Loans from my Neighbours: East Asian Commercial Banks, Financial Integration, and Bank Default Risk

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ABSTRACT

This study investigates the impact of financial integration on recipient country bank default risk and, in particular, if that relationship is moderated by the type of financial integration. Using the system generalized method of moments (GMM), the study finds that financial integration lowers bank default risk in the recipient countries. The impact is primarily driven by the foreign claims extended by Asian lenders and the foreign claims extended via local affiliates. These results show that the close proximity of lenders and borrowers or 'local' knowledge via an affiliate presence alleviates information asymmetry, allowing for effective monitoring and disciplining of the loan relationship. The result supports the fostering of financial integration, promoting deeper intra-regional connectedness throughout East Asia. Where foreign claims come from outside East Asia, policy makers should encourage presence through local affiliates, as this has an equivalent impact.

Key words: financial integration, international banking claims, default risk, information asymmetry, East Asia

JEL codes: G21, G28, F36

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1. Introduction

East Asia is an economically dynamic region of growing importance to the international financial system and the global economy. Unsurprisingly, East Asia has become increasingly integrated with the global financial system (World Bank, 2018). This trend is apparent from the large increase in foreign banking claims to East Asia for the period 1999–2014, depicted in Figure 1. These changes appear against the backdrop of the Asian financial crisis that led to high-profile bank defaults and a painful economic contraction in many East Asian economies (Asian Development Bank, 2008). Thus, the climate for financial integration has fostered continued academic and policy interest in understanding the impact of financial integration with regards to financial stability.

[INSERT FIGURE 1]

As shown in Figure 2, the statistics for foreign banking claims to East Asia reveal a steady growing share of foreign claims extended by Asian banks especially after the global financial crisis. This finding is consistent with efforts to promote intra-regional integration throughout East Asia (starting with the Chiang Mai Initiative in 2000, the Asian Bond Markets Initiative in 2003, and culminating with the formation of the ASEAN Economic Community in 2015) (Ananchotikul et al., 2015).

[INSERT FIGURE 2]

International banks can extend claims locally through their branches and subsidiaries established in recipient countries; alternatively, they can extend claims across borders by financing and booking their claims from outside these recipient countries (García-Herrero and Martínez Pería, 2007). Hence, foreign banking claims can be decomposed by the method of extension. From Figure 3, local claims account for the majority of claims and represent efforts by international banks to obtain ‘local’ knowledge via affiliate presence. Overall, these facts motivate a detailed examination of the impact of financial integration in East Asia.

[INSERT FIGURE 3]

This study investigates the impact of financial integration on recipient country bank default risk and if that relationship is moderated by the *type* of financial integration. In particular, as the title of the paper intimates, we explore whether foreign banking claims from 'neighbours' have a preferential impact on bank default risk. We employ two definitions of 'neighbours': (i) banks from other Asian countries and (ii) foreign bank presence via a full affiliate office in the recipient countries.

More specifically, and considering East Asian countries as the foreign claims recipients, the first research question (RQ1)states: How does financial integration affect recipient country bank default risk? The extant literature provides limited and contrasting findings. For instance, Dinger and Kaat (2017) report that inflows of foreign capital lead to higher impaired loans while Karolyi et al. (2018) show that cross-border banking flows lower bank systemic risk. This paper contributes to the empirical evidence on the relationship between financial integration and bank default risk using a sample of commercial banks in East Asia, a dynamic and growing region that relies increasingly on foreign claims from international banks.

The study then decomposes the measure of total foreign claims based on lenders' nationality and methods of extension. According to lenders' nationality, foreign banking claims are extended either by Asian neighbours or by distant non-Asian lenders. This finding motivates the second research question (RQ2): Does regional lending affect recipient country bank default risk differently to non-regional lending? Considering methods of loan extension, foreign claims may be extended via local affiliates set up by international banks in the recipient countries or by international banks across borders. This leads to our third research question (RQ3): Do local affiliate claims affect recipient country bank default risk differently to cross-border claims with no-local presence?

Evidence of information asymmetry associated with the distance between lenders and borrowers is well documented in the literature (Brennan and Cao, 1997; Petersen and Rajan, 2002; and Knyazeva and Knyazeva, 2012). This leads to our central argument that each type of foreign banking capital is associated with different levels of information asymmetry. Specifically, Asian claims face less information asymmetry in comparison to their non-Asian counterparts due to the geographical, cultural, and institutional proximity between Asian lenders and their regional borrowers (Mian, 2006; Claessens and van Horen 2014). Similarly, the extension of funds via local affiliates rather than across borders involves some forms of foreign direct investment (García-Herrero and Martínez Pería, 2007), which also helps to obtain "local knowledge". Therefore, the information advantage associated with Asian claims and local claims arguably creates an effective discipline mechanism and a strong competitive pressure over banks in the recipient countries, thus leading to lower risk-taking behaviour. Although the rationale for expecting the preferential impact of Asian claims and local claims is highly intuitive, there is currently no research that has investigated the difference. Therefore, this paper addresses the literature gap.

The main result from this paper is that financial integration (measured via the total foreign claims of international banks) lowers bank default risk in the recipient countries. This effect is primarily driven by the foreign claims extended by Asian lenders and the foreign claims extended via local affiliates. The findings remain robust when an alternative measure of bank risk (i.e. profit volatility) is employed or a different sub-sampling strategy (i.e. domestic banks or low-financial-integration countries) is conducted.

The paper contributes to the existing literature in several ways. The first research question sheds light on the debate about the impact of financial integration and international capital on financial stability. Research by Cubillas and González (2014) and Wu et al. (2017) confirm that financial liberalization and foreign bank presence increase bank risk-taking in emerging

countries. Similarly, several empirical studies establish the connection between international capital flows, credit growth, and lower credit quality or even the incidence of financial crisis (e.g. Dinger and Kaat, 2017; Reinhart and Rogoff, 2008). In contrast, this paper focuses on the impact of financial integration measured via the foreign claims extended by international banks and documents a positive effect on banking stability (lower bank default risk) in the recipient countries. This finding complements Karolyi et al. (2018), who find that cross-border banking flows help to lower bank systemic risks at the country level.

The second and third research questions connect the literature on the distance constraint between providers and recipients of funds. In the context of international equity portfolio investment, the theoretical model and empirical evidence of Brennan and Cao (1997) suggest that foreign investors are less informed about the foreign markets than the local investors, which could affect their investment returns. Similarly, foreign banks lending in poor countries face severe information asymmetry due to the geographic, cultural, and institutional distance between home and host countries (Mian, 2006; Detragiache et al., 2008). In the bank loan market, Knyazeva and Knyazeva (2012) report higher loan spreads between distant borrowers and lenders due to the costs of gathering soft information. Evidence from these studies implies that information asymmetry decreases when the borrowers' and lenders' proximity increases. This paper uses the context of foreign claims extended from international banks, taking the viewpoint of the recipient countries, to make the definition of 'closeness' or 'neighbours' more direct. Specifically, 'closeness' refers to the fact that foreign claims are extended by regional lenders or via local affiliates established in the recipient countries.

The findings are useful in guiding important policy decisions affecting the design of a financial integration strategy within East Asia. To maintain the financial stability of their banking systems, these countries should favour either the foreign claims extended by Asian

lenders or foreign claims extended via local branches of international banks established in their countries. Foreign claims from Asian lenders are synonymous with the promotion of intra-regional financial integration. Foreign claims sourced from outside East Asia, via local branches of international banks, imply that policy makers should encourage presence through local affiliates.

The rest of the paper proceeds as follows. Section 2 reviews the relevant literature and develops the hypotheses. Section 3 outlines the empirical methodology. Sections 4 and 5 present the descriptive and empirical findings. Section 6 concludes.

2. Literature review and hypotheses development

The first research question examines the impact of financial integration (measured via the total foreign claims from international banks) on bank default risk in the recipient countries. The existing theoretical and empirical literature suggests that financial integration can both lower and increase bank default risk.

On the one hand, lower bank default risk could arise from different channels, including funding diversification, competition, and monitoring. With regard to the first channel, domestic banks can be funded by either retail deposits or international interbank borrowing. The latter may serve as an alternative source of funding in the event of local shocks (Allen et al., 2011). Second, foreign capital could create healthy competition among the different providers of financing, leading to the threat of 'flight to quality' (Agénor, 2001). In other words, banks in the recipient countries are under pressure to improve their risk management and credibility to compete with international banks who provide another source of finance for domestic borrowers. The final channel relates to the monitoring of international banks. East Asian borrowers received large volumes of foreign claims from international banks, especially after the global financial crisis (World Bank, 2018). The substantial exposure to the region encouraged international banks to monitor their loans, contributing to the

improved recipient country bank stability. Recent empirical evidence documenting this monitoring channel is provided by Karolyi et al. (2018). The authors attribute the stabilizing impact of cross-border banking flows to the oversight provided by lending banks located in countries with better regulatory quality relative to banks in recipient countries with weaker regulatory and supervisory systems.

On the other hand, financial integration can increase recipient country bank default risk via excessive liquidity and regulation arbitrage. Specifically, a microeconomic model of bank risk, as developed by Dell'Ariccia and Marquez (2006), identifies a positive association between lending booms and higher bank risk-taking behaviour. Acharya and Naqvi (2012) further posit that international capital inflows (as a result of capital account openness or financial liberalization) may generate excess liquidity, lowering interest rates. Lower interest rates induce banks to 'search for yields' and aggravate bank agency problems, leading to higher bank risks. Houston et al. (2012) conjecture that banks tend to transfer funds to countries with fewer regulations. Consistent with regulation arbitrage motives, Ongena et al. (2013) find that banks operating in countries with tighter bank restrictions and higher capital requirements tend to make riskier loans abroad. This behaviour has the potential to destabilize the recipient countries' financial system.

The East Asia countries examined in this paper are both developed (Hong Kong, Singapore, and Korea) and emerging (Indonesia, Malaysia, China, Thailand, and the Philippines) in nature. While developed countries have regulatory systems in place; emerging countries, following lessons from the Asian financial crisis, have formed improved systems to regulate international banking capital flows (Asian Development Bank, 2008). These initiatives help to alleviate concerns about regulation arbitrage and excess liquidity.

Hypothesis 1: *Financial integration significantly lowers bank default risk in the recipient countries.*

Empirical evidence on the relationship between financial integration and bank default risk is relatively scant. The extant literature mainly studies the relationship between financial liberalization or foreign bank presence and bank risks (such as Claessens et al., 2001; Cubillas and González, 2014; and Wu et al., 2017). Notably, Cubillas and González (2014) find that financial liberalization increases bank risk-taking via improved competition and more risk-taking opportunities. Similarly, Wu et al. (2017) document that the risk of domestic banks increases with the presence of foreign banks. In contrast to the *de jure* indicator of financial liberalization (i.e. the capital account openness or the financial freedom index) used in Cubillas and González (2014) or foreign bank penetration ratio used in Wu et al. (2017), this paper measures financial integration via the total foreign claims extended by international banks, and provides a new *de facto* approach to examine the impact of financial integration on bank risks.

Contrasting evidence from working papers directly examining the impact of international capital on recipient country bank risks highlight the need for further research. Dinger and Kaat (2017) find that inflows of foreign capital (measured via a country's negative account balance) lead to higher loan-to-asset ratios and impaired loans using a sample of 11 countries in the Eurozone area. In contrast, Karolyi et al. (2018) document evidence that heightened cross-border banking flows lower bank systemic risks in 114 recipient countries. This paper contributes to the current literature by providing additional evidence on the impact of foreign claims from international banks on default risk at the individual-bank level for a sample of East Asian banks.

The second research question addresses whether the impact of financial integration on bank default risk differs due to the source countries of the foreign claims. International banks that extend claims to East Asia will seek to monitor and discipline the recipients of funds. However, informational disadvantages and higher monitoring costs mean that non-Asian

international banks will exercise less effective monitoring power compared with their Asian counterparts. This is confirmed by several seminal studies, such as Brennan and Cao (1997), Petersen and Rajan (2002), and Knyazeva and Knyazeva (2012). These studies imply that lenders face greater information asymmetry and more costly monitoring for distant borrowers. Large institutional, cultural, and geographic distances also heighten the loss of relationship lending between loan officers and management (Mian, 2006; Detragiache et al., 2008). Conversely, Asian international banks are informationally advantaged. The information advantage results from their familiarity with the cultural, legal, political, and economic environments of the recipient countries (Mian, 2006; Claessens and van Horen 2014). In addition to the regional specific knowledge, the information advantage is inherent to the local business relationship (Buch et al., 2012).

The informational advantage allows Asian lenders to do a better job of monitoring claims extended to regional borrowers. Furthermore, regional knowledge enables Asian lenders to compete as finance providers with banks in the recipient countries. Therefore, the benefit of the monitoring and competition channel in lowering bank default risk outlined in the first hypothesis becomes stronger in the case of Asian claims. In other words, the receipt of Asian claims is expected to lead to lower bank default risk. This leads to Hypothesis 2: *Foreign claims extended by Asian banks, as distinct from claims extended by non-Asian banks, significantly lower bank default risk in the recipient countries.*

The third research question aims to test whether the impact of financial integration on bank default risk is different across methods of extension, namely local claims and cross-border claims. Neumann (2003) argues that portfolio debt flows (relative to equity flows and foreign direct investment) do not incorporate ownership and thus augment manager control, increasing the severity of information asymmetry. This also holds true in the context of local claims and cross-border claims; the former involves some forms of foreign direct investment

in the host country's financial sector, while the latter does not (García-Herrero and Martínez Pería, 2007). In short, the asymmetric information is more pronounced for cross-border claims. Therefore, the monitoring and discipline of international banks over cross-border claims will be less effective, meaning that banks in recipient countries are likely to take on more risks than they might otherwise.

If international banks set up their affiliates to extend their claims to the recipient countries, there are additional benefits arising from the competition between domestic and foreign banks. Claessens et al. (2001) empirically prove that multinational banks stimulate healthy competition among local banks in host countries. The dynamic multinational banking model of Faia and Ottaviano (2017) specifically links tougher local competition from global bank entry in retail banking to less risk-taking for the host banking system. Following this line of reasoning, the *a priori* expectation is that claims extended via local affiliates will lower recipient country bank default risk in the recipient countries. This motivates Hypothesis 3: *Foreign claims extended via local affiliates of international banks, as distinct from cross-border flows, significantly lower recipient country bank default risk.*

Given the current limited empirical evidence, this is the first study to test the differential impact of different types of foreign banking claims on bank default risk.

3. Methodology and data

3.1. Model specification

The paper adopts the dynamic specification to model the determinants of bank default risk. The dynamic setting is appropriate since Berger et al. (2000) argue that the risk-return profile of banks shows a tendency to persist over time, reflecting impediments to market competition

and information opacity. More specifically, the first-order dynamic model of bank default risk is specified as in Equation 1.[1]

$$RISK_{ijt} = \beta_0 RISK_{ijt-1} + \boldsymbol{\beta_1 INTEG_{jt}} + \beta_k BANK^k{}_{ijt} + \beta_m COUNTRY^m{}_{jt} + \theta_i + \gamma_j + \mu_t + \varepsilon_{ijt} \quad (1)$$

In this specification, the default risk of bank *i* in year *t* for country *j* is written as a function of its past level, financial integration (INTEG), a vector of *k* bank-level variables reflecting the characteristics of each bank *i* (BANK), and a vector of *m* variables reflecting the macroeconomic condition to all banks including bank regulation and supervision (COUNTRY) for any given country *j*. θ_i is the bank- specific fixed effect to control for unobserved factors that do not change over time for each bank. γ_j and μ_t are the country and time dummies, respectively; ε_{ijt} is the error term. All explanatory variables enter the estimation of equations at the contemporaneous level based on the assumption that banks revise their targets during the estimation period (measured in years) in response to changes in their financial health as well as macroeconomic conditions.

3.2. Estimation method

The paper employs the two-step system generalized method of moments (GMM) developed by Arellano and Bover (1995) and Blundell and Bond (1998) with finite-sample corrected standard errors as proposed by Windmeijer (2005). Arellano and Bover (1995) and Blundell and Bond (1998) suggest employing the lagged first differences of the explanatory variables as instruments for the equation in levels and the lagged values of the explanatory variables in levels as instruments for the equation in differences.

The system GMM helps to address several econometric issues. Specifically, the GMM provides an unbiased estimator for the dynamic panel data model with the presence of bank fixed effect, which is a solution to the famous Nickell's (1981) finite-sample bias. More

[1] To appropriately specify the lag order as in Equation 1, the moment selection criteria for GMM models developed by Andrews and Lu (2001) are employed. Specifically, the first-order dynamic panel is our preferred model because it has the smaller Bayesian information criterion (BIC) than the second-order one.

importantly, the GMM accommodates for possible endogeneity between bank default risk and other covariates in the model, which could affect the interpretation of the empirical results. For instance, contemporaneous bank-level regressors ($BANK_{ijt}$) are treated as being endogenous due to their simultaneous relationship with bank default risk. Among country-level regressors, financial integration ($INTEG_{jt}$) and bank regulation and supervision variables are treated as being predetermined variables. To explain, a lower bank default risk (i.e. a stable financial system) in the recipient countries would attract higher foreign claims extended by international banks (Karolyi et al., 2018). Similarly, regulators could change their regulation and supervision to discipline bank risk-taking behaviour (Agoraki et al., 2011). Finally, other macro-economic variables are treated as exogenous variables.

After running the system GMM, some post-diagnostic tests are performed. For instance, the second-order (i.e. the AR(2)) Arellano-Bond autocorrelation test is used to detect the serial correlation of the residuals in the differenced equation. Besides, both the Hansen J-statistics and the Difference-in-Hansen test are conducted to check for the joint validity of the full instrument set and the subsets of instruments, respectively.

3.3. Variables and data

3.3.1. Bank default risk

To measure bank default risk, the distance-to-default (ZSCORE) is used. ZSCORE = (ROA+ CAP)/(Std.ROA), where ROA is the rate of return on assets, CAP is the equity capital to asset ratio, and Std.ROA is the standard deviation of ROA (Roy, 1952). To calculate the standard deviation of ROA, we use the three-consecutive-year moving window (i.e. year t-2, t-1, and t) rather than the full sample period. By its construction, ZSCORE is interpreted as the number of standard deviations by which returns must decrease to wipe out all equity owned by the bank; ZSCORE can be viewed as the inverse of the probability of bank failure (Roy, 1952; Laeven and Levin, 2009; Demirgüç-Kunt and Huizinga, 2010). This

means that a higher value of the ZSCORE suggests a lower exposure to default risk. As the distribution of ZSCORE is highly skewed, following Laeven and Levin (2009), the natural logarithm of ZSCORE is taken.

3.3.2. Financial integration proxies

To address the first research question and test Hypothesis 1, an overall measure of financial integration is constructed based on the foreign claims extended by international banks to the sampled (recipient) countries. The statistics are sourced from the Consolidated Banking Statistics (CBS) on Intermediate Counterparty basis (IC) published by the Bank for International Settlement (BIS).[2] In detail, foreign claims are reported in their outstanding amount (in million USD) on a quarterly basis. The paper constructs the annual claims by using the stock data on the last quarter of each year in the sampled period. Bilateral claims of a source-recipient country pair are then aggregated by the recipient country. After these steps, the year- and country-level claims on each of the sampled countries are obtained. As these claims are extended by all lenders regardless of their nationality or methods of extension, the obtained value of claims after all these steps is regarded as the total foreign claims. The total foreign claims is either scaled by the GDP of the corresponding sampled countries to construct the variable CLAIM or transformed by taking the natural logarithm to construct the variable LN(claim). CLAIM is relevant to assess the size of the international banking activities of one country in comparison with its GDP; higher values of CLAIM are associated with more participation in the international banking market and greater financial integration.[3]

[2] BIS-CBS provides the credit exposures (termed as "foreign claims") of banks headquartered in 31 BIS-reporting (source/lender) countries to over 200 counterparties (recipient) countries on a bilateral basis (Bank for International Settlement, 2015). Appendix A presents some caveats, which are helpful to understand the structure and reporting basis of this report.

[3] Houston et al. (2012) and Karolyi et al. (2018) also use BIS-CBS to construct international banking *flow* as the difference in natural logarithm of outstanding foreign claims between year t and t-1. As the paper aims to measure the level of financial integration, it purposely constructs a *stock* measure. Stock measures capture the progress of financial integration better than flow measures as the latter is prone to measurement errors (Kose et al., 2009) and can fluctuate markedly due to changes in short-term market conditions and investors sentiment (Agénor, 2001).

In short, both measures (CLAIM and LN(claim)) proxy for the total foreign claims on the sampled countries, which are extended by all lenders regardless of their nationality and methods of extension.

Question 2 and Hypothesis 2 test whether the source country of foreign claims matters in the impact of financial integration on bank default risk. To do so, the total foreign claims measure is classified by the nationality of the lenders[4] to compute the foreign claims extended by Asian banks (or Asian claims, for short) and the foreign claims extended by non-Asian banks (or non-Asian claims, for short). These statistics are then scaled by the GDP of the sampled countries (to construct ASIAN and NON_ASIAN, respectively) or transformed in a natural logarithm (to construct LN(asian) and LN(non_asian), respectively). The break-down by nationality reflects the difference not only in geographic location but also in the source country characteristics, including culture and institutional quality.

Question 3 and Hypothesis 3 examine the variation in the relationship between financial integration and bank default risk due to the difference in methods of extension of the foreign claims. The foreign claims could be classified as cross-border claims (i.e. claims extended from the banks' headquarters and booked outside the recipient countries) or local claims (i.e. claims extended locally by international banks through the banks' branches and subsidiaries in the recipient countries). The data for this break-down are sourced from the CBS on Ultimate Risk basis (CBS-UR) rather than the CBS-IC, as the latter does not provide a clear-cut distinction between cross-border claims and local claims. In a similar approach to earlier, measures of cross-border claims and local claims[5] are scaled by the GDP of the sampled

[4] Asian source countries include Australia, Chinese Taipei, Hong Kong SAR, India, Japan, (South) Korea, and Singapore. Non-Asian lenders mainly include European and North American advanced countries, such as the US, UK, Germany, France, etc. (see Appendix A).

[5] The CBS-IC reports the break-down of foreign claims into "international claims" and "local claims in *local* currency", in which international claims include both cross-border claims and local claim in *foreign* currency. In contrast, the CBS-UR separately reports cross-border claims and local claims. There are differences in the reporting basis of CBS-IC and CBS-UR. While CBS-IC looks at the immediate relationship between borrowers and lenders, CBS-UR tracks the ultimate bearer of the obligations (Bank for International Settlement, 2015). Furthermore, CBS-UR is only available since 2005, while CBS-IC is available since the 1980s.

countries (to obtain CROSS and LOCAL, respectively) or transformed in a natural logarithm (to obtain LN(cross) and LN(local), respectively).

The difference in the available time periods and reporting basis between CBS-IC and CBS-UR prevents the analysis of local claims and Asian claims in a full parallel fashion. However, there is one scenario when local claims and Asian claims measure the same thing, which is when the majority of foreign affiliates/branches in the sampled countries are owned by Asian banks. To prove this is not the case, the database from Claessens and van Horen (2015) on bank ownership is employed to examine the origin of foreign banks in the sampled East Asian countries. First, the total number of foreign banks in these countries is computed. Then, the number of foreign banks owned by Asian BIS-reporting countries is calculated. In Korea, there are no foreign banks with origin from Asian BIS-reporting countries. The ratio of Asian foreign banks to total foreign banks varies among the rest of the group (as reported in Appendix B). For instance, in Thailand, Indonesia, and China, nearly 50% of their foreign banks are Asian foreign banks, while in Hong Kong and Singapore, the proportion is around 23%. In short, the data presented in Appendix B give confidence that the two measures 'local claims' and 'Asian claims' are distinctive but related measures of 'closeness' or 'neighbours'.

3.3.3. Control variables

In line with the existing literature on the determinants of bank risks (Laeven and Levin, 2009; Demirgüç-Kunt and Huizinga, 2010; and Beck et al., 2013), standard explanatory variables are included in Equation 1. The commonly used bank-level control variables include natural logarithm of total assets (SIZE), equity to total assets ratio (CAP), ratio of non-performing loans to gross loans to proxy for credit risk (CRERISK), ratio of non-interest operating expenses to total assets to proxy for cost efficiency (COST), the share of non-interest income to total income to proxy for income diversification (INC_DIV), the ratio of demand deposits to total deposits to proxy for bank charter value (CHARTER), and a dummy

variable to proxy for the foreign and domestic ownership of a bank (ODUM). Market concentration (CON), measured as the assets of the three largest banks to the total assets of all commercial banks in a country, is also included.

Consistent with cross-country studies such as Demirgüç-Kunt and Huizinga (2010), Agoraki et al. (2011), and Wu et al. (2017), the model also includes the GDP growth rate (GDP) and the inflation rate (IFL) to capture the impact of business cycles on financial stability, as well as the level of financial development (PRICE) measured as the ratio of private sector credit to GDP, and a dummy to proxy for a bank crisis (CRISIS). The model also includes a variable to control for the impact of interest rates (INT) because lower interest rates may encourage a 'search for yield' that increases bank risk (Acharya and Naqvi, 2012). Based on the deposit insurance database from Demirgüç-Kunt et al. (2014), a dummy variable is constructed to indicate the existence of an explicit deposit insurance scheme in a country (INS). Finally, the model includes three categories of bank regulation and supervision as other important determinants of bank risk (Laeven and Levine, 2009; Beck et al., 2013). The definitions for all variables are provided in Appendix C.

3.4. Sample

The study examines an unbalanced sample of 2,280 commercial bank-year observations (or 393 banks) from eight countries in East Asia (China, Hong Kong, Indonesia, Malaysia, the Philippines, Korea, Singapore, and Thailand) over the period 1999–2014. Bank-level data are obtained from Bankscope. Banks with less than three consecutive years of available financial data for all bank-specific variables are excluded. All mergers and acquisitions and bank failures during the sample period are accounted for in the dataset so that both active and inactive banks are included to avoid selection bias.[6] The data are drawn from unconsolidated

[6] Ten negative observations of ZSCORE are dropped so that the natural logarithm of the variable is defined. Active banks make up 91.49% of the sample; 8.17% of banks in the sample are dissolved; 0.04% of banks are in bankruptcy; and 0.21% of sampled banks are in liquidation.

statements to reduce aggregation bias in the results (consolidated data are used if unconsolidated statements are unavailable). All bank-level data are winsorized at the top and bottom 0.5% percentile.

4. Descriptive analysis

Table 1 reports the descriptive statistics of all variables included in the regression. The LN(zscore) of the sampled commercial banks has a mean value of 3.648 and a standard deviation of 1.226. The wide range of LN(zscore) (ranging from -2.37 to 7.89) highlights the substantial variation on the level of default risk across banks in the sampled period.

With regard to the financial integration variables, the ratio of total foreign claims to GDP (CLAIM) has a mean value of 28.1% and a standard deviation of 38.2%. This partly reflects the different levels of financial integration among the sampled countries. Besides, NON_ASIAN with its mean value of 16.2% is higher than the mean value of ASIAN (11.8%). This is consistent with the observation that foreign claims on the sampled countries mostly come from non-Asian international banks, as depicted in Figure 2. LOCAL has its mean value of 14.3% being higher than CROSS's value of 8%. This is also consistent with the fact that local claims account for the major shares of total claims, as depicted in Figure 3.

[INSERT TABLE 1]

Table 2 reports the Pearson pairwise correlation coefficients. The bank-level variables and macro-economic variables are found not to be highly correlated with each other, implying that the joint inclusion of these variables is unlikely to lead to concerns about multi-collinearity. This is also confirmed by Variance Inflation Factor (VIF) tests (not reported).

[INSERT TABLE 2]

5. Empirical analysis

5.1. The impact of financial integration on bank default risk

Table 3 reports the system GMM estimates of Equation 1 to test Hypothesis 1.[7] The post-estimation tests (reported at the end of Table 3) confirm the validity of the system GMM estimators. Specifically, the AR(2) test is statistically insignificant, confirming the absence of the second-order serial correlation. The high p-values of the Hansen J-statistics and the difference-in-Hansen tests suggest that the full set and each sub-set of instruments are valid.

Table 3 shows that the coefficients of financial integration (measured by CLAIM and LN(claim), respectively, in models 1 and 2) are positive and significant. This implies that financial integration is associated with the increase in bank ZSCORE (or reduction in bank default risk) and is consistent with Hypothesis 1. With regard to the economic impact, take column 1 as an example, a one-percentage-point increase in CLAIM is associated with an approximately 4.6% (0.046*100) increase in ZSCORE. Overall, the evidence points to the benefit of financial integration in lowering individual bank default risk for the recipient countries. This result is consistent with the monitoring channel of international banks, which is found to drive the association between heightened cross-border banking flows and lower systemic risks (Karolyi et al., 2018). Further, the finding also supports the competition channel, which predicts that foreign banking claims would engender healthy competition

[7] Before running the system GMM, all variables included in the regression has been tested for non-stationary with a Fisher test developed by Maddala and Wu (1999). SIZE is dropped due to its unit root. Additionally, a Durbin-Wu-Hausman (DWH) endogeneity test are conducted at the level equation and confirms the endogenous relationship between bank-level covariates and the dependent variable. These results are available upon request. It is also note-worthy that the number of observations used in the system GMM (836 observations) is substantially lower than the original bank-year observations (2,280 observations, as reported in Section 4). This is mostly due to the simultaneous inclusion of three regulation variables, which are not available for all observations. As a robustness check, two models, in which SUP (i.e. the variable with the lowest available observations) and both three variables are dropped from the regression, respectively, are conducted. The results are quantitatively similar to the baseline's (and available upon request). However, the coefficients of the lagged dependent variable fall out of the possible range between the FE and OLS estimates, which is a sign of model misspecification (Roodman, 2006). Therefore, we include all three variables in our model as reported in Table 3.

among different providers of funds, thus leading to lower risk-taking behaviour (Agénor, 2001; Faia and Ottaviano, 2017). Overall, the results strongly support Hypothesis 1.

The results in Table 3 also show that the bank and year fixed effects capture a significant fraction of the overall explanatory power of ZSCORE. The only bank-level variables that have a significant impact on ZSCORE are equity capital ratio (CAP) and income diversification (INC_DIV). Banks with a lower level of equity capital to buffer against return volatility have higher risk default. Similarly, due to the greater reliance on non-interest income, banks are exposed to more volatile activities or expand to risky non-traditional activities, reducing bank stability. The finding is congruent with the work by Demirgüç-Kunt and Huizinga (2010).

At the country level, the positive coefficient of CON implies that market concentration helps to lower bank default risk, which is in line with the 'competition-fragility' hypothesis. In a more concentrated banking system, banks are prudent to protect their charter values derived from their market power (Beck et al., 2006). The negative and significant coefficient on financial development (PRICRE) suggests that banks take more risks in more financially developed countries. It is easier for firms to switch from bank-based to market-based funding in more financially developed markets (Beck et al., 2013). Competitive pressure from stock market developments push banks to take more risks. Higher interest rates and higher economic growth rate induce banks to take more risks to 'search for yields' (Acharya and Naqvi, 2012), thus leading to higher bank default risk. All three categories of bank regulation and supervision are significantly and positively related to ZSCORE. Consistent with Agoraki et al. (2011), banks in countries with stricter restrictions on bank activities (ACT), stronger private monitoring (PRIMON), and greater authority power (SUP) are characterized by a lower default risk profile. Finally, the negative bank crisis coefficient indicates that bank default risk is greater during periods of financial crisis.

[INSERT TABLE 3]

The next two sections explore Hypotheses 2 and 3 to see if the above results are driven by neighbours' banks with information advantages, where we take two alternative definitions of 'neighbours' (see section 1), namely regional banks or international banks with affiliate offices.

5.2. The impact of Asian claims and non-Asian claims on bank default risk

Table 4 reports the impact of Asian claims (ASIAN) and non-Asian claims (NON_ASIAN). According to Hypothesis 2, foreign claims extended by Asian lenders should significantly lower bank default risk in recipient countries. Based on the results reported in columns 1 and 3 of Table 4, the significant and positive ASIAN and LN(Asian) coefficients provide evidence to support this hypothesis. In fact, the magnitude of the ASIAN coefficient is much larger than the CLAIM coefficient reported in Table 3. Given a one-percentage-point increase in ASIAN, the coefficient in column 1 of Table 4 predicts a 7.1% (0.071*100) increase in ZSCORE for the recipient country.

Consistent with Hypothesis 2, only the Asian claims contribute to the higher stability of banks in the recipient countries, as evidenced by the non-significant coefficients of NON_ASIAN and LN(non_asian) in columns 2 and 4. The result supports the argument that the Asian claims are linked to lower information asymmetry, as regional banks possess an information advantage, facilitating closer recipient country bank monitoring (Mian, 2006; Claessens and van Horen, 2014). The impact of other control variables is relatively similar to the baseline result reported in Table 4, though some variables lose their explanatory power.

[INSERT TABLE 4]

5.3. The impact of local claims and cross-border claims on bank default risk

Table 5 reports the significant and positive coefficients of local claims regardless of its measures (i.e. LOCAL in column 1 or LN(local) in column 3, though in the latter case it is

only marginally significant). The coefficients for cross-border claims are insignificant in both models reported in columns 2 and 4. The result indicates that local claims extended via foreign affiliates rather than across borders help to lower recipient country bank default risk. In fact, the magnitude of the LOCAL coefficient is much larger than the CLAIM coefficient reported in Table 3. Given a one-percentage-point increase in LOCAL, the coefficient in column 1 predicts a 10.1% (0.101*100) increase in ZSCORE for the recipient country. Overall, this finding strongly supports Hypothesis 3 and confirms the link between lower information asymmetry and local affiliates–based lending.

[INSERT TABLE 5]

In short, the findings in Sections 5.2 and 5.3 complement and further elucidate the findings in Section 5.1. They show that the positive association between financial integration (measured via the total foreign claims) and ZSCORE is driven by claims extended by Asian banks and local claims, as distinct to non-Asian claim and cross-border claims, respectively. The policy implication of these results is discussed in Section 6. Prior to this, the robustness of the above results is further explored with alternative specifications of the models.

5.4. Robustness tests

We perform several robustness tests. First, an alternative measure of bank risk, namely volatility in bank profit as measured by the volatility of ROA over the three-year window (ROA_VOL) is employed. The result is reported in Table 6. As seen in column 1, financial integration (CLAIM) helps to lower bank profit volatility (ROA_VOL). Consistent with the earlier findings, the effect is present when claims are extended by Asian lenders (ASIAN) or via local affiliates (LOCAL). This result reinforces the findings in Sections 5.2 and 5.3. Additionally, Table 6 also reports a positive association between higher rates of inflation, economic growth rates, and greater financial development and profit volatility (ROA_VOL).

Bank regulation and supervision helps to reduce profit volatility via effective private monitoring and supervisory power exercised by local authorities.

[INSERT TABLE 6]

Second, a sub-sample of the low-integration group of countries is utilised to ensure that our original analysis was not biased by the presence of financial centres (i.e. Hong Kong and Singapore). The low financial integration sub-sampling is reported in Table 7. Again, the results are fully consistent with the previous results and Hypotheses 1, 2, and 3. In fact, the impact of financial integration on bank default risk becomes stronger in this sub-sampling, as the magnitude of the CLAIM, ASIAN, and LOCAL coefficients are higher than their baseline's. This implies that countries with a lower level of financial integration are benefiting more from the receipt of foreign banking claims.

[INSERT TABLE 7]

Third, only domestic banks are sampled to ensure that our prior findings are not driven by the presence of foreign banks in the recipient countries. The concern is valid, as foreign banks own better risk management, thus having a lower level of default risk (Wu et al., 2017). The domestic sub-sampling is reported in Table 8. Overall, the main findings remain qualitatively unchanged from the baseline results. Specifically, financial integration measures, such as CLAIM, ASIAN, and LOCAL, are significantly and positively associated with bank distance-to-default. Additionally, higher bank costs are associated with higher default risk in the domestic banks' sampling.

[INSERT TABLE 8]

6. Conclusion

The paper considers a country receiving foreign claims from international banks to examine the impact of financial integration on its bank default risk. The key finding is that financial integration lowers recipient countries' bank default risk. The result is primarily

driven by the foreign claims extended by Asian lenders and the foreign claims extended via local affiliates. The findings remain robust when an alternative measure of bank risk (i.e. profit volatility) is employed or a different sub-sampling strategy is conducted. Overall, the result provides empirical support for the positive effect of financial integration and international banking capital on bank stability.

From a practical perspective, the findings suggest some preference about the forms of financial integration may be beneficial for East Asian recipient countries. Specifically, these countries should favour either the foreign claims extended by Asian lenders or foreign claims extended via local branches of international banks established in their countries. The former is synonymous with the promotion of intra-regional financial integration. This implication is meaningful because intra-regional finance still lags behind trade, both in terms of the level of integration and the benefits of risk-sharing (Ng and Yarcia, 2014). The latter implies that, where foreign claims come from outside East Asia, policy makers should encourage presence through local affiliates, as this has an equivalent impact. These two options of the foreign claims of 'neighbours' are complementary, providing recipient countries' policy makers with flexibility in their choice of preferred form of financial integration.

Finally, this paper is subject to some limitations. First, China has recently emerged as an important financial hub (in addition to Hong Kong, Japan, and Singapore) channelling funds both inter- and intra-regionally (World Bank, 2018). The majority of Asian countries, including China, have not reported their foreign claims to BIS CBS. Therefore, the analysis so far might under-estimate the value of foreign claims with intra-regional origin. An increase in the number of emerging Asian lenders reporting to BIS in the future would facilitate better monitoring of intra-regional claims, as well as their impact on the bank stability of the recipient countries. Second, as BIS CBS were originally designed with a lender perspective in mind, the data to construct our measures of total foreign claims, its decomposition by lender

nationality, and methods of extension rely on different reporting bases (see Appendix A). This prevents comparative and parallel analysis for these measures. Therefore, if data on lender nationality could be broken down further by methods of extensions, or vice versa, we could provide a more detailed analysis.

Appendix A

Some caveats about BIS Consolidated Banking Statistics (CBS)

CBS provides the credit exposures (termed as "foreign claims") of banks headquartered in 31 BIS-reporting (source) countries to over 200 counterparties (recipient) countries on bilateral basis. CBS are structured on the nationality (not the location) of reporting banks. Specifically, Asian source countries include Australia, Chinese Taipei, Hong Kong SAR, India, Japan, (South) Korea, and Singapore. Non-Asian lenders include Austria, Belgium, Brazil, Canada, Chile, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Mexico, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States.

To illustrate the reporting basis of CBS, take Singapore as an example of a country reporting to BIS. There are four types of reporting banks located in Singapore:

(i) domestic banks (controlled by parent entities with the same country code as the reporting country), for instance: OCBC bank, United Overseas Bank, etc.;
(ii) banks located in the reporting country, but controlled by parent entities located in non-reporting countries, for instance: an affiliate of Bank of China ;
(iii) banks located in the reporting country, but controlled by parent entities located in reporting countries; for instance: an affiliate of HSBC;
(iv) banks controlled by parent entities located in the reporting country but not consolidated by their parent.

These reporting banks will report their claims extended to counterparties in a recipient country (i.e. the sampled East Asia). In the case of the total "foreign claims" data (to construct CLAIM), three types of reporting banks, including (i), (ii), and (iv) are considered.

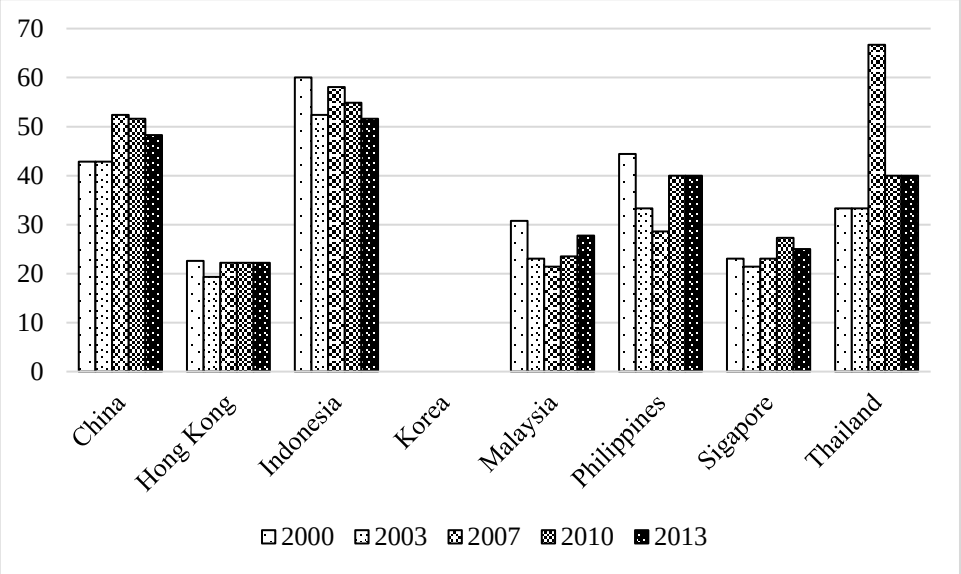
When "foreign claims" are broken down by lender nationality (to construct ASIAN and NON_ASIAN), only the first type of reporting banks (i.e. domestic banks) are considered. This is to clarify that the affiliates of distant international banks set up in Singapore (such as an affiliate of HSBC in Singapore) are not considered to construct Asian claims. The claims extended by an affiliate of HSBC in Singapore will later be consolidated by their parent bank HSBC (UK); the claims then become non-Asian claims.

When "foreign claims" are broken down by methods of extension (to construct CLAIM and CROSS_BORDER), only the first type of reporting bank (i.e. domestic banks) are considered. Specifically, United Overseas Bank (Singapore) sets up its branch in China and extends claims to counterparties in China via this branch; this is the case of local claims. Alternatively, United Overseas Bank (Singapore) books its claims outside China (by either extending from its head office in Singapore or from its branch located in another country); this is the case of cross-border claims.

With regard to the reporting basis of Immediate Counterparty (IC) and Ultimate Risk (UR), the former considers parties directly involved in lending contracts, while the latter takes into account the credit risk transferring from one counterparty to another via collaterals or guarantees. For example, a Singapore bank extends a loan to a company in China and the loan is guaranteed by a Hong Kong bank. On an IC basis, the Singapore bank would report the loan as a claim on China. On an UR basis, the loan would be reported as a claim on Hong Kong instead.

Appendix B

The ratio of Asian foreign banks to total foreign banks in the East Asian sampled countries (%)



This figure presents the ratio of Asian foreign banks to total foreign banks in East Asian (%). The denominator is the total number of foreign banks in these sampled countries. The numerator is the number of foreign banks owned by Asian BIS- reporting countries. Source: Claessens and van Horen (2015).

Appendix C

Lists of variables and definition

Variables	Definition	Sources
Dependent variable		
ZSCORE	Default risk = Natural logarithm of bank Z-SCORE. Z-SCORE = [ROA+ (Equity/total assets)]/ [Std. (ROA)]. The Std. (ROA) is calculated over a three-year rolling window.	Bankscope
Bank-level variables		
SIZE	Natural logarithm of total assets	Bankscope
CAP	Equity ratio = total equity/ total assets (%)	Bankscope
INC_DIV	Income diversification = (non-interest income/ total income) (%)	Bankscope
COST	Overhead cost = Total non-interest operating expenses/total assets (%)	Bankscope
CHARTER	Charter value = customer demand deposits/ total assets (%)	Bankscope
CRERISK	Credit risk = Non Performing Loans / Gross loans (%)	Bankscope
ROA	Bank profitability= return on assets (%)	Bankscope
ROA_VOL	Profitability volatility= Standard deviation of ROA calculated over a three-year rolling window.	Bankscope
CON	Market concentration =top 3 largest banks assets/ total banks assets (%)	Bankscope
ODUM	Foreign ownership equal 1 otherwise	Claessens and van Horen (2015)
Financial integration variables		
CLAIM	Foreign claims extended by international banks/ GDP (%)	BIS CBS IC
ASIAN	Foreign claims extended by Asian international banks/ GDP (%)	BIS CBS IC
NON_ASIAN	Foreign claims extended by non-Asian international banks/ GDP (%)	BIS CBS IC
LN(asian)	Natural logarithm of foreign claims extended by Asian international banks	BIS CBS IC
LN(non_asian)	Natural logarithm of foreign claims extended by non-Asian international banks	BIS CBS IC
CROSS	Foreign claims extended across border by international banks/GDP (%)	BIS CBS UR
LOCAL	Foreign claims extended via foreign affiliates of international banks/GDP (%)	BIS CBS UR
LN(cross)	Natural logarithm of foreign claims extended across border by international banks	BIS CBS UR
LN(local)	Natural logarithm of Foreign claims extended via foreign affiliates of international banks	BIS CBS UR
Country-level control variables		
IFL	Inflation rate = (CPIt –CPIt-1)/ CPIt (%)	Global Financial Development (GFD-WB)
GDP	GDP growth rate = (GDPt- GDPt-1)/ GDPt-1 (%)	GFD-WB
PRICRE	Private credit to GDP =Bank credit to private sector/ GDP (%)	GFD-WB
INT	Real interest rate (%)	World Development Indicator (WDI-WB)

CRISIS	Dummies year for the financial crisis	Laeven and Valencia (2012)
INS	Dummy to proxy for the deposit insurance coverage of a country: equals 1 when the country has explicit deposit insurance and other wise	Demirgüç-Kunt et al. (2014)
ACT	Overall restrictions on banking activities index = the index measures the degree to which banks are allowed to engage in securities, insurance, real estate investment, and ownership of non-financial firms. Higher values indicate more restrictiveness.	Barth et al. (2013)
SUP	Supervisory power index = the index measures Whether the supervisory authorities have the authority to take specific actions to prevent and correct problems. Higher value denotes that supervisory agencies are authorised more oversight power.	Barth et al. (2013)
PRIMON	Private monitoring index = The index measures the degree of private monitoring which requires banks to release accurate and comprehensive information to the public. Higher value indicates greater regulatory empowerment of the monitoring of banks by private investors.	Barth et al. (2013)

References

Acharya, V., Naqvi, H., 2012. The seeds of a crisis: A theory of bank liquidity and risk taking over the business cycle. Journal of Financial Economics 106(2), 349-366.

Agénor, P.R., 2001. Benefits and costs of international financial integration: theory and facts. The World Bank.

Agoraki, M.E.K., Delis, M.D., Pasiouras, F., 2011. Regulations, competition and bank risk-taking in transition countries. Journal of Financial Stability 7(1), 38-48.

Allen, F., Beck, T., Carletti, E., Lane, P.R., Schoenmaker, D., Wagner, W., 2011. Cross-border banking in Europe: implications for financial stability and macroeconomic policies. CEPR.

Ananchotikul, N., Piao, S., Zoli, M.E., 2015. Drivers of financial integration–implications for Asia. International Monetary Fund Working Paper No. 15-160.

Andrews, D.W., Lu, B., 2001. Consistent model and moment selection procedures for GMM estimation with application to dynamic panel data models. Journal of Econometrics, 101(1), 123-164.

Arellano, M., Bover, O., 1995. Another look at the instrumental variable estimation of error-components models. Journal of Econometrics 68(1), 29-51.

Asian Development Bank, 2008. Emerging Asian Regionalism- A partnership for Shared Prosperity.

Bank for International Settlement, 2015. Introduction to BIS statistics. BIS Quarterly Review September 2015.

Barth, J.R., Caprio Jr, G., Levine, R., 2013. Bank regulation and supervision in 180 countries from 1999 to 2011. Journal of Financial Economic Policy 5(2), 111-219.

Beck, T., De Jonghe, O., Schepens, G., 2013. Bank competition and stability: Cross-country heterogeneity. Journal of Financial Intermediation 22(2), 218-244.

Beck, T., Demirgüç-Kunt, A., Levine, R., 2006. Bank concentration, competition, and crises: First results. Journal of Banking and Finance 30(5), 1581-1603.

Berger, A.N., Bonime, S.D., Covitz, D.M., Hancock, D., 2000. Why are bank profits so persistent? The roles of product market competition, informational opacity, and regional/macroeconomic shocks. Journal of Banking and Finance 24(7), 1203-1235.

Blundell, R., Bond, S., 1998. Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics 87(1), 115-143.

Brennan, M.J., Cao, H.H., 1997. International portfolio investment flows. The Journal of Finance 52(5), 1851-1880.

Buch, C.M., Koch, C.T., Koetter, M., 2012. Do banks benefit from internationalization? Revisiting the market power–risk nexus. Review of Finance 17(4), 1401-1435.

Claessens, S., Van Horen, N., 2015. The impact of the Global Financial Crisis on banking globalization. IMF Economic Review 63(4).

Claessens, S., Van Horen, N., 2014. Location decisions of foreign banks and competitor remoteness. Journal of Money, Credit and Banking 46(1), 145-170.

Claessens, S., Demirgüç-Kunt, A., Huizinga, H., 2001. How does foreign entry affect domestic banking markets? Journal of Banking and Finance 25(5), 891-911.

Cubillas, E., González, F., 2014. Financial liberalization and bank risk-taking: International evidence. Journal of Financial Stability 11, 32-48.

Dell' Ariccia, G., Marquez, R., 2006. Lending booms and lending standards. The Journal of Finance 61(5), 2511–2546.

Demirgüç-Kunt, A., Huizinga, H., 2010. Bank activity and funding strategies: The impact on risk and returns. Journal of Financial Economics 98(3), 626-650.

Demirgüç-Kunt, A., Kane, E.J., Laeven, L., 2014. Deposit insurance database. National Bureau of Economic Research (NBER) Working Papers No. 20278.

Detragiache, E., Tressel, T., Gupta, P., 2008. Foreign banks in poor countries: theory and evidence. The Journal of Finance 63(5), 2123-2160.

Dinger, V., Kaat, D.M., 2017. Cross-border capital flows and bank risk-taking. Working paper.

Faia, E., Ottaviano, G.I., 2017. Global banking: Risk taking and competition. Centre for Economic Performance (CEP), London School of Economics, Discussion Paper No. 1471.

García-Herrero, G., Martínez Pería, S.M., 2007: The mix of international banks' foreign claims: determinants and implications. Journal of Banking and Finance 31(6), 1613-1631.

Houston, J.F., Lin, C., Ma, Y., 2012. Regulatory arbitrage and international bank flows. The Journal of Finance 67(5), 1845-1895.

Karolyi, G.A., Sedunov, J., Taboada, A.G., 2018. Cross-border bank flows and systemic risk. SSRN working paper.

Knyazeva, A., Knyazeva, D., 2012. Does being your bank's neighbour matter?. Journal of Banking and Finance 36(4), 1194-1209.

Kose, M.A., Prasad, E. S., Taylor, A.D., 2009. Thresholds in the process of international financial integration. The World Bank.

Laeven, L., Levine, R., 2009. Bank governance, regulation and risk taking. Journal of Financial Economics 93(2), 259-275.

Laeven, L., Valencia, F., 2012. Systemic Banking Crises Database: An Update. International Monetary Fund Working paper No. WP/12/163.

Maddala, G. S., Wu, S., 1999. A comparative study of unit root tests with panel data and a new simple test. Oxford Bulletin of Economics and statistics 61(S1), 631-652.

Mian, A., 2006. Distance constraints: The limits of foreign lending in poor economies. The Journal of Finance 61(3), 1465-1505.

Neumann, R.M., 2003. International capital flows under asymmetric information and costly monitoring: implications of debt and equity financing. Canadian Journal of Economics 36(3), 674-700.

Ng, T.H., Yarcia, D.L., 2014. Has regional integration led to greater risk-sharing in Asia?. Asian Development Bank Working Paper No. 135.

Nickell, S., 1981. Biases in dynamic models with fixed effects. Econometrica, 1417-1426.

Ongena, S., Popov, A., Udell, G.F., 2013. "When the cat's away the mice will play": Does regulation at home affect bank risk-taking abroad?. Journal of Financial Economics 108(3), 727-750.

Petersen, M.A., Rajan, R.G., 2002. Does distance still matter? The information revolution in small business lending. The Journal of Finance 57(6), 2533-2570.

Reinhart, C.M., Rogoff, K.S., 2008. Is the 2007 US sub-prime financial crisis so different? An international historical comparison. American Economic Review 98(2), 339-44.

Roodman, D., 2006. How to do xtabond2: An introduction to 'difference' and 'system GMM in STATA. Center for Global Development Working Paper No. 103.

Roy, A.D., 1952. Safety first and the holding of assets. Econometrica, 431-449.

Windmeijer, F., 2005. A finite sample correction for the variance of linear efficient two-step GMM estimators. Journal of Econometrics 126(1), 25-51.

World Bank, 2018. Bankers Without Borders. Global Financial Development Report 2017/2018.

Wu, J., Chen, M., Jeon, B.N., Wang, R., 2017. Does foreign bank penetration affect the risk of domestic banks? Evidence from emerging economies. Journal of Financial Stability 31, 45-61.

Table 1 Descriptive Statistics

	Mean	Std.	Min	Max	N
LN(zscore)	3.648	1.226	-2.377	7.895	2280
CAP (%)	10.275	7.264	1.520	81.300	2280
ROA (%)	1.118	1.134	-8.970	8.840	2280
ROA_VOL	0.611	1.592	0.012	17.423	2280
CRERISK(%)	5.400	9.233	0.010	70.780	2280
INC_IV (%)	14.122	11.064	0.100	85.057	2280
COST (%)	1.942	1.600	0.050	23.423	2280
CHARTER (%)	33.983	26.322	0.153	100.000	2280
CON (%)	44.734	10.018	29.789	94.407	2280
IFL (%)	4.145	3.209	-3.953	20.489	2280
GDP (%)	12.934	10.453	-13.044	47.368	2280
PRICRE (%)	91.607	46.601	19.909	233.663	2280
INS	0.514	0.500	0.000	1.000	2280
INT (%)	3.068	3.521	-3.903	13.347	2280
ACT	8.627	2.409	3.000	12.000	2141
SUP	12.304	2.584	7.000	16.000	1161
PRIMON	9.427	1.070	7.000	11.000	1846
CLAIM (%) (*)	28.136	38.240	3.357	290.071	2280
LN(claim)	11.854	1.137	9.937	14.074	2280
ASIAN (%)	5.126	7.063	0.644	50.360	2280
NON_ASIAN (%)	16.230	26.975	1.718	189.181	2280
LN(asian)	10.111	1.095	8.021	12.217	2280
LN(non_asian)	11.165	1.055	9.452	13.219	2280
LOCAL (%)	14.388	27.132	1.446	186.572	1710
CROSS (%)	8.035	7.915	1.761	50.262	1710
LN(local)	11.201	1.039	8.842	13.206	1710
LN(cross)	11.192	1.104	9.187	13.135	1710

The table reports descriptive statistics for the variables used in the empirical analysis. There are 2,280 bank-year observations (about 393 banks) for eight sampled countries (including China, Hong Kong, Indonesia, Malaysia, Philippines, Korea, Singapore, and Thailand) during 1999–2014. For the definition and construction of the variables, see Appendix C. Mean refers to the average value for each variable. Std. refers to standard deviation. Min and Max are the minimum and maximum observations for each variable in the sample. N refers to the number of observations.

(*): ASIAN and NON_ASIAN (similarly LOCAL and CROSS) do not add up to CLAIM. The deviation originates from the types of reporting banks from which the underlying statistics are aggregated. Specifically, in the case of CLAIM, there are three type of banks reporting to BIS, including (i) domestic banks (controlled by parent entities with the same country code as the reporting country); (ii) banks located in the reporting country, but controlled by parents entities located in non-reporting countries; (iii) banks controlled by parent entities located in the reporting country but not consolidated by their parent. In the case of ASIAN, NON_ASIAN, LOCAL and CROSS, reporting banks are only domestic banks. For further detail, refer to Appendix A.

Table 2 Pairwise correlation between variables

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
[1] ZSCORE	1.00																		
[2] CAP	0.12*	1.00																	
[3] CRERISK	-0.03	0.17*	1.00																
[4] INC_DIV	0.01	0.22*	0.13*	1.00															
[5] COST	-0.04*	0.19*	0.23*	0.11*	1.00														
[6] CHARTER	0.00	-0.09*	-0.01	0.00	-0.25*	1.00													
[7] CON	-0.01	0.01	0.06*	0.12*	-0.04*	0.30*	1.00												
[8] IFL	-0.04*	0.12*	0.09*	-0.08*	0.32*	-0.15*	0.09*	1.00											
[9] GDP	-0.04*	-0.10*	0.00	-0.14*	-0.04*	0.18*	0.02	0.28*	1.00										
[10] PRICRE	0.06*	-0.22*	-0.25*	-0.10*	-0.54*	0.23*	-0.08*	-0.61	-0.10*	1.00									
[11] INT	0.00	0.08*	0.14*	0.07*	0.15*	-0.14*	0.14*	0.04*	-0.43*	-0.16*	1.00								
[12] CLAIM	0.02	0.10*	0.02	0.31*	-0.08*	-0.02	0.50*	-0.17*	-0.24*	0.25*	0.15*	1.00							
[13] ASIAN	0.05*	0.15*	0.03	0.30*	-0.04	-0.04	0.62*	-0.11*	-0.26*	0.19*	0.18*	0.91*	1.00*						
[14] NON_ASIAN	0.00	0.08*	0.02	0.29*	-0.08*	0.01	0.51*	-0.15*	-0.21*	0.24*	0.16*	0.99*	0.89*	1.00					
[15] CROSS	0.05	0.09*	-0.03	0.40*	-0.02	-0.11*	0.62*	-0.15*	-0.27*	0.18*	0.19*	0.96*	0.87*	0.95*	1.00				
[16] LOCAL	0.03*	0.08*	-0.07*	0.33*	-0.09*	-0.11*	0.58*	-0.18*	-0.23*	0.31*	0.12*	0.99*	0.89*	0.98*	0.94*	1.00			
[17] ACT	-0.06*	-0.17*	-0.16*	-0.41*	-0.22*	0.28*	-0.09*	0.17*	0.45*	0.14*	-0.40*	-0.55*	-0.49*	-0.52*	-0.64*	-0.56*	1.00		
[18] SUP	-0.03*	0.17*	-0.07*	0.02	0.08*	-0.06*	-0.02	0.29*	0.29*	-0.30*	-0.26*	-0.05	-0.02	-0.07*	-0.19*	-0.15*	0.51*	1.00	
[19] PRIMON	-0.07*	-0.18*	-0.25*	-0.24*	-0.26*	0.23*	-0.11*	-0.15*	0.16*	0.28*	-0.14*	-0.26*	-0.30*	-0.24*	-0.35*	-0.31*	0.36*	0.04	1.00

The table reports the Pearson rank correlation coefficients among variables. * indicate statistical significance at the 5% level.

Table 3 The impact of financial integration on bank distance to default

	(1)	(2)
L.LN(zscore)	0.423***	0.425***
	(0.04)	(0.04)
CLAIM	0.046*	
	(0.02)	
LN(claim)		1.924***
		(0.66)
CAP	0.063***	0.060***
	(0.02)	(0.02)
CRERISK	-0.004	-0.004
	(0.01)	(0.01)
INC_DIV	-0.024**	-0.021*
	(0.01)	(0.01)
COST	-0.112	-0.087
	(0.09)	(0.10)
CHARTER	0.001	-0.002
	(0.01)	(0.01)
CON	0.075**	0.052*
	(0.03)	(0.03)
IFL	-0.034	-0.029
	(0.03)	(0.03)
GDP	-0.037**	-0.041**
	(0.02)	(0.02)
PRICRE	-0.044**	-0.028**
	(0.02)	(0.01)
INS	-0.933*	-0.514
	(0.52)	(0.44)
INT	-0.049*	-0.061**
	(0.03)	(0.03)
ACT	0.163	0.291**
	(0.10)	(0.13)
SUP	0.219**	0.115
	(0.11)	(0.10)
PRIMON	0.639**	0.337*
	(0.26)	(0.18)
ODUM	0.015	0.020
	(0.10)	(0.11)
CRISIS	-1.389**	-1.741**
	(0.70)	(0.70)
Constant	-6.383*	-25.450***
	(3.58)	(8.78)
#Obs.	836	836
# banks	202	202
# IV	100	100
AR(2) test (p value)	0.342	0.288
Hansen-J test (p value)	0.602	0.476
Diff-In-Hansen test (p value):		
GMM instruments for level	0.698	0.417
GMM instruments for the lagged dependent variable	0.696	0.619
GMM instruments for endogenous bank-level variables	0.486	0.186
GMM instruments for predetermined variables	0.275	0.192
IV instruments for exogenous variables	0.579	0.287

The table reports the impact of financial integration on bank default risk from Equation 1:

$$RISK_{ijt} = \beta_0 RISK_{ijt-1} + \boldsymbol{\beta_1 INTEG_{jt}} + \beta_k BANK^k_{ijt} + \beta_m COUNTRY^m_{jt} + \theta_i + \gamma_j + \mu_t + \varepsilon_{ijt}$$

The dependent variable is the natural logarithm of ZSCORE to proxy for bank default risk. Financial integration is proxied via the ratio of foreign claims to GDP (CLAIM) or the natural logarithm of foreign claims (LN(claim)). For the definition and construction of other control variables, see Appendix C. Bank FE, country and time dummies are included, but not reported to save space.

All models are estimated by the system GMM. For the dependent variable and endogenous bank-level control variables, their second and third lagged values are used as instruments in the transformed equation; the first lag of their differenced values are used as instruments in the level equation. For the predetermined variables (including financial integration and regulation variables), their first and second lagged values are used as instruments in the transformed equation; their differenced values are used as instruments in the level equation. For exogenous variables (including other country-level control variables, time and country dummies), their differenced values are used as instruments in the transformed equation; their level values are used as instruments in the level equation. The system GMM is run by the *xtabond2* Stata syntax written by Roodman (2006). *Collapse* option is used in specifying instruments for the endogenous and predetermined variables. As there are gaps in the sample panel, the forward orthogonal deviations transform (*orthogonal* option) is used instead of first differencing to maximise the sample size. *Twostep* along with the *robust* option are used to obtain the finite sample corrected two-step covariance matrix following Windmeijer (2005) correction. *Small* option is to adjust the estimates for small-sample and report t-statistics instead of z-statistics.

Insignificant value of AR(2) tests confirm the absence of the serial correlation in the second order. Similarly, insignificant value of Hansen J-statistics test and Difference-in-Hansen test ensures the validity of the instruments. The robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Table 4 The impact of Asian claims and non-Asian claims on bank distance to default

	(1)	(2)	(3)	(4)
L.LN(zscore)	0.460***	0.434***	0.439***	0.429***
	(0.04)	(0.04)	(0.04)	(0.05)
ASIAN	0.071**			
	(0.03)			
NON_ASIAN		0.013		
		(0.03)		
LN(asian)			0.824**	
			(0.38)	
LN(non_asian)				0.618
				(0.40)
CAP	0.052**	0.056***	0.053***	0.049**
	(0.02)	(0.02)	(0.02)	(0.02)
CRERISK	-0.005	-0.006	-0.006	-0.007
	(0.01)	(0.01)	(0.01)	(0.01)
INC_DIV	-0.014	-0.021**	-0.014	-0.025**
	(0.01)	(0.01)	(0.01)	(0.01)
COST	-0.089	-0.123	-0.086	-0.119
	(0.10)	(0.08)	(0.10)	(0.09)
CHARTER	-0.004	0.002	-0.004	0.002
	(0.01)	(0.01)	(0.01)	(0.01)
CON	0.016	0.047	0.032	0.061*
	(0.03)	(0.04)	(0.02)	(0.03)
IFL	-0.050	-0.041	-0.063*	-0.036
	(0.03)	(0.03)	(0.03)	(0.03)
GDP	-0.033**	-0.025	-0.028**	-0.028*
	(0.02)	(0.02)	(0.01)	(0.02)
PRICRE	-0.019	-0.017	-0.010	-0.018
	(0.01)	(0.02)	(0.01)	(0.01)
INS	-0.445	-0.580	-0.312	-0.324
	(0.45)	(0.50)	(0.44)	(0.45)
INT	-0.037	-0.034	-0.039	-0.041
	(0.02)	(0.03)	(0.02)	(0.03)
ACT	0.077	0.064	0.142	0.168*
	(0.06)	(0.08)	(0.09)	(0.09)
SUP	0.082	0.147	0.097	0.162
	(0.10)	(0.12)	(0.10)	(0.11)
PRIMON	0.212	0.378	0.202	0.373*
	(0.18)	(0.27)	(0.16)	(0.22)
ODUM	0.040	0.014	0.004	0.028
	(0.10)	(0.10)	(0.09)	(0.10)
CRISIS	-0.211	-0.631	-0.848	-1.480*
	(0.48)	(0.81)	(0.53)	(0.87)
Constant	0.246	-3.777	-10.069**	-16.984**
	(3.02)	(4.17)	(4.70)	(8.33)
#Obs.	836	836	836	836
# banks.	202	202	202	202
# IV	100	100	100	100
AR(2) test (p value)	0.308	0.397	0.347	0.381
Hansen-J test (p value)	0.643	0.655	0.665	0.37
Diff-In-Hansen test (p value):				

GMM instruments for level	0.492	0.761	0.697	0.276
GMM instruments for the lagged dependent var.	0.887	0.795	0.815	0.728
GMM instruments for endogenous var.	0.281	0.716	0.252	0.595
GMM instruments for predetermined var.	0.572	0.339	0.483	0.171
IV instruments for exogenous var.	0.33	0.665	0.375	0.201

The table reports the impact of different forms of financial integration on bank default risk. The total foreign claims are classified by the lender nationality. In column 1 and 2, ASIAN and NON_ASIAN are the foreign claims extended by international banks whose nationality are Asian and non-Asian, respectively; these statistics are then scaled by GDP of the sampled countries. As a robust check, the natural logarithm of these statistics (i.e. (LN(asian) and LN(non_asian)) are constructed and presented in column 3 and 4. The dependent variable is the natural logarithm of ZSCORE to proxy for bank default risk. Other control variables definition and the system GMM specification remain unchanged (as reported in Table 3). The robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Table 5 The impact of local claims and cross-border claims on bank distance to default

	(1)	(2)	(3)	(4)
L.LN(zscore)	0.464***	0.455***	0.445***	0.451***
	(0.06)	(0.06)	(0.06)	(0.06)
LOCAL	0.101**			
	(0.04)			
CROSS		0.046		
		(0.05)		
LN(local)			1.438*	
			(0.78)	
LN(cross)				0.213
				(0.54)
CAP	0.036*	0.033	0.039*	0.028
	(0.02)	(0.02)	(0.02)	(0.02)
CRERISK	0.009	0.007	0.008	0.006
	(0.02)	(0.02)	(0.02)	(0.02)
INC_DIV	-0.018*	-0.014	-0.015	-0.011
	(0.01)	(0.01)	(0.01)	(0.01)
COST	-0.132	-0.105	-0.111	-0.108
	(0.10)	(0.09)	(0.09)	(0.10)
CHARTER	-0.005	-0.006	-0.006	-0.006
	(0.01)	(0.01)	(0.01)	(0.01)
CON	0.035	0.059	0.027	0.034
	(0.03)	(0.05)	(0.03)	(0.04)
IFL	0.005	-0.028	0.012	-0.041
	(0.04)	(0.04)	(0.04)	(0.04)
GDP	-0.042**	-0.031*	-0.039*	-0.024
	(0.02)	(0.02)	(0.02)	(0.02)
PRICRE	-0.052***	-0.036*	-0.025	-0.023
	(0.02)	(0.02)	(0.02)	(0.02)
INS	-0.499*	0.388	0.233	-0.496**
	(0.27)	(0.25)	(0.26)	(0.24)
INT	-0.041	-0.027	-0.033	-0.015
	(0.04)	(0.04)	(0.05)	(0.05)
ACT	-0.071	0.032	0.176	0.137
	(0.12)	(0.14)	(0.16)	(0.15)
SUP	0.360	0.322	0.318	0.337
	(0.25)	(0.25)	(0.33)	(0.30)
PRIMON	0.807	0.762	0.911	0.907
	(0.70)	(0.74)	(0.94)	(0.88)
ODUM	0.137	0.142	0.113	0.143
	(0.12)	(0.13)	(0.12)	(0.13)
Constant	-15.697*	-4.613	-22.26**	-7.781
	(8.53)	(6.40)	(10.91)	(8.64)
#Obs.	615	615	615	615
# banks.	156	156	156	156
# IV	80	80	80	80
AR(2) test (p value)	0.103	0.15	0.186	0.239
Hansen-J test (p value)	0.509	0.415	0.42	0.289
Diff-In-Hansen test (p value)				

GMM instruments for level	0.716	0.847	0.724	0.804
GMM instruments for the lagged dependent var.	0.583	0.523	0.387	0.575
GMM instruments for endogenous bank-level var.	0.228	0.492	0.13	0.159
GMM instruments for predetermined var.	0.884	0.536	0.829	0.357
IV instruments for exogenous var.	0.886	0.550	0.860	0.474

The table reports the impact of different forms of financial integration on bank default risk. The total foreign claims are classified by the methods of extension. In column 1 and 2, LOCAL and CROSS are the foreign claims extended by international banks via their foreign affiliates or across borders; these statistics are then scaled by GDP of the sampled countries. As a robust check, the natural logarithm of these statistics (i.e. (LN(local) and LN(cross)) are constructed and presented in column 3 and 4. The examination period is 2005-2014 due to the availability data. The dependent variable is the natural logarithm of ZSCORE to proxy for bank default risk. Other control variables definition and the system GMM specification remain unchanged (as reported in Table 3). The robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Table 6 The impact of financial integration on bank profit volatility

	(1)	(2)	(3)	(4)	(5)
L.ROA_VOL	0.391***	0.399***	0.397***	0.429***	0.431***
	(0.12)	(0.12)	(0.12)	(0.06)	(0.06)
CLAIM	-0.023**				
	(0.01)				
ASIAN		-0.031**			
		(0.01)			
NON_ASIAN			-0.020		
			(0.01)		
LOCAL				-0.026*	
				(0.02)	
CROSS					-0.000
					(0.01)
CAP	-0.007	-0.005	-0.006	0.001	0.003
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
CRERISK	-0.004	-0.002	-0.003	-0.020	-0.015
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
INC_DIV	0.012	0.010	0.012	0.001	-0.002
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
COST	-0.035	-0.025	-0.028	0.014	0.011
	(0.05)	(0.04)	(0.05)	(0.03)	(0.03)
CHARTER	-0.003	-0.003	-0.002	0.000	0.002
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
CON	-0.026*	-0.005	-0.022	0.006	0.006
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
IFL	0.063**	0.054*	0.060*	-0.011	0.003
	(0.03)	(0.03)	(0.03)	(0.02)	(0.01)
GDP	0.031***	0.023**	0.026***	0.011**	0.007
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
PRICRE	0.029**	0.016**	0.020**	0.018**	0.008
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
INS	0.390	0.190	0.255	-0.038	-0.077
	(0.25)	(0.19)	(0.21)	(0.14)	(0.10)
INT	0.001	-0.004	-0.005	-0.005	-0.005
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
ACT	-0.079	-0.036	-0.053	-0.017	-0.023
	(0.05)	(0.04)	(0.05)	(0.04)	(0.03)
SUP	-0.141***	-0.081*	-0.129**	-0.235**	-0.167**
	(0.05)	(0.05)	(0.06)	(0.11)	(0.07)
PRIMON	-0.310**	-0.165*	-0.238*	-0.568**	-0.399**
	(0.12)	(0.09)	(0.12)	(0.28)	(0.20)
ODUM	-0.078	-0.068	-0.087	-0.062	-0.045
	(0.12)	(0.10)	(0.11)	(0.07)	(0.06)
CRISIS	0.622	0.134	0.516		
	(0.49)	(0.35)	(0.50)		
Constant	2.364*	0.520	2.248	7.647**	3.197*
	(1.34)	(1.24)	(1.65)	(3.86)	(1.71)
#Obs.	836	836	836	615	615
# banks.	202	202	202	156	156
# IV	100	100	100	80	80
AR(2) test (p value)	0.844	0.719	0.946	0.84	0.758
Hansen-J test (p value)	0.46	0.764	0.454	0.711	0.654

The table reports the impact of financial integration on bank profit volatility (ROA_VOL). ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Table 7 Low financial integration countries sub-sampling

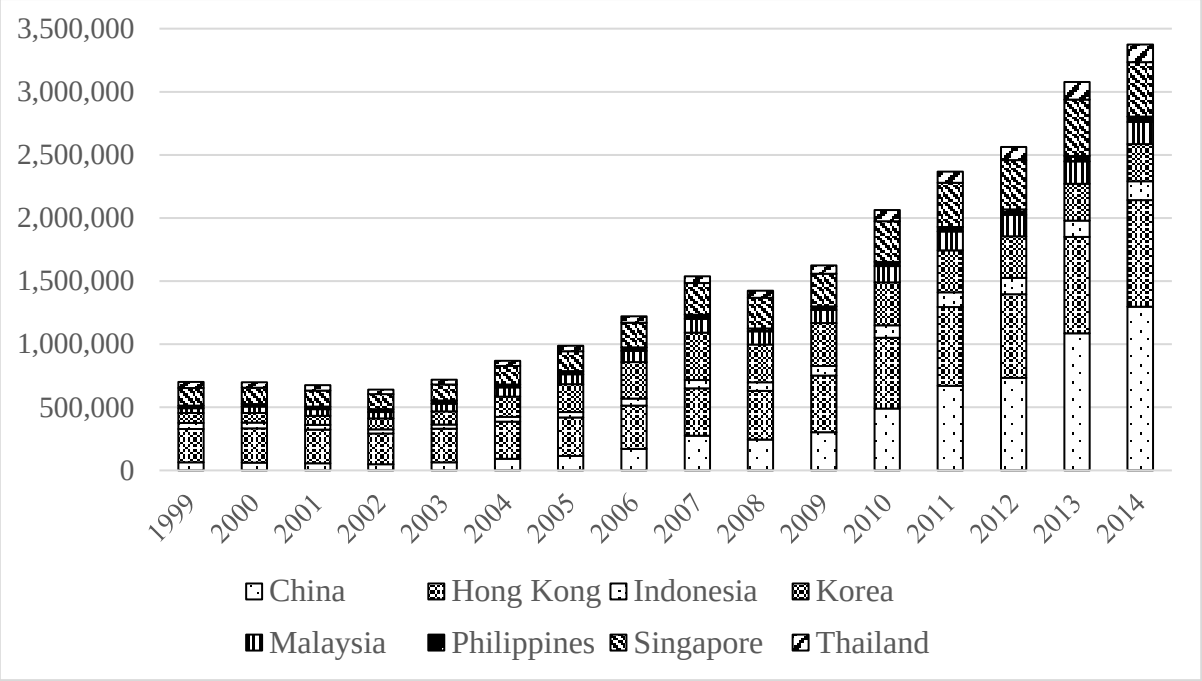
	(1)	(2)	(3)	(4)	(5)
L.LN(zscore)	0.421***	0.464***	0.433***	0.465***	0.463***
	(0.05)	(0.04)	(0.05)	(0.06)	(0.06)
CLAIM	0.065**				
	(0.03)				
ASIAN		0.073**			
		(0.03)			
NON_ASIAN			0.018		
			(0.05)		
LOCAL				0.132***	
				(0.04)	
CROSS					0.062
					(0.05)
CAP	0.060***	0.046**	0.056***	0.023	0.023
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
CRERISK	-0.006	-0.006	-0.009	0.000	0.003
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
INC_DIV	-0.023*	-0.012	-0.017	-0.014	-0.008
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COST	-0.132	-0.107	-0.111	-0.077	-0.057
	(0.10)	(0.10)	(0.08)	(0.10)	(0.09)
CHARTER	0.003	0.002	0.000	0.001	-0.006
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
CON	0.066*	0.022	0.024	0.021	0.081**
	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)
IFL	-0.050	-0.054	-0.073**	0.025	-0.026
	(0.03)	(0.03)	(0.03)	(0.05)	(0.05)
GDP	-0.035**	-0.032*	-0.023	-0.038*	-0.040**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
PRICRE	-0.050**	-0.026	-0.017	-0.067***	-0.048*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
INS	-0.662	-0.435	-0.301	0.712*	0.515
	(0.58)	(0.55)	(0.54)	(0.40)	(0.38)
INT	-0.055*	-0.055*	-0.043	-0.033	-0.051
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
ACT	0.221*	0.055	0.027		
	(0.13)	(0.09)	(0.13)		
SUP	0.171	0.077	0.105	0.482*	0.313
	(0.12)	(0.12)	(0.11)	(0.25)	(0.27)
PRIMON	0.623**	0.287	0.230	1.275**	0.756
	(0.28)	(0.21)	(0.26)	(0.64)	(0.70)
ODUM	-0.082	-0.076	-0.071	0.069	0.089
	(0.11)	(0.11)	(0.10)	(0.13)	(0.12)
CRISIS	-1.256*	-0.141	-0.044		
	(0.71)	(0.50)	(0.88)		
Constant	-5.482	-0.040	-0.480	-17.275*	-11.552
	(3.86)	(3.06)	(4.36)	(9.18)	(10.78)
#Obs.	796	796	796	575	575
# banks.	188	188	188	142	142
# IV	98	98	98	78	78
AR(2) test (p value)	0.398	0.432	0.466	0.116	0.155
Hansen-J test (p value)	0.438	0.444	0.364	0.314	0.199

This table reports the robustness test on the sub-sample of countries with low level of financial integration. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Table 8: Domestic banks sub-sampling

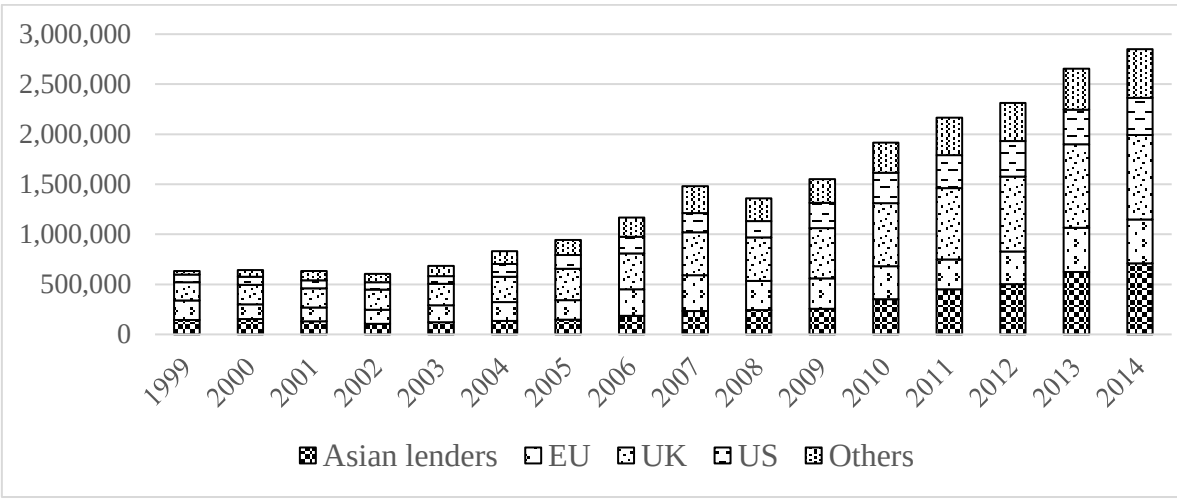
	(1)	(2)	(3)	(4)	(5)
L.LN(zscore)	0.426***	0.451***	0.424***	0.404***	0.416***
	(0.05)	(0.05)	(0.06)	(0.07)	(0.08)
CLAIM	0.041*				
	(0.02)				
ASIAN		0.062*			
		(0.04)			
NON_ASIAN			0.027		
			(0.04)		
LOCAL				0.150***	
				(0.05)	
CROSS					0.065
					(0.07)
CAP	0.049	0.042	0.046	0.013	0.016
	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)
CRERISK	-0.009	-0.006	-0.014	0.019	0.001
	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)
INC_DIV	-0.022*	-0.020	-0.021	-0.019*	-0.011
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COST	-0.183*	-0.161	-0.170*	-0.100	-0.061
	(0.10)	(0.11)	(0.10)	(0.08)	(0.10)
CHARTER	-0.000	-0.001	0.001	0.010	0.004
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
CON	0.032	-0.006	0.024	-0.024	0.005
	(0.04)	(0.03)	(0.05)	(0.04)	(0.05)
IFL	-0.038	-0.036	-0.034	0.075	-0.002
	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)
GDP	-0.018	-0.015	-0.007	-0.024	-0.008
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
PRICRE	-0.031	-0.014	-0.011	-0.071***	-0.043*
	(0.02)	(0.01)	(0.02)	(0.03)	(0.03)
INS	-0.717	-0.310	-0.405	0.014	0.002
	(0.81)	(0.76)	(0.85)	(0.40)	(0.46)
INT	-0.005	0.004	0.010	0.040	0.044
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)
ACT	0.148*	-0.016	-0.024	-0.142	0.011
	(0.08)	(0.07)	(0.09)	(0.21)	(0.28)
SUP	0.228	0.250***	0.187	0.601**	0.210**
	(0.14)	(0.09)	(0.16)	(0.27)	(0.10)
PRIMON	0.341	0.059	0.206	1.079	0.912
	(0.31)	(0.24)	(0.35)	(0.80)	(0.97)
CRISIS	-0.752	0.198	-0.463		
	(0.87)	(0.79)	(1.11)		
Constant	-2.032	2.411	-1.400	-22.050**	-4.819
	(3.62)	(3.57)	(4.74)	(8.63)	(8.34)
#Obs.	521	521	521	366	366
# banks.	142	142	142	99	99
# IV	99	99	99	79	79
AR(2) test (p value)	0.799	0.854	0.818	0.263	0.194
Hansen-J test (p value)	0.852	0.891	0.813	0.447	0.273
Diff-In-Hansen test for level equation (p value)	0.71	0.695	0.664	0.133	0.223

This table reports the robustness test on the sub-sample of domestic banks. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.



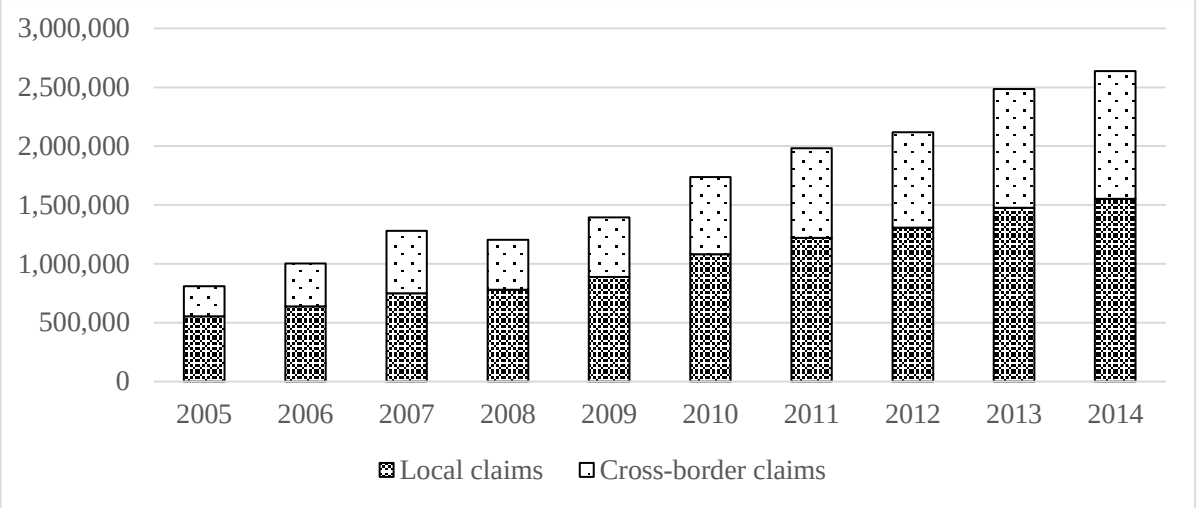
This figure reports the total foreign claims (in millions USD) extended to each recipient country in the sample during 1999-2014. The source (lender) countries include 31 countries who report to BIS (see Appendix A). Types of reporting banks include: (i) domestic banks (controlled by parent entities with the same country code as the reporting country); (ii) banks located in the reporting country, but controlled by parents entities located in non-reporting countries; (iii) banks controlled by parent entities located in the reporting country but not consolidated by their parent. Source: BIS Consolidated on Immediate Counterparty basis (CBS-IC), bank type "All excluding 4C banks, excluding domestic position".

Figure 1: Total foreign banking claims on each country in the sample



This figure reports the foreign claims (in millions USD) extended to all sampled countries and broken down by lender nationality during 1999-2014. The source (lender) countries include 31 countries who report to BIS (see Appendix A). Reporting Asian lenders include Australia, Chinese Taipei, Hong Kong, Japan, Singapore and (South) Korea. Only one type of reporting banks are considered: domestic banks (controlled by parent entities with the same country code as the reporting country). Source: BIS Consolidated on Immediate Counterparty basis (CBS-IC), bank type "Domestic banks, excluding domestic position".

Figure 2: The foreign banking claims by lender nationality



This figure reports the foreign claims (in millions USD) extended to all sampled countries and broken down by methods of extension during 2005-2014. The source (lender) countries is similar to CBS-IC; except for the three countries including Brazil, Mexico, Luxembourg do not report in the CBS-UR. (see Appendix A). These source countries could extend claims either via their local affiliates set up at the recipients countries (local claims) or across border (cross-border claims). Only one type of reporting banks are considered: domestic banks (controlled by parent entities with the same country code as the reporting country). Source: BIS Consolidated on Ultimate Risk basis (CBS-UR), bank type "Domestic banks, excluding domestic position".

Figure 3: The foreign banking claims by methods of extension