’s economic development, especially for the employment problem. Another issue is what the relations between the relationship banking and M&As. Furthermore, exploring how different the financial deepening, banking stability and other macroeconomic factors influence the M&A activity for developing and developed countries would be an interesting avenue of research.

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Table 1: Global Completed M&A Transaction Value (billion US$)
This table depicts the global completed M&A transaction value. MA presents the completed M&A
transaction value. CBMA is the completed cross-border M&A transaction value. CBMA/MA presents the ratio of cross-border M&A value and M&A value. Mean_MA and Mean_CBMA are the
average of M&A and cross-border M&A transaction value respectively.

| Year | MA    | CBMA  | CBMA/MA | Mean_MA | Mean_CBMA |
|------|-------|-------|---------|---------|-----------|
| 2003 | 1,320.33 | 325.33 | 0.246   | 0.118   | 0.029     |
| 2004 | 1,859.34 | 569.68 | 0.356   | 0.150   | 0.046     |
| 2005 | 2,591.59 | 882.35 | 0.340   | 0.192   | 0.065     |
| 2006 | 3,373.60 | 1,077.66 | 0.319 | 0.229   | 0.073     |
| 2007 | 3,909.59 | 1,695.27 | 0.434 | 0.236   | 0.102     |
| 2008 | 2,418.95 | 928.63 | -0.459 | 0.384   | 0.163     |
| 2009 | 1,725.09 | 456.82 | -0.512 | 0.265   | 0.037     |
| 2010 | 1,812.65 | 705.49 | 0.389 | 0.150   | 0.058     |

Table 2: Summary of M&A Activity in 13 emerging economies
This table represents the M&A transaction value and Cross border M&A value for 13 emerging countries
by two portfolios: the acquiring country in which the firms are acquirers in the M&A activity; the targeting
countries in which the firms are targets. The variables MA_Acq (MA_Tar) and CBMA_Acq (CBMA_Tar) indicate the acquiring country’s (targeting country’s) M&A and cross-border M&A transaction value,
respectively. Figures are in millions of U.S. dollars. Sum and Mean denote the total amount and average
value for variables M&A and CBMA, respectively. Max and Min present the maximum and minimum values
respectively. The variable No indicates the completed deals of the M&A and CBMA transactions
respectively.

| Nation | Acquirer | Target |
|--------|----------|--------|
| All countries | | |
| 2003 | MA_Acq | MA_Target |
| 2004 | CBMA_Acq | CBMA_Target |
| 2005 | | |
| 2006 | | |
| 2007 | | |
| 2008 | | |
| 2009 | | |
| Total | | |
| Year | China | Czech Rep. | Hungary | India |
|------|-------|------------|--------|-------|
| 2003 | 1931.29 | 1315.23 | 1216.91 | 3182.30 |
| 2004 | 1716.09 | 1300.00 | 1191.06 | 1603.02 |
| 2005 | 1177.43 | 1300.00 | 363.51  | 2846.27 |
| 2006 | 1515.54 | 11791.62 | 1300.00 | 3845.00 |
| Total | 2198.55 | 1050.00 | 1246.99 | 3587.00 |

| Year | China | Czech Rep. | Hungary | India |
|------|-------|------------|--------|-------|
| 2007 | 3693.91 | 1300.00 | 403.79  | 1109.69 |
| 2008 | 3158.92 | 1300.00 | 298.90  | 2154.60 |
| Total | 5302.85 | 1300.00 | 1238.51 | 8815.50 |

| Year | China | Czech Rep. | Hungary | India |
|------|-------|------------|--------|-------|
| 2009 | 1085.37 | 1300.00 | 1300.00 | 1300.00 |
| 2010 | 699.38  | 1300.00 | 1300.00 | 1300.00 |
| Total | 1339.52 | 1300.00 | 1300.00 | 1300.00 |

| Year | China | Czech Rep. | Hungary | India |
|------|-------|------------|--------|-------|
| 2011 | 802.90  | 1300.00 | 1300.00 | 1300.00 |
| 2012 | 341.27  | 1300.00 | 1300.00 | 1300.00 |
| Total | 1141.27 | 1300.00 | 1300.00 | 1300.00 |

| Year | China | Czech Rep. | Hungary | India |
|------|-------|------------|--------|-------|
| 2013 | 1268.52 | 1300.00 | 1300.00 | 1300.00 |
| 2014 | 1268.52 | 1300.00 | 1300.00 | 1300.00 |
| Total | 1737.04 | 1300.00 | 1300.00 | 1300.00 |

| Year | China | Czech Rep. | Hungary | India |
|------|-------|------------|--------|-------|
| 2015 | 156.11  | 1300.00 | 1300.00 | 1300.00 |
| 2016 | 57480.07| 1300.00 | 1300.00 | 1300.00 |
| Total | 129540.30| 1300.00 | 1300.00 | 1300.00 |

| Year | China | Czech Rep. | Hungary | India |
|------|-------|------------|--------|-------|
| 2017 | 8464.92 | 1300.00 | 1300.00 | 1300.00 |
| 2018 | 8464.92 | 1300.00 | 1300.00 | 1300.00 |
| Total | 2852.48 | 1300.00 | 1300.00 | 1300.00 |

| Year | China | Czech Rep. | Hungary | India |
|------|-------|------------|--------|-------|
| 2019 | 1083.10 | 1300.00 | 1300.00 | 1300.00 |
| 2020 | 76410.11| 1300.00 | 1300.00 | 1300.00 |
| Total | 329940.30 | 1300.00 | 1300.00 | 1300.00 |

| Year | China | Czech Rep. | Hungary | India |
|------|-------|------------|--------|-------|
| 2021 | 120518.60| 1300.00 | 1300.00 | 1300.00 |
| 2022 | 120518.60| 1300.00 | 1300.00 | 1300.00 |
| Total | 356780.00 | 1300.00 | 1300.00 | 1300.00 |

819
### Indonesia

| Year | Total |
|------|-------|
| 2003 | 1722.79 |
| 2004 | 1900.00 |
| 2005 | 1841.00 |
| 2006 | 1825.91 |
| 2007 | 1960.00 |
| 2008 | 2003.00 |
| 2009 | 2009.00 |

### Malaysia

| Year | Total |
|------|-------|
| 2003 | 1024.68 |
| 2004 | 1072.60 |
| 2005 | 1016.33 |
| 2006 | 1820.44 |
| 2007 | 1731.69 |
| 2008 | 1381.15 |
| 2009 | 504.91 |
| 2010 | 1126.38 |
| 2011 | 9746.17 |
| 2012 | 5041.11 |
| Total | 401345.60 |

### Mexico

| Year | Total |
|------|-------|
| 2003 | 2672.76 |
| 2004 | 2407.94 |
| 2005 | 2527.59 |
| 2006 | 2679.43 |
| 2007 | 5761.57 |
| 2008 | 21213.01 |
| 2009 | 5074.55 |
| 2010 | 4026.83 |
| Total | 147741.80 |

### Korea

| Year | Total |
|------|-------|
| 2003 | 9645.07 |
| 2004 | 5774.01 |
| 2005 | 347.17 |
| 2006 | 2008.16 |
| 2007 | 4023.51 |
| 2008 | 3937.41 |
| 2009 | 9908.08 |
| 2010 | 3316.21 |
| Total | 431836.36 |

### Thailand

| Year | Total |
|------|-------|
| 2003 | 1208.87 |

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**Note:** The table above represents data for various years and shows the total values for each year.
The variable PRICREDIT is the ratio of credit provided by banks and other financial institutions to the private sector to GDP. ZINDEX denotes the ratio of return on assets plus capital to the standard deviation of return on assets. HHIA is the Herfindahl-Hirschman index. The variable CAP denotes the Tier 1 capital ratio.

### Table 3: Descriptive statistics

This table reports the summary statistics for the independent variables employed in this study. We report the mean, standard deviation, maximum and minimum for each variable and for each country, covering the period 2003-2010. LIL is the value of the currency plus demand and interest-bearing liabilities of all financial intermediaries divided by GDP. STOCKCA indicates value of listed shares divided by GDP. STOCKTR is total shares traded on the stock market exchange divided by GDP. PRICREDIT is the ratio of the amount of credit provided by banks and other financial institutions to the private sector to GDP. ZINDEX denotes the ratio of return on assets plus capital-asset-ratio to the standard deviation of return on assets. HHIA is the Herfindahl-Hirschman index. The variable CAP denotes the Tier 1 capital ratio.

|        | LIL  | STOCKCA | STOCKTR | PRICREDIT | ZINDEX | HHIL   | CAP   |
|--------|------|---------|---------|-----------|--------|--------|-------|
| Argentina | 27.237 | 37.618  | 3.423   | 12.430    | 5.034  | 772.383| 13.940|
|         | 1.239 | 22.862  | 1.647   | 2.637     | 0.998  | 105.372| 9.042 |
|         | 28.758 | 85.034  | 6.501   | 18.336    | 5.969  | 962.280| 24.550|
|         | 25.389 | 15.138  | 1.451   | 9.774     | 3.107  | 655.211| 0.000 |
| Brazil  | 52.061 | 50.444  | 22.483  | 36.096    | 20.785 | 1036.202| 26.727|
|         | 7.459 | 16.715  | 13.476  | 9.989     | 2.781  | 24.804 | 5.006 |
|         | 64.955 | 78.863  | 41.148  | 52.476    | 26.103 | 1066.691| 32.210|
|         | 43.124 | 26.911  | 9.765   | 27.053    | 16.463 | 991.119| 18.666|
| Chile   | 39.264 | 99.771  | 14.426  | 79.147    | 24.033 | 5585.336| 34.071|
|         | 10.587 | 12.971  | 6.842   | 9.194     | 9.423  | 3600.101| 17.883|
|         | 65.031 | 112.504 | 22.846  | 96.156    | 29.937 | 10000.000| 75.600|
|         | 33.413 | 74.049  | 5.223   | 72.617    | 7.068  | 1404.130| 16.573|
| China   | 145.791| 63.832  | 74.696  | 108.962   | 17.851 | 1037.999| 15.212|
|         | 6.306 | 37.234  | 60.607  | 6.630     | 11.766 | 213.518 | 2.652 |

821
|            |          |          |          |          |          |          |          |
|------------|----------|----------|----------|----------|----------|----------|----------|
|            |          |          |          |          |          |          |          |
| 160.631    | 125.311  | 160.062  | 116.822  | 33.660   | 1380.522 | 20.007   |
| 139.913    | 32.148   | 24.836   | 99.654   | -1.989   | 807.991  | 11.804   |
| Czech Rep. | 70.332   | 25.922   | 16.741   | 36.550   | 23.655   | 1381.892 | 25.479   |
|            | 3.431    | 6.288    | 7.297    | 7.531    | 10.502   | 133.233  | 4.843    |
|            | 76.758   | 35.285   | 25.998   | 50.173   | 37.060   | 1670.104 | 32.416   |
|            | 67.636   | 17.190   | 6.412    | 29.211   | 8.169    | 1244.392 | 19.591   |
| Hungary    | 50.369   | 24.756   | 18.514   | 47.945   | 15.956   | 1515.443 | 14.383   |
|            | 6.071    | 6.638    | 8.446    | 11.420   | 1.397    | 204.460  | 1.120    |
|            | 61.827   | 35.538   | 30.746   | 65.179   | 18.661   | 1853.833 | 15.870   |
|            | 44.093   | 17.504   | 8.633    | 32.639   | 14.046   | 1276.040 | 12.720   |
| India      | 40.522   | 26.110   | 13.107   | 21.907   | 16.435   | 852.043  | 26.828   |
|            | 4.180    | 8.041    | 6.316    | 2.343    | 1.768    | 73.644   | 4.810    |
|            | 47.319   | 40.508   | 21.612   | 25.265   | 18.205   | 972.014  | 35.572   |
|            | 35.839   | 14.177   | 6.064    | 17.902   | 13.041   | 769.177  | 20.400   |
| Indonesia  | 63.215   | 62.451   | 58.304   | 36.982   | 24.816   | 754.100  | 14.108   |
|            | 4.783    | 29.418   | 16.975   | 5.989    | 2.299    | 101.591  | 1.367    |
|            | 70.518   | 109.889  | 83.539   | 44.774   | 28.073   | 980.213  | 15.525   |
|            | 59.121   | 22.951   | 39.957   | 29.918   | 21.012   | 671.332  | 11.103   |
| Korea      | 72.266   | 68.331   | 137.412  | 94.270   | 15.615   | 1469.775 | 88.877   |
|            | 8.368    | 19.097   | 27.991   | 5.646    | 2.199    | 189.040  | 55.481   |
|            | 82.721   | 94.590   | 171.104  | 104.678  | 19.804   | 1588.292 | 156.720  |
|            | 61.060   | 41.594   | 94.334   | 87.594   | 12.352   | 1020.866 | 13.808   |
| Mexico     | 24.809   | 25.141   | 6.799    | 17.605   | 11.766   | 1035.947 | 24.849   |
|            | 1.850    | 7.325    | 2.567    | 2.830    | 3.243    | 28.375   | 7.120    |
|            | 28.765   | 35.819   | 10.111   | 22.215   | 16.329   | 1076.399 | 32.657   |
|            | 23.173   | 15.278   | 3.446    | 14.672   | 6.988    | 1007.887 | 15.167   |
| Malaysia   | 121.638  | 131.782  | 41.909   | 108.017  | 18.892   | 749.301  | 26.197   |
|            | 7.449    | 13.641   | 11.070   | 7.521    | 1.229    | 22.693   | 2.281    |
|            | 136.716  | 153.955  | 58.934   | 119.584  | 20.819   | 780.923  | 29.645   |
|            | 113.530  | 111.770  | 24.036   | 97.234   | 17.155   | 705.783  | 24.001   |
| Thailand   | 106.618  | 59.732   | 48.676   | 101.722  | 3.764    | 888.753  | 16.332   |
|            | 5.831    | 14.300   | 9.488    | 8.140    | 0.720    | 50.448   | 0.802    |
|            | 112.018  | 75.546   | 65.151   | 115.704  | 4.537    | 960.814  | 17.495   |
|            | 97.665   | 33.079   | 33.378   | 93.998   | 2.276    | 830.313  | 15.433   |
| Turkey     | 36.747   | 25.182   | 35.232   | 21.682   | 21.550   | 1256.298 | 26.069   |
|            | 7.432    | 6.663    | 4.931    | 7.866    | 10.781   | 494.098  | 5.095    |
|            | 51.080   | 35.593   | 42.520   | 34.228   | 34.147   | 2147.243 | 37.343   |
|            | 29.500   | 16.022   | 28.552   | 13.170   | 8.434    | 885.959  | 20.243   |
Table 4: Empirical results

The empirical results of panel regressions of cross-border M&A activity are shown in this table for two portfolios: the firms in emerging country are acquirer or target respectively. Dependent variables CBMA_Acq and CBMA_Tar are the value of the cross-border M&As for acquiring country and targeting country respectively. Independent variable LIL is the value of the currency plus demand and interest-bearing liabilities of all financial intermediaries divided by GDP. STOCKCA indicates value of listed shares divided by GDP. STOCKTR is total shares traded on the stock market exchange divided by GDP. PRICREDIT is the ratio of the amount of credit provided by banks and other financial institutions to the private sector to GDP. ZINDEX denotes the ratio of return on assets plus capital-asset-ratio to the standard deviation of return on assets. HHIA is the Herfindahl-Hirschman index measured with banks’ asset. The variable CAP denotes the Tier 1 capital ratio which is defined as Tier 1 capital divided by total risk weighted assets. The symbols *, **, *** indicates significance at 10%, 5% and 1% confidence level. The numbers in the brackets are t-statistic.

|                | Acquiring (CBMA_Acq) | Targeting (CBMA_Tar) |
|----------------|-----------------------|-----------------------|
|                | Model 1-1  | Model 1-2  | Model 1-3  | Model 2-1  | Model 2-2  | Model 2-3  |
| LIL            | 68.703     | (0.775)    |            | 181.447    | (1.629)    |            |
| STOCKCA        | 19.994     | (0.464)    | 14.709     | (0.342)    | 106.911**  | 86.568     |
| STOCKTR        | 74.531**   | (1.947)    | 81.213**   | (2.150)    | -58.119    | -39.677    | 14.891     |
| PRICREDIT      | -42.651    | (-0.570)   | -41.761    | (-0.561)   | (-1.208)   | (-0.845)   | (0.450)    |
| ZINDEX         | 131.166    | (1.532)    | 146.404*   | (1.693)    | 145.343*   | (1.691)    | (0.095)    | (0.182)    | (0.123)    |
| HHIA           | -0.094     | (-0.176)   | -0.321     | (-0.591)   | (-0.175)   | (-0.096)   | (-0.019)   |
| CAP            | -31.676    | (-0.958)   | -24.883    | (-0.787)   | -13.896    | 15.493     | 17.351     |
| C              | -5493.498  | 1470.780   | 1856.346   | -8844.066  | -8154.077  | -5884.861  |

Number of observations | 101 | 99 | 99 | 101 | 99 | 99

R-squared | 0.562 | 0.558 | 0.557 | 0.476 | 0.483 | 0.466

Adjusted R-squared | 0.466 | 0.458 | 0.464 | 0.361 | 0.366 | 0.354

F-statistic | 5.839 | 5.601 | 5.989 | 4.141 | 4.148 | 4.155

Prob(F-statistic) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000