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How Should We Bank With Foreigners? An Empirical Assessment of Lending Behaviour of International Banks to Six East Asian Countries

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Abstract:

The possible crucial role of international bank lending in the transmission of adverse economic disturbance from advanced economies to emerging economies in the recent global financial crisis has once again placed this type of capital flows into sharper scrutiny both in academic and policy discussions. We construct macro-and micro-panel data on international bank lending to six Asian economies, viz., Indonesia, Korea, Malaysia, Philippines, Singapore and Thailand, to analyze a number of objectives. We first examine the influence of a number of critical determinants not only to overall international bank lending but also to cross-border bank lending, and obtained one critical finding in this part of the study that cross-border lending by international banks tend to pull-out from host economies during difficult times in source economies, whereas such retrenchment are not evident on an aggregated basis. This may suggest that encouraging brick-and-mortar affiliates of international banks to 'set up shop' in recipient economies may be the judicious choice for these economies. We next critically examine the difference between subsidiaries and branches of international banks in terms of their ability to shield themselves from the financial difficulties of their global parent banks and thus their ability to continue lending in destination markets. According to our results, foreign bank subsidiaries are more capable in this regard. This finding carries with it the obvious attraction of favouring an organizational banking structure that is biased towards subsidiaries. However, national banking regulators should remember that apart from encouraging a host of other domestic and cross-border initiatives, encouraging the entry of brick-and mortar subsidiaries of international banks should not viewed as a panacea to the financial stability concerns not only in Asia but also across emerging markets in general.

JEL Classification: C23, F34, F36, G15 and N25

Key Words: International Bank Lending; Cross-border Lending; International Bank Exposure; Asian Economies.

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1. Introduction

One notable trademark of financial globalisation has been the remarkable rise in cross-border banking linkages between countries in recent years. The pros and cons of these linkages in turn are currently being intensely re-assessed in the wake of the 2007-2009 global financial crises. The alleged advantages are well-known—emerging market countries are deemed to have benefitted in the form of mitigating anti-competitive behaviour on the part of domestic banks in view of competition or the threat of competition from foreign banks which arguably leads to efficiency gains manifested in the form of greater variety in financial services and lower prices; the transfer and spill-over of knowledge and technical know-how as well as the greater availability of finance most especially to credit-constrained firms and households. Yet the recent interruption of the recent global financial crisis to this spectacular rise in international bank lending serves as a stark reminder to every observers, most especially policymakers, that international bank lending can rapidly transmit adverse shocks emanating from developed country financial markets to emerging markets. It is no surprise that under this circumstance, the role of the global banking system, in general, and international bank lending, in particular, has once again been placed into closer scrutiny. As a testament to this greater focus on the consequential role of large and volatile cross-border capital flows, most especially that of greater cross-border banking interconnectedness, this concern has in fact been placed high in the policy reform agenda of the global financial system by the International Monetary Fund and the G-20 (IMF, 2010).

In the case of the East Asian economies, the intensified volatility in global bank lending and the accompanying sharp drops in lending by the international banks in late 2008 have brought back fears of a repeat episode of credit squeeze suffered by these group of economies during the height of the 1997-98 East Asian financial crisis (Figure 1). Indonesia, Korea and Thailand, arguably among the most severely affected economies by the Asian financial crisis, experienced sudden and sharp reversal of international bank lending flows. Specifically, total

international bank claims to Indonesia, Korea and Thailand contracted by average annual rates of 6.3 percent, 7.5 percent and 13.3 percent, respectively, from 1997 to 2000. Thereafter, a steadfast surge in international bank lending again resumed and flooded these same East Asian markets for five consecutive years until the collapse of Lehman Brothers in 2008. Korea, for instance, experienced a remarkable growth in international bank lending at an average annual rate of around 35 percent from 2003 to 2007. In 2008, the country, however, suffered a sudden retrenchment in international bank lending of around 20 percent. Neighbouring Asian countries such as the Philippines and Malaysia also experienced a similar rate of sharp contractions in international bank lending in that same year.

The importance of international bank lending can also be understood from the size of the loans coming especially from the banks of three advanced economies, namely Japan, US and UK. In early 2010, the total lending of banks from these three industrialized economies to the ASEAN-5¹ economies and Korea varied from less than 10 percent to as high as 75 percent of the annual GDP of these East Asian economies. In the case of Indonesia and the Philippines, for instance, the total loans of the banks from these three advanced economies hovered at around 6 to 9 percent of Indonesia and Philippines's GDP, respectively. In the same year, Thailand received around 15 percent of its GDP in terms of lending from these three advanced economies, whereas Korea and Malaysia reported a higher amount of lending from these advanced economies at around 25 percent of their respective GDP. Finally, In view of its status as a regional financial centre, Singapore received flows of international lending from these same advanced economies' banks to the tune of around 75 percent of its GDP in 2010.

In light of the interconnectedness of the domestic banking systems in the above mentioned East Asian economies to lending by international banks, and its consequent role as a crucial source of finance for these Asian economies, the key objectives of this paper are enumerated as follows. To start, our study assesses the fundamental determinants of lending by

¹ Comprise of Indonesia, Malaysia, Philippines, Singapore and Thailand.

banks from the three advanced economies of Japan, UK and US to five Southeast Asian economies (Indonesia, Malaysia, Philippines, Singapore and Thailand) and Korea. These six Asian economies are selected because of their relatively increased reliance to international bank lending, both prior to the 1997-98 East Asian crises as well as in the years preceding the recent global financial crisis. With regards to the former, for instance, there is now a large literature that ascribes the cause and severity of the Asian financial crisis to the large short-term bank loans that these Asian economies mainly obtained from these three advanced economies. It should not come as a surprise then that once we examine the stylized data on international bank lending, banks from Japan, UK and the US have lent strongly in these economies not just in recent years as noted above, but also since the early 1990s when this surge in international lending coincided with the process of liberalization and structural reforms in the banking sector of these Asian economies.

The fundamental determining factors that we examine here include home and host country indicators. Economic performance as measured by the GDP growth rates of both the host and home economies are included as potential pull and push factors, respectively, and as such tries to account for the effect of cyclical conditions in home and host economies to international lending. Interest rate differentials between the host and home economies is another macroeconomic factor that we examined and tries to account for the role of relative rates of return. One should note that these factors have come to be considered as standard in the emerging literature on the determinants of international bank lending.² This study, however, goes beyond the examination of these standard fundamental determinants of international bank lending by squarely ascertaining the role of three other critical factors.

First, we take into account the role of expectations regarding short-term volatility in the global financial market in driving shifts in global supply conditions with regards to international bank lending. Second, a topical concern which resurfaced during the recent global financial

² See, for instance, Buch, et al (2010).

crisis is the issue of potential spill-over or contagion effect. A crucial question in this regard is whether decisions by international banks to ramp-up or contract its lending to one country necessarily extend to neighbouring economies in the East Asian region. This has come to be known in the seminal literature as the potential existence of a common lender effect.³ Finally, we deal with the issue of stability in international bank lending to our six Asian host economies by examining it via the sensitivity or reaction of lending by international banks to shocks coming from their own economies while, at the same time, taking into account the extent of the exposure by international banks into these same Asian economies. In other words, we investigate whether an escalation in international bank exposure to the six Asian host economies translates into steady financing on the part of these international banks in the face of economic disturbance occurring in their own economies. In view of what transpired during the recent global financial crisis as well as that the previous literature have contended with the issue of stability in international bank lending against the background of shocks coming instead from *host* economies,⁴ this is certainly a timely and interesting research objective to pursue.

That said, in this study rather than simply focusing alone on overall international bank lending,⁵ we also assess the impact of the above mentioned determinants to cross-border lending by international banks. By comparing the extent of influence of the same above determinants to overall international bank lending as opposed to cross-border lending by international banks, we are able to investigate on an aggregate level the distinctive influence of each of the above factors to the two channels by which international banks lend – cross-border vis-à-vis that of local lending. More importantly, in doing so, we can also explore the relative stability of the two channels of international bank lending. This is again a well-timed and worthwhile task to pursue in light of recent evidence that brick-and-mortar presence of

³ See, for instance, van Rijckeghem and Weder (2003).

⁴ See, for instance, Peria et al (2005).

⁵ See, for instance, Siregar and Choy (2010).

international banks in recipient economies is the more prudent and judicious policy to undertake within the context of host economies.⁶

The strength and soundness of the international bank's balance sheet should also influence its capacity to extend loans. Deterioration in its asset quality, for instance, would affect the capital adequacy position of the bank and in turn should influence its lending decision (Bayoumi and Melander, 2008). In order to test the likely impact of balance sheet strength and quality on the lending of the bank, our micro-panel empirical estimation will include a number of commonly observed balance sheet indicators that deal with aspects of size, solvency, net interest margin, profitability and liquidity.

Finally, once we have some understanding on the relative stability of the two channels of international bank lending as emphasized above, our study will then dig-deeper by squarely dealing with another relevant and contentious policy issue concerning the mode or organizational form of entry of international banks. Do subsidiaries and branches of international banks in the six Asian economies have a crisis-mitigating impact in terms of an unfettered capacity to lend in these economies during the recent crisis? In relation to this research question, we would like to know whether there is a significant difference between these two organizational forms of entry as far as their ability to withstand financial difficulties in their global parent banks and thereby are able to continue lending in the six Asian economies.

These are again crucial research questions which have recently been brought into the limelight of policy discussions and arguments that bear on the issue. One of this argument, for instance, is that the attraction of being able to easily ring-fence the assets of subsidiaries of foreign banks as opposed to foreign bank branches arguably leads banking regulators to favour an organizational bank structure comprised mainly of subsidiaries rather than branches (Mihaljek, 2010; Fiechter et al, 2011). In addition, as a perceived advantage for the international bank, the ability to screen and monitor its lending activities may be improved by the

⁶ See, for instance, Kamil and Rai (2010) and de Haas and Lelyveld (2010).

establishment of a local subsidiary (de Haas and van Horen, 2011). On the other hand, though, while local subsidiary reduces geographical distance, Aghion and Tirole (1997) argue that it could potentially create “functional distance within the bank as information may not be efficiently passed on from the subsidiary to the head-quarter of the bank. It is quite a surprise that in spite of the policy importance of the issues raised above, to the best of our knowledge, hardly no formal empirical work has been conducted to investigate the lending behaviour of subsidiaries and branches during a crisis, particularly so in the recent global financial crisis. We consider this aspect in our study as one of the key contribution of our paper.

The paper then proceeds as follows. Section 2 briefly presents key trends and stylized facts. Section 3 introduces the empirical approach as well as the data employed, after which we proceed to Section 4 to elaborate in greater detail the exhaustive empirical findings. The paper ends with a brief concluding section.

2. Stylized Trends

Private international capital flows are a defining feature of the global financial landscape and the experience of the six Asian economies that we examined here are no exception. Lending on an aggregated level by international banks or global banks that occur through two distinct channels -- directly, via cross-border lending by parent banks headquartered abroad, or indirectly, via credit extended by the local affiliates of these globally active banks – have expanded rapidly for these six economies from modest levels in the beginning of 2000s (Figure 1). However, this observed expansion has been quite volatile and uneven across the six Asian economies and as such are intermittently punctuated by bouts of surges and reversals throughout the decade. Perhaps with the lesser exception of Thailand, the latter characterization is much more drastic and consistently felt across the six economies during the recent GFC of 2008-2009, and at which time put a dramatic end to an international bank lending inflow boom that were experienced by these economies during the middle and latter part of the decade.

Nonetheless, a more careful examination of what transpired during the recent GFC suggests a more nuanced story to the sudden reversal in international bank flows in these six Asian economies. The component of international bank lending extended directly by the overseas headquartered parent banks of these internationally active banks is very volatile and experienced a much sharper decline during the recent crises as opposed to credit extended by the local affiliates of these same internationally active banks, which either slowed to a lesser extent than the former or quickly recovered in the immediate aftermath of the recent crises (Figure 2). In other words, the sudden retrenchment in international bank flows during the recent financial turmoil was predominantly driven by the sudden curtailment in cross-border lending by internationally active banks.

It is interesting to note also that between the early-1990s and prior to the Asian financial crisis, Japanese banks were the largest sources of funding for the banks and corporations in these six economies (Figure 3).⁷ For instance, at one point between the period of 1990 to 1994, Japanese lending amounted close to 60 percent of total international bank lending in the case of Thailand, Singapore and Indonesia. Not far from these two economies are Korea and Malaysia which recorded lending by Japanese banks of around 30 and 40 percent, respectively for the same period. As evidently presented in Figure 3, close to the onset of the Asian financial crisis and in its aftermath, a consistent waning in the share of lending by Japanese banks were experienced by all of these six economies. The diminishing dominance in lending by Japanese banks have been taken on recently to some extent by UK banks and ever consistently by US banks. As a result, such is the critical influence of Japanese, UK and US owned-banks that the combined lending of these three big economies accounted at least to around half of the combined lending by developed countries into these six Asian countries in the last two decades (Figure 3).

⁷ An exception is the Philippines which is heavily dominated by lending from US-owned banks.

Finally, it is noteworthy to mention that while international banks that are headquartered overseas have expanded their lending activities for the greater part of this decade via their cross-border lending to all of the six Asian economies, the extent of penetration by the local affiliates of these international banks reveals that these so-called foreign banks have made inroads into these six Asian economies but the extent of participation vary depending on the measure one uses. For instance, as presented in Table 1, in terms of the share of foreign banks in the total number of banks in the respective Asian economies' banking system, it shows that, with the lesser exception of Korea, the number of local affiliates of these international banks account to at least half of the domestic banking system of these economies. Whereas, an examination of the share of foreign banks in terms of total domestic banking assets indicate that foreign banks account for less than a third of domestic banking assets in these economies. This latter point may be a reflection that in these Asian economies, takeovers by foreign banks have been in the form of purchases of small financial institutions (Gopalan and Rajan, 2010).

3. Estimation Approach and Data

3.1 Dynamic Macro-Panel Model

The basic working empirical model employed to assess the possible determinants of international bank lending is represented by the following dynamic panel equation:

$$\Delta \log Claims_{ij,t} = \alpha_0 + \alpha_1 \Delta \log Claims_{ij,t-1} + \beta_1 indiff_{ij,t} + \beta_2 VIX_t + \beta_3 Clender_{ij,t} + \beta_4 growthrate_{j,t} + \beta_5 growthrate_{i,t} + \beta_7 growth_{i,t} \times exposure_{ij,t} + v_{ij,t}$$

(1)

Where i and j represent country pairs i and j , and i denotes the home or source economies of international bank lending (Japan, UK and US), while j denotes the six Asian host or recipient countries of Indonesia, Korea, Malaysia, Philippines, Singapore and Thailand. The dependent

variable in this section of the paper, $\Delta \log Claims_{ij,t}$ is the logarithmic differences of international bank lending from banks in home country i to our six host countries j ; $\Delta \log Claims_{ij,t-1}$ is the lagged of the dependent variable. In Equation (1) we assume that $v_{ij,t}$ contains the following two effects: (a) the unobserved time-invariant country-pair specific effect, η_{ij} , and (b) a stochastic error term $\varepsilon_{ij,t}$ varying across time and cross-section.

We pursue the first group of objectives set out in the beginning of this paper by conducting our estimation of equation (1) in two separate stages. In the first stage we obtain and use for our left-hand side variable available raw data on total international bank lending (cross-border lending plus total credit extended by affiliates of these international banks), whereas in the second stage we only employ available data on international cross-border lending. In doing so, we can assess the relative stability of local lending by affiliates of international banks in the six Asian host economies vis-à-vis the cross-border lending by these international banks that are headquartered overseas to our same six Asian destination economies.

In terms of our right-hand side variables in equation (1), the fundamental determinants of international capital flows are accounted for by home or push and host or pull factors that figure prominently in this extant literature. The roles of standard macroeconomic factors such as the respective real GDP growth of host country j ($growthrate_{j,t}$) and home country i ($growthrate_{i,t}$) to capture economic cycles and nominal interest differential between host country j and home country i ($indiff_{ij,t}$) to reflect rates of return in both home and host economies are included.⁸ We expect a positive coefficient on the ($indiff_{ij,t}$) variable as higher interest rate in the host country or, conversely, lower interest rates in the home countries,

⁸ These macroeconomic factors have also been considered by earlier studies such as by Jeanneau and Micu (2002) and Buch, Carstensen and Schertler (2010).

ceteris paribus, should lead to an increase in international bank flows in the host economies. We also expect a positive coefficient on the real GDP growth of host countries as higher returns in these countries should then lead to a rise in international bank flows in these countries. Whereas, there is ambiguity as to the expected sign of the real GDP growth in home countries as, on one hand, recessionary economic conditions in home countries entail lower profit opportunities at home, which should then encourage foreign banks to seek better or higher returns abroad in which case we expect a negative coefficient on the ($growthrate_{i,t}$) variable. On the other hand, weak economic conditions in the home countries may signal a worsening of the capital position of foreign banks which should then discourage, or worse, retrench their lending overseas.

Apart from considering the role of traditional push and pull factors on international bank lending, we also take into account a measure of the state of the global financial market, such as the S&P 100 Volatility Index (VIX_t) of the Chicago Board Options Exchange which is widely used as an indicator of expected short-term volatility of the global financial market. A high value of the (VIX) indicates more volatile market expectations and as such we expect a negative coefficient on the (VIX) variable as greater global volatility should lead to a reduction in international bank flows to host economies (Hermann and Mihaljek, 2010).⁹ Furthermore, in line with the well-cited study of van Rijckeghem and Weder (2003), we also include in our empirical model a measure of the potential contagion or spill-over of changes in international bank flows from one country to another, and is denoted by the ($Clender_{ij,t}$) variable. More popularly known as the common lender effect, this argues that movements in international banks' lending on one country may be transmitted to other countries that owe from the same international banks. We

⁹ It is also based on this expected relation that (VIX) is also construed as a factor that measures the global supply of international bank lending. Higher volatility corresponding to a high value of (VIX) makes it more difficult for banks to raise additional capital (Takats, 2010).

follow Peria, et al (2005) in accounting for this effect and thus operationalize $(Clender_{ij,t})$ as the changes in lending from home country i banks to all the major Asian host countries except that of the individual Asian host country j .^{10,11} We should then expect that if the common lender effect works, the coefficient on the variable $(Clender_{ij,t})$ would be positive and significant.

Turning finally into our main variable of interest, that is, in order to test the impact of home economy shocks on the stability of international bank lending to our six Asian host economies, an interaction term between our home countries' real GDP growth rate variable, $(growthrate_{i,t})$ and a measure of international banks' exposure to our individual Asian host countries, $(exposure_{ij,t})$, was created and noting that we measure $(exposure_{ij,t})$ as the ratio of home country i 's international bank lending on one particular Asian host country j to the total worldwide lending of home country i 's banks. The rationale underlying this interaction variable follows on from a similar idea by Peria et al (2005) that the variable $(growthrate_{i,t})$ can be considered an alternative measure of home economy shocks as it is essentially indistinguishable from a crisis on the grounds that crisis coincide with deterioration in macroeconomic fundamentals such as in real GDP growth rates as what happened in developed markets, for instance, during the recent global financial crisis. Consequently, the interaction between the variable $(growthrate_{i,t})$, and with the latter variable on international bank exposure, $(exposure_{ij,t})$ captures the reaction of international banks to shocks or crisis

¹⁰ As pointed out by Peria, et al (2005), in an ideal sense, the common lender effect can be equated to a portfolio allocation choice wherein changes in values of lending trigger an adjustment in other assets or claims. The limitation of working then with aggregated country level data on international bank lending is that it obscures this portfolio allocation decisions at the individual bank level.

¹¹ These major Asian host countries are the same six Asian economies that we examined in this paper, that is, Indonesia, Korea, Malaysia, Philippines, Singapore and Thailand plus China. Herein lies the distinction of the present study with regards to the Peria et al (2005) in which the latter defines the common-lender effect as the changes in lending from home country banks to all non-BIS-reporting countries other than that of the host economy. Our rationale for doing is that we would like to capture more of the regional spillover dimension as far as the movements in this type of flows.

that emanate from home or source economies which then indicate the commitment, or lack thereof, of international banks to continue lending to host economies. Based on this interpretation, a rise in international bank exposure to host economies has an effect that can work in equal but opposite directions – as exposure increases, the response of international banks to shocks coming from their own economy is either to retrench or remain steady in their lending to the six Asian host economies.¹² Thus, depending on the sign and significance of the interaction term, we can ascertain the impact of international bank exposure on how these international banks respond to a shock that originates from their own economy. A priori, if higher exposure translates into stable international bank lending, we should expect the interaction between home country foreign banks' real GDP growth rate and international bank exposure to be negative.

3.2 Dynamic Micro-Panel Model

In order to dig-deeper into the overarching issue of the credit stability of international bank lending amidst the financial turbulence that occurred in source economies in the recent global financial crisis as well as the concomitant implications of the balance sheet strength of these same banks, we estimate the following dynamic panel equation on a micro-panel dataset of foreign banks operating in the six Asian host economies:

¹² We should point out at this point, however, that the major difference between the interaction term used in our study as opposed to the interaction term used in the above cited Peria et al (2005) study is that the latter study examines the response of international banks to shocks in *host* economies and as such the interaction term used is the product between the *host* countries' real GDP growth rate (as opposed to the home countries' real GDP growth rate used in our present study) and the measure of international bank exposure. Nonetheless, the interpretation of the expected a-priori signs with regards to both the interaction term and the shock variable work out to be similar in both studies.

$$\begin{aligned}
loangrowth_{i,t} = & \alpha_0 + \alpha_1 loangrowth_{i,t-1} + \beta_1 growth\ home_{i,t} + \beta_2 int\ rate\ home_{i,t} + \\
& \beta_3 growth\ host_{i,t} + \beta_4 int\ rate\ host_{i,t} + \beta_5 solvency_{i,t} + \beta_6 weakness_{i,t} + \\
& \beta_7 int\ erest\ margin_{i,t} + \beta_8 liquidity_{i,t} + \beta_9 profitability_{i,t} + \beta_{10} size_{i,t} + \\
& \beta_{11} crisis\ dummy_{i,t} + v_{ij,t}
\end{aligned}
\tag{2a}$$

Where i denotes the individual foreign bank operating in the six Asian host countries of Indonesia, Korea, Malaysia, Philippines, Singapore and Thailand. The dependent variable in this part of the analysis, ($loangrowth_{i,t}$), is the growth rate of lending by affiliates (branches and subsidiaries) of these international banks located in the host economies. Just as in the previous analysis, we also include macroeconomic home or push and host or pull factors of host country lending by foreign banks in equation (2a). To be more specific, we employ two home country variables of the foreign banks, i.e., home country GDP growth ($growth\ home_{i,t}$) and home country lending rate ($int\ rate\ home_{i,t}$) as well as include two analogous host country variables: host country GDP growth ($growth\ host_{i,t}$) and host country lending rate ($int\ rate\ host_{i,t}$). Along similar lines of arguments presented in the previous section, we expect that the sign of home country GDP growth is ambiguous with respect to host country lending by foreign banks, whereas host country GDP growth is expected to be strongly positively related to host country lending by foreign banks. Furthermore, higher home (host) country lending rates will be negatively (positively) related to host country lending by foreign banks as higher lending rates in a country makes it attractive for banks to expand their credit in that economy.

As a point of departure with the earlier presented dynamic macro-panel model, we now include in equation (2a) a set of bank specific balance sheet variables in order to control for other bank characteristics that may influence the decision of a bank to extend credit.

Strengthening the balance sheet position of international banks has taken more prominence and traction in recent years in light of the package of proposed changes in the regulatory structures and supervisory standards in advanced economies' financial systems. Perhaps one underlying motivation in these discussions comes from the belief that the deterioration in the balance sheets of international banks from advanced economies has been blamed as one of the root-causes for the sharp and sudden dropped in the lending of international banks to East Asian economies in late 2008 and early 2009. For instance, doubts about the quality of the international banks' balance sheet started to intensely pick up starting in 2008 especially in the wake of the collapse of Bear and Stearns and Lehman Brothers (Hoggarth, et al, 2010). Thus, as earlier mentioned, another timely contribution of this study is on the inclusion and assessment of the effects of various balance sheet indicators with regards to the lending of these international banks into these six Asian economies.

A number of balance sheet indicators are thus considered in equation (2b). Quality and adequacy of assets are represented by total assets ($size_{i,t}$), liquid assets to total assets ($liquidity_{i,t}$) and equity to total assets ($solvency_{i,t}$). Theoretically, a strengthening of asset size and quality should have positive effect on international bank lending. In addition, we also consider a cost factor measured as the ratio of the loan loss provisions to net interest revenue ($weakness_{i,t}$). It is expected that a rise in this measure of cost factor should reduce the capacity to lend of the bank. Lastly, but equally important is the overall past performance of the bank. In this case, we consider the commonly used indicator of profit, i.e. return-on-asset ($profitability_{i,t}$). Lending activity of a bank should be positively related with its level of profitability. Furthermore, banks that enjoy higher net interest margins ($interestmargin_{i,t}$) tend to expand its lending.

We also include a crisis dummy ($crisisdummy_{i,t}$) which takes on the value of 1 for the years 2008-2009 to capture the amplified volatility emanating from the global financial crisis, whereas it is zero otherwise. There is actually ambiguity as to the expected sign of this crisis dummy variable with respect to its effect on host country lending by the affiliated branches and subsidiaries of these international banks. On one hand, the coefficient of this variable has been found to be either insignificant or even positive by earlier empirical studies such as by Peria et al (2005), De Haas and van Lelyveld (2006) and De Haas and van Lelyveld (2010). The underlying argument in support of this evidence is that the affiliated offices of these international banks in host economies can rely on their parent banks for support in case they encounter financial difficulties which make these group of banks either insensitive or robust to crisis episodes. This is unlike that of the case of domestic banks which lack support from parental banks which have 'deep pockets' and will have to rely on its own resources in times of financial strain. On the other hand, the nature and scale of acuteness of the recent global financial crisis in which the robustness and resilience of this so called internal capital support from parent banks to their network of affiliates in overseas locations was severely tested in the wake of the economic slowdowns in the home countries of these global banks, and as such we expect a negative coefficient for the crisis dummy variable.

Finally, in order to advance with our final main objective as highlighted in the beginning of the paper, that is, to test the credit stability implications of foreign bank branches as opposed to foreign bank subsidiaries as distinct organizational forms of entry of foreign banks, we create another dummy variable to capture the organizational form of foreign banks in our sample. To be more specific, the $subsidiary_{i,t}$ dummy variable takes a value of one if the particular foreign bank in our sample is a subsidiary operating in the individual six Asian economies, whereas it is zero if the particular foreign bank is a branch. We then use this dummy variable to create an interaction term with our earlier crisis dummy variable to test explicitly the differences between

subsidiaries and branches in their credit stability consequences to our six Asian host economies. We therefore expect to find support to the argument that subsidiaries rather than branches can shield themselves from the financial difficulties of its global parent bank if the sign of the coefficient of this interaction term comes out to be positive upon its inclusion in the same dynamic micro-panel regression that we encountered previously in equation (2a). For completeness, the dynamic micro-panel regression presented earlier as equation (2a) can now be expressed as:

$$\begin{aligned}
loangrowth_{i,t} = & \alpha_0 + \alpha_1 loangrowth_{i,t-1} + \beta_1 growth\ hom\ e_{i,t} + \beta_2 int\ rate\ hom\ e_{i,t} + \\
& \beta_3 growth\ host_{i,t} + \beta_4 int\ rate\ host_{i,t} + \beta_5 solvency_{i,t} + \beta_6 weakness_{i,t} + \\
& \beta_7 int\ erest\ m\ arg\ in_{i,t} + \beta_8 liquidity_{i,t} + \beta_9 profitability_{i,t} + \beta_{10} size_{i,t} + \\
& \beta_{11} crisis\ dummy_{i,t} + \beta_{12} crisis\ dummy_{i,t} \times subsidiary_{i,t} + v_{ij,t}
\end{aligned}
\tag{2b}$$

3.3 International Banking Statistics of the BIS

As discussed, the estimation of equation (1) in two separate stages requires us to obtain two country-level dependent variables on international bank lending -- foreign bank claims and cross-border claims, respectively. We extract these two variables and facilitate the construction of our panel using the *International Banking Statistics* made available by the Bank for International Settlements (BIS). Specifically, in the first stage of our estimation of equation (1), we use as our data on foreign bank claims, the *foreign financial claims* of international banks to the financial and non-financial sectors in the six Asian economies as reported in the BIS's *Consolidated Banking Statistics*. This bilateral data comprises of the *international financial claims* – defined as the sum of the credit extended by the foreign banks headquartered overseas (cross-border claims) and the credit extended in foreign currencies by the affiliates of

foreign banks in host economies (local claims of foreign affiliates in foreign currency) – plus the credit extended in local currency by the affiliates of foreign banks in host economies (*local claims of foreign affiliates in local currency*). As emphasized in the previous section, driven by the relative importance of international bank lending from Japan, UK and US banks into the six Asian economies, the focus of our first-stage estimation of equation (1) will be on the behaviour of foreign bank claims from banks coming from these three advanced economies.

On the other hand, obtaining a convenient and suitable data on the cross-border claims variable with regards to the second stage of our estimation of equation (1) is not straightforward. One limitation of the BIS Consolidated Banking statistics is that the data on international financial claims does not disaggregate ‘pure’ cross-border claims from that of the credit extended in foreign currencies by the affiliates of foreign banks, i.e., local claims of foreign affiliates in foreign currency. Alternatively, one can resort to using the external positions of BIS reporting banks to the financial and non-financial sectors of our six Asian economies as reported in the BIS’s Locational Banking Statistics. This is also the data that we use for our variable on cross-border claims at this stage of estimation of equation (1).¹³ In doing so, however, an issue with the Locational Banking Statistics on cross-border loans is that unlike the Consolidated Banking Statistics on foreign financial claims of international banks, it only makes available to the public the aggregate cross-border claims of all the BIS-reporting home country banks to non-BIS reporting countries including that of the six Asian economies examined here. In other words, in contrast to the estimation of equation (1) in the first stage in which we specifically focus on the behavior of bilateral foreign bank claims from banks coming from the three advanced economies of Japan, UK and the US, a constraint faced by this study is that similarly investigating the respective bilateral cross-border claims of the three major home country banks in the second stage of estimation of equation (1) is not permitted due to limitation on the available data. Thus, we settle at this stage of our estimation of equation (1) with the data

¹³ Hermann and Mihaljek (2010) also use this data for their own variable on cross-border flows.

on aggregate cross-border claims of all the BIS-reporting home country banks, which are mostly comprised of industrialized countries, to our individual six Asian host economies.^{14,15}

Finally, we construct the common lender variable, $(Clender_{ij,t})$, and the variable on exposure, $(exposure_{ij,t})$, in the first stage of estimation of equation (1) using the above mentioned BIS's Consolidated Banking Statistics data on international financial claims, whereas these same two variables were constructed using the BIS's Locational Banking Statistics data on external positions of BIS reporting banks in the second stage estimation of equation (1).¹⁶

3.4 Bankscope dataset

The raw data used in the calculation of the bank-specific variables of foreign banks as well as the raw data on total loans of affiliated branches and subsidiaries of foreign banks in equations (2a) and (2b) above were obtained from the Bureau van Dijk's BankScope database for all active foreign commercial banks in the six Asian host economies. This widely used subscription-based database makes available yearly balance sheet and income statement data for individual banks in a large number of countries including that of our six Asian economies. To be sure, the individual foreign commercial banks covered by the database were representative of the foreign commercial banking system in each of the six countries as verified by information

¹⁴ One should then note this caveat upon our presentation of the empirical results in the subsequent section of the paper.

¹⁵ One should also be made aware of the distinction between the BIS's Consolidated Banking Statistics and Locational Banking Statistics. In the former, creditor data is reported according to the nationality principle while the latter is based on the residency principle. An illustrative example will be helpful here. Take for instance US banks' loans which are consolidated on a worldwide basis regardless of their location (including for example US bank branches in Paris). In the locational statistics, all cross-border loans made by international banks in the US (including for instance Japanese banks) are reported as 'US', while the loans from US banks' branches in Paris are reported as French loans. For further discussion on the limitation of BIS data, please refer to Box 1 of Hoggarth, et.al (2010).

¹⁶ In view of the limitation we faced in terms of available data on cross-border lending as highlighted above, one should note that in the latter construction of these two variables, the aggregate cross-border lending of all the BIS-reporting home country banks were used.

obtained from the respective national monetary authorities.¹⁷ The advantage of working with Bankscope on the lending of affiliated branches and subsidiaries of foreign banks in host economies is that not only it provides data on the BIS-reporting foreign banks (the aggregated lending of these group of banks are included in the above mentioned Consolidated-BIS data), but also on the lending of foreign banks from non-BIS reporting countries. Finally, from our constructed panel data of foreign banks and in view that we can gather from Bankscope the organizational form of all these individual banks for the six Asian host economies¹⁸, the earlier mentioned organizational form dummy variable in equation (2b) for each bank in each year can then be constructed. As mentioned, the organizational form dummy (subsidiary) is one for foreign banks that operate as a subsidiary and zero for all other foreign banks that operate as branches.

4. Empirical Results

4.1 Macro-Panel Results on International Bank Lending Stability

4.1.1 The evidence from country-level data on total lending by international banks

The results of our estimation of equation (1) in two separate stages are reproduced in Tables 2 and 3 in that respective order. In both tables we first report pooled OLS and simple fixed-effects panel estimates in columns (1) and (2), respectively. We then report in the last two columns of both tables the results from the use of two dynamic GMM panel estimators, i.e., the results from the GMM difference estimator (column 3) and the GMM system estimator (column 4). It is well-known that both pooled OLS and fixed-effects estimation of a dynamic panel model will be subject to serious biases in the estimation of all model parameters. Specifically, the OLS estimate of the autoregressive coefficient will be biased upwards, while the corresponding fixed-effects estimate will be biased downwards. On the other hand, GMM estimates are supposedly

¹⁷ In this study, we used a standard definition of a foreign bank, that is, if foreign shareholders own a majority of outstanding shares that exceeds 50% of the subscribed capital of a bank.

¹⁸ This is denoted in Bankscope as entity type.

free of such bias in large samples and given some weak assumptions, the estimate of the autoregressive coefficient should lie between the OLS and fixed-effects estimates. This is known as the “bounds-test” of small sample bias. For instance, the estimate of the autoregressive coefficient, $\Delta \log Claims_{ij,t-1}$ coming from the two GMM estimators reported in columns (3) and (4) of Table 2 lie between -0.11 (fixed-effects) and -0.08 (OLS), and thus passes the small sample bias test referred to above.

Moreover, the absence and the almost lack of significance, in the OLS and fixed-effects point estimates respectively, are largely due to endogeneity problems in these estimates, and, suitably for this purpose, the GMM point estimates are intended to control. When controlling for this problem with using the GMM, most of the point estimates markedly improved in significance. Though the system GMM results in column (4) can a priori be considered superior to the difference GMM results in column (3), the results from using both the difference and the system GMM estimators show almost similar results, with the lone exception of the statistical significance of the host country growth rate variable. Finally, the standard diagnostic tests suggest no misspecification problems.¹⁹

To start, we are interested in highlighting the effect of home and host country conditions. First, it is interesting to note that we do not find evidence for a relationship between the nominal interest rate differentials between the host and home economies and the changes in lending by international banks. This is the result even after we control for the possible presence of nonlinearities in the rates with the inclusion in the regression of a quadratic term of the nominal interest rate differential as nonlinearities can arise due to the distinct divergence in interest rates during periods of financial turmoil such as what happened during the recent global financial crisis in which advanced economy interest rates dramatically fell to almost zero levels as

¹⁹ The Hansen test for over identifying restrictions and the difference Hansen test for the validity of the instruments used in system GMM estimator in addition to those used in the difference GMM estimator, fail to reject the null hypothesis that the instruments are valid. The AR2 test fails to reject the null hypothesis of no second-order residual autocorrelation.

contrasted to normal or tranquil times.²⁰ A plausible explanation for this result is that international banks when deciding to lend or not to host economies do not only take into account of relative prices but also the relative risk levels as well (de Haas and Lelyveld, 2006). Furthermore, the insignificant role of the interest rate differential on changes to total lending of international banks also suggests that changes in the monetary policy stances in the home and host countries do not affect international lending by these banks. This result is in line with recent evidence obtained by Cetorelli and Goldberg (forthcoming) in which international lending in the case of large and global US banks are insulated from changes in monetary policy in the US.²¹

A second result worth mentioning is that changes in lending by international banks is positively affected to some extent by host country GDP growth (this result is found not to be significant, however, in the difference GMM estimator). That is, the presence of a 'pull factor' in lending by international banks suggests that these banks increase (decrease) their lending on host markets once these same economies experience stronger (adverse) macroeconomic conditions. Meanwhile, we also find that changes in lending by international banks are significantly positively influenced by the international banks' home country GDP growth as well. This implies that international banks' behaviour is veered towards focusing their activities at home when domestic economic conditions are low and weak, that is, international banks tend to increase and decrease their international lending to our six Asian economies over the course of their own home economies cyclical conditions.

Next, we find evidence in support of the common lender effect in view of the positive and significant coefficient on the $Clender_{ij,t}$ variable, that is, changes in lending by international banks on one country spillover to other countries that owe from the same international banks. Furthermore, in conformity with the theoretical expectation, a rise in the expected short-term

²⁰ We also ran the dynamic panel GMM regressions without this quadratic term and the insignificant effect of the nominal interest rate differential remained.

²¹ A contrasting result is found by Buch, et al (2010) in the case of international lending by banks headquartered in 17 OECD countries.

volatility of the global financial market which is proxied in this study by the widely used S&P 100 Volatility Index (VIX_t) of the Chicago Board Options Exchange is found to significantly contribute to a decline in the changes in lending by international banks.

Finally, with regards to our ultimate variable of interest which is the interaction term between our home country international banks' real GDP growth rate and a measure of its exposure to the six Asian host economies, we obtain a negative and significant coefficient for this interaction variable as compared to the separately positive and significant coefficient of the international banks' home country real GDP growth rate. This suggests that the reaction or sensitivity of lending by international banks to shocks coming from their own economies tend to decrease as international bank exposure to the six Asian host economies increases. In short, a rise in international bank exposure translates into a steady financing on the part of the international banks in response to shocks in their own economies.²² It is interesting to mention at this point that Peria et al (2005) using similar data on *foreign financial claims* of international banks found that the lending of international banks do also become less responsive to shocks in *host* economies as exposure increases.

4.1.2 *The evidence from cross-border lending*

In certain respect, the above main result suggesting that even in the face of economic downturn in source economies lending by international banks in host economies tend to remain stable as their exposure rises appears not to be in sync with our earlier depicted stylized trend on the behaviour of these aggregated international bank lending flows. However, one should recall that the results presented in this part of the study uses total international bank lending (in BIS lingo the total foreign bank claims), which based on the BIS own definition as explained in the previous section of the study, combines data on cross-border lending and total credit

²² de Haas and van Horen (2010) find that in the wake of the Lehman Brothers collapse agency problems increased less for banks lending to countries that they had been lending to before.

extended by affiliates of these international banks. On this basis, it is only logical that in this part of the study we then formally examine the hypothesis that cross-border operations of these international banks are more prone to 'a sudden-stop' and sharp reversal during periods of economic downturn in source economies.

The dynamic-panel estimation results of directly testing this hypothesis and as such exclusively concentrating only on publicly available data on cross-border lending by international banks are presented in Table 3. For one, the standard diagnostic tests suggest no misspecification problems and we see that the two GMM-estimates of the autoregressive coefficient reported in columns (3) and (4) lie between the OLS and simple fixed-effects estimates in columns (1) and (2), respectively, and thus pass the small sample bias test referred to above. However, the difference-GMM estimates in column (3) indicate marginal improvement in significance compared to the simple-fixed effects results in column (2). On this basis, the results are slightly weaker compared to the previous GMM results presented in Table 2 -- the host country real GDP growth rate are completely insignificant as well as the lack of evidence found as to the common lender effect.

However, unlike the case of total lending by international banks, the test result for the quadratic term of the interest rate differential variable in the case of cross-border lending is found to be significant at the 10 percent level. This suggests that the transmission of monetary policy changes via the bank lending is non-linear in both home and host economies and this non-linearity is revealed in the case of cross-border lending by international banks (Table 3) as opposed to total lending by international banks (Table 2). In addition, the VIX variable retains its strong negative significance in column (4), confirming again the role of global market uncertainty in explaining the fluctuations of the cross-border lending.

Furthermore, we still obtain a positive and significant coefficient on the international banks' home country real GDP growth rate as well as a significantly positive coefficient for the interaction variable between the international banks' home country real GDP growth rate and

the measure of international bank exposure (Table 3). To be crucially noted is this positive sign of the interaction term reported in Table 3 as opposed to the negative coefficient earlier obtained for this same variable in Table 2 for the case of total international bank lending. This suggest that this time the response or sensitivity of international banks to shocks coming from their own economies is to cut their international cross-border lending to the six Asian host economies even when international bank exposure to these economies increases.

The story implied by these results is that cross-border lending by international banks pull out from host or recipient economies during difficult and tough economic times in home economies, whereas, under similar circumstances such curtailment in lending are not evident on an aggregate or collective basis. These findings reinforce the stylized evidence of the important role played by the lending of the brick-and-mortar affiliates of these international banks in mitigating or resisting the vulnerability of our six Asian economies from shocks originating in home countries. This analysis carries with it an important implication that when a country is concerned with stability in foreign bank financing and is confronted with the need to make tough choices on whether to further open their domestic banking systems, it appears that encouraging internationally active banks to lend by establishing brick-and-mortar presence in recipient economies is the prudent and sensible policy. Recent studies that arrive at similar conclusions were Peria et al (2005), Kamil and Rai (2010), and de Haas and Lelyveld (2010).

That said, more recently, Takats (2010) and the IMF (2011) have further thrown into the mix that not only the brick-and-mortar presence of international banks *per se* that matter in terms of the financial stability concerns of emerging markets but also the organizational form of entry of international banks. Specifically, encouraging the entry of subsidiaries and less so on branches can shield themselves from the financial difficulties of its parent bank (Fiechter, 2011; IMF, 2011). This is a very interesting and noteworthy objective at this juncture of the paper, to which we turn to in the next sub-section.

4.2 Micro-Panel Test Results on Local Lending: Effects of Balance Sheet and Subsidiary Mode of Entry

We will now analyse the results of the estimation of our two equations 2a and 2b using the pooled OLS, simple fixed-effects and the two GMM estimators of difference and system GMM estimators. In all, there are eight columns of results shown in Table 4. As such, the results presented based on these estimators will each have two respective columns, one containing the estimation results for equation (2a) and the other for equation (2b). Between the two GMM estimators, only the system GMM-estimates in columns (7) and (8) pass the small sample bias test referred to above and also show no misspecification problems.²³ Accordingly, we would concentrate and emphasize the results coming from our system-GMM estimates reported in Table 4.

We first highlight the results emanating from the effect of home and host country conditions on local lending by international banks. First, we find that ‘pull’ factors in terms of the host country GDP growth rate and the host country interest rate both exert a strongly positive and significant effect on host credit growth by international banks. Likewise, the home country GDP growth rate ‘push’ factor is significant and positively related to host country credit growth by international banks, which is in line with what we found in the previous section when using country-level data on international lending by international banks and again indicates that international banks tend to refocus their lending activities at home when economic conditions weaken. Furthermore, we now find evidence of a significant and negative relation between home country interest rate and host country credit growth by international banks after again controlling for the possible presence of a nonlinear relationship between these two variables by the inclusion of a quadratic term of the home country interest rate in the system-GMM

²³ That is, the difference-GMM estimates of the autoregressive coefficient of equations (2a) and (2b) in columns (5) and (6) are smaller compared to the fixed-effects estimates (columns (4) and (5)). In addition, the result of the AR2 test shown in column (6) weakly rejects at the 10 percent level the null hypothesis of no second-order residual autocorrelation.

estimations.²⁴ These results interestingly suggest that the transmission of monetary policy changes in home and host economies are strongly evident in terms of the local lending by international banks.

Next some interesting results are worth highlighting from the inclusion of balance sheet variables. To start, we do find that profitable foreign banks expand their credit faster and relatively solvent and liquid foreign banks tend to significantly decrease their host country credit growth. The latter results are contrary to our earlier expectations though a plausible explanation for this puzzling result is that relatively solvent and liquid foreign banks are typically more risk-averse and expand credit only moderately (de Haas and van Lelyveld, 2010). Our test results also demonstrate that foreign banks that enjoy relatively higher interest rate margins tend to expand their host country lending.

Finally, we now move to our main variables of interest beginning with our crisis dummy variable. This dummy variable enters significantly negative in both columns (7) and (8), which indicate that during the recent global financial crisis foreign banks contracted their local lending in the six Asian host economies. However, when testing for the differential in credit stability of foreign bank branches as opposed to foreign bank subsidiaries via the interaction term of the same crisis dummy variable with the organizational form dummy variable, the coefficient estimates are found to be significantly positive, as reported in column (6) as well as in column (8) (though it is only significant at the 10 percent level in this case). This suggests that subsidiaries have a crisis-mitigating impact on host economies, especially when the source of the shock emanates from strains in the financial conditions of global parent banks. What can serve as a plausible explanation for the notable difference between foreign bank subsidiaries and foreign bank branches in their ability to shield themselves from the financial difficulties of their parent banks? A reasonable explanation is that the payment of higher and irreversible fixed

²⁴ Though the quadratic term is found to be insignificant in columns (7) and (8), without the inclusion of this quadratic term in the system-GMM regressions, the linear home country interest rate variables becomes also insignificant.

costs that comes with the direct investment decision of a foreign bank to establish operational presence in a host economy is no more evident than that of a foreign subsidiary, which makes it harder for international banks to 'cut' and 'run' during times of financial troubles either in host or source economies.²⁵

The story that comes out from this part of the results of our study are that not only home macroeconomic conditions are relevant to local lending by international banks, but also local lending by international banks react procyclically to changing local economic conditions. The financial characteristic of an individual foreign bank also matters. More importantly, encouraging foreign banks to operate as subsidiaries in order to maintain an 'arm's length' relation with its global parent bank may be the most compelling and viable solution to limiting the susceptibility of these flows to changing international economic conditions as well as a device to commit these banks to the host economies. That said, it is important to note at this stage, however, that from our system-GMM estimated results, the coefficient estimate for the interaction term that captures the differential in credit stability of foreign bank branches as opposed to foreign bank subsidiaries is not the most significant variable.²⁶ This result should be viewed in the perspective that pursuing a favoured subsidiary policy is not a guarantee that such policy can provide the full-proof insulation, e.g., ring-fencing policy, from problems coming from the global parent banks.²⁷

5. Conclusion

Just as any other type of short-term capital flows, international bank lending is subject to episodes of ebb and flow. In the case of financially integrated economies of East Asia, for instance, international bank lending has provided the much needed financial capital to sustain

²⁵ See also, for instance, Peria et al (2005) and Kamil and Rai (2010).

²⁶ Refer to the last column of Table 4.

²⁷ One can point out to the earlier presented stylized facts in which Malaysia experienced one of the most severe sudden stop in cross-border bank lending that it receives in spite of pursuing a policy of local incorporation of foreign banks.

its aspirations of economic expansion at various times in the region's recent economic history, i.e., years prior to the Asian financial crisis and the period preceding the recent global financial crisis. On the other hand, the Asian financial crisis provided us one of the valuable lessons that flows of international bank lending could easily and rapidly exit in sizeable amounts those economies that play host to this type of flows. Not only that, some recent studies have also demonstrated that international bank lending play a vital role in the transmission of economic shocks from one economy or region to another. It is a widely-held observation that such mechanism was at work in the recent crisis and such financial linkages had added to 'fuel the fire' of the recent crisis. In this study we indeed find in the affirmative the existence of the so-called common-lender or spill-over effect, that is, movements in international banks' lending on one country in the region has the potential to be transmitted to neighbouring countries that borrow from the same international banks.

In order to be able to device effective measures that can assist policymakers in East Asia in addressing the vices out of international banking flows, while, at the same time, reap the virtues that emanate from such type flows, it is therefore clearly important in the onset to understand the lending behaviour of international banks. 'Rounding up the possible suspects' or unearthing the likely determinants of these international banking flows is the natural and logical way to proceed. This then forms as the first main objective of our paper.

We then find some indications of procyclicality of international bank flows, that is, internationally active banks increase (decrease) their lending on host or recipient markets once these same economies experience stronger (adverse) macroeconomic growth performance. Robust evidence which suggests that weak (strong) economic conditions in the home or source countries leads internationally active banks to decrease (increase) their lending to host or recipient economies. We also find strong evidence that a 'global supply factor' is also at work with international bank flows, that is, higher volatility in international financial markets leads to a reduction in international bank flows to host markets.

In addition to domestic and global macroeconomic factors, we also find supporting evidence to the significant role of balance sheet factors in explaining the movements of bank lending. Size and quality of asset, profitability and cost factors have indeed influenced the lending of these advanced economies' banks to the ASEAN-5 and Korea. More importantly, our empirical assessment also confirm that cross-border lending by internationally-active banks tend to pull out from host or recipient economies during difficult and tough economic times in home economies, whereas, on the other, under similar circumstances such curtailment in lending are not evident on an aggregate or collective basis, thus reinforcing the critical role played by the brick-and-mortar affiliates of these internationally active banks in mitigating the vulnerability of our six East Asian economies from shocks originating in home countries. This then leads us to the other major aim of this paper. We tested whether there is a significant difference between foreign bank subsidiaries and branches as far as their ability to withstand financial difficulties in their global parent banks and thereby continue their ability to lend in the six Asian economies. Our results seems to suggest that foreign bank subsidiaries rather than foreign bank branches in the six major East Asian economies for the period of 2000 to 2010 provided the credit stability to these economies, especially during turbulent economic environment in the advanced economies.

Nonetheless, encouraging the entry of brick-and mortar subsidiaries of internationally-active banks in the domestic banking systems of emerging markets should not be viewed as the magic cure-all solution to the financial stability concerns of this group of countries. As our stylized facts also clearly indicate, pursuing a local incorporation²⁸ policy does not necessarily insulate the local banking sector from the sudden pull-out of lending from these international banks. It is clearly important then that national banking regulators and supervisors should not veer away from first-best initiatives and efforts that alongside superior risk-management techniques and stronger capital-related prudential requirements for systemically important and

²⁸ Refer to footnote 27.

inter-connected banks that often have large cross-border banking presence, strengthening supervisory capacity, including through active participation in cross-border banking supervision cooperation, should also be a priority.

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Table 1: Measures of Foreign Bank Penetration in Selected East Asian Economies

	Number of foreign banks^a (in percent)	Share of banking assets (in percent)^b
Indonesia ^c	52	23
Korea ^d	35	13
Malaysia ^c	52	17
Philippines ^e	46	12
Singapore ^f	90	NA
Thailand ^d	63	21

Sources: Bankscope, EIU Financial Services Country Reports.

^ameasured as percentage share of the total number of banks in the country; ^b measured as percentage share of total bank assets; ^c as at end-2009; ^d as at end-2010; ^e as at September 2010; ^f as at June 2010; NA – not available.

Table 2: Dynamic Panel Estimation Results of Determinants of Changes in International Total Bank Claims, 2000Q1-2010Q3

	(1) OLS	(2) FE	(3) First-diff. GMM	(4) System GMM
log difference international total bank claims (lagged)	-0.08 [0.34]	-0.11 [0.21]	-0.10 [0.18]	-0.09 [0.24]
interest differential	0.02 [0.95]	0.42 [0.30]	0.53 [0.56]	0.06 [0.82]
square of interest differential	-0.03 [0.17]	-0.06 [0.07]*	-0.06 [0.31]	-0.03 [0.14]
Growth rate (host)	0.05 [0.63]	0.19 [0.04]**	0.51 [0.20]	0.51 [0.01]***
Growth rate (home)	0.45 [0.26]	0.50 [0.16]	1.80 [0.00]***	0.72 [0.04]**
Growth rate (home) × Exposure	0.01 [0.97]	-0.11 [0.55]	-1.41 [0.00]***	-0.39 [0.00]***
VIX	0.01 [0.93]	-0.05 [0.65]	-3.86 [0.00]***	-3.79 [0.00]***
Common lender	0.05 [0.44]	0.05 [0.46]	0.29 [0.00]***	0.32 [0.00]***
<i>R</i> -squared	0.16	0.16		
AB test AR1			0.01	0.01
AB test AR2			0.69	0.65
Hansen <i>J</i> test			0.99	0.99
difference Hansen <i>J</i> test				0.99

Notes: *p*-values in brackets. 'AB test AR1(2)': *p*-value of the Arellano-Bond test that average autocovariance in residuals of order 1 (order 2) is 0. 'Hansen *J*' and 'difference Hansen *J*': *p*-value of the Hansen *J* test for overidentifying restrictions and for the validity of the instruments used in SYS-GMM in addition to those used for first-diff. GMM, respectively, which are both asymptotically distributed as χ^2 under the null of instrument validity.

* Significance at 10%; ** Significance at 5%; *** Significance at 1%.

Table 3: Dynamic Panel Estimation Results of Determinants of Changes in International Cross-border Bank Claims, 2000Q1-2010Q3

	(1) OLS	(2) FE	(3) First-diff. GMM	(4) System GMM
log difference international total bank claims (lagged)	-0.08 [0.51]	-0.14 [0.26]	-0.12 [0.15]	-0.10 [0.37]
interest differential	0.31 [0.27]	0.89 [0.09]*	1.29 [0.34]	0.36 [0.11]
square of interest differential	-0.05 [0.05]**	-0.07 [0.03]**	-0.09 [0.14]	-0.05 [0.06]*
Growth rate (host)	-0.09 [0.48]	0.02 [0.93]	-0.28 [0.31]	-0.15 [0.19]
Growth rate (home)	-1.33 [0.09]*	-0.61 [0.29]	1.57 [0.06]*	1.85 [0.06]*
Growth rate (home) × Exposure	0.64 [0.02]**	0.11 [0.84]	0.49 [0.48]	0.52 [0.05]**
VIX	-0.33 [0.25]	-0.32 [0.28]	-0.97 [0.10]	-1.43 [0.03]**
Common lender	0.01 [0.98]	-0.19 [0.67]	-0.13 [0.72]	0.10 [0.81]
<i>R</i> -squared	0.43	0.44		
AB test AR1			0.02	0.02
AB test AR2			0.17	0.21
Hansen <i>J</i> test			0.99	0.99
difference Hansen <i>J</i> test				0.99

Notes: *p*-values in brackets. 'AB test AR1(2)': *p*-value of the Arellano-Bond test that average autocovariance in residuals of order 1 (order 2) is 0. 'Hansen *J*' and 'difference Hansen *J*': *p*-value of the Hansen *J* test for overidentifying restrictions and for the validity of the instruments used in SYS-GMM in addition to those used for first-diff. GMM, respectively, which are both asymptotically distributed as χ^2 under the null of instrument validity.

* Significance at 10%; ** Significance at 5%; *** Significance at 1%.

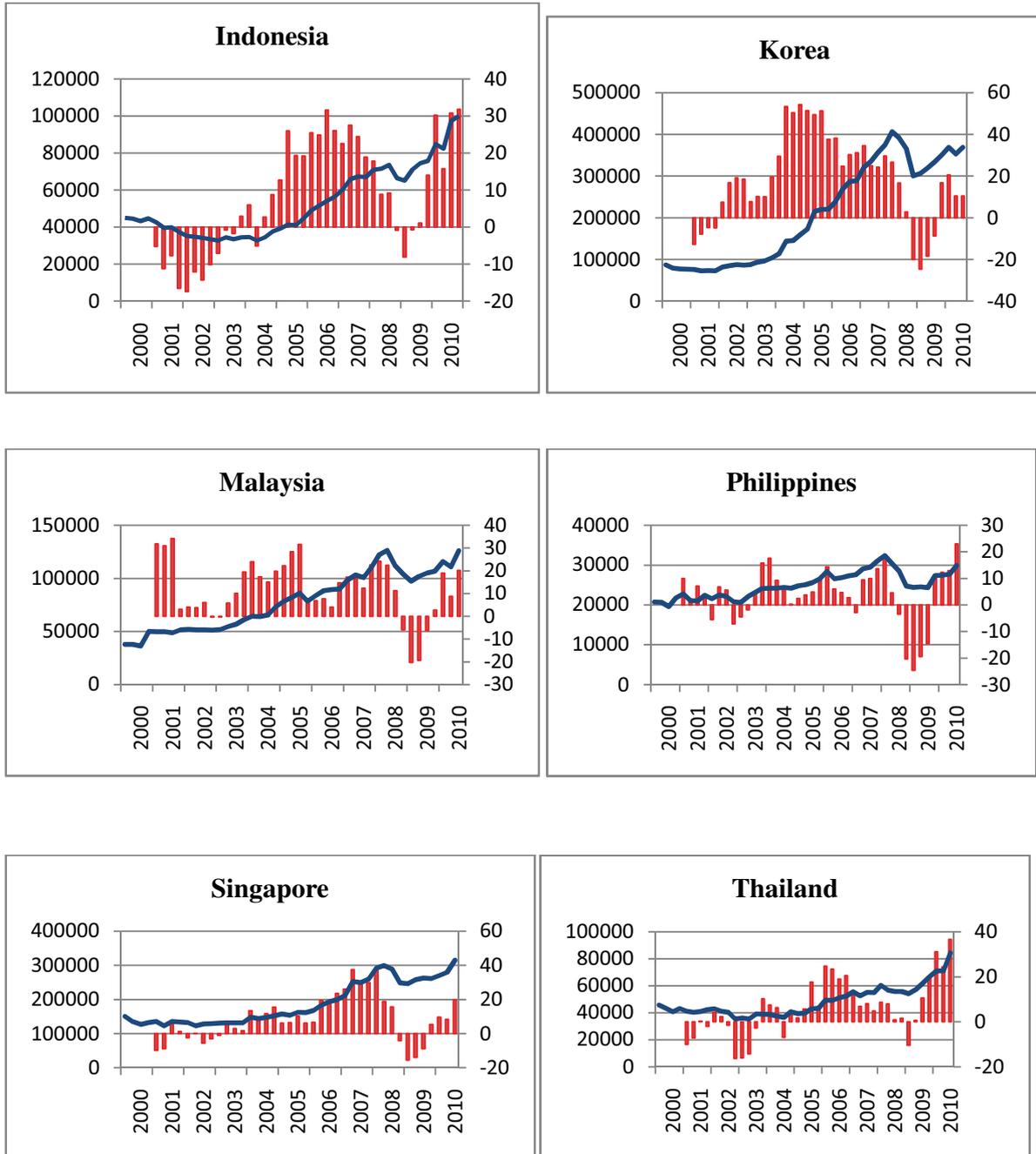
Table 4: Dynamic Panel Estimation Results of Determinants of Loan Growth, 2000-2010

	(1) OLS	(2) OLS	(3) FE	(4) FE	(5) First-diff. GMM	(6) First-diff. GMM	(7) System GMM	(8) System GMM
Loan growth (lagged)	0.20 [0.00]***	0.21 [0.00]***	0.10 [0.16]	0.10 [0.16]	0.05 [0.00]***	0.02 [0.28]	0.15 [0.00]***	0.12 [0.00]***
Interest rate (home)	0.29 [0.89]	0.29 [0.89]	-10.55 [0.00]***	-10.54 [0.00]***	-24.45 [0.00]***	-27.08 [0.00]***	-8.70 [0.01]***	-5.54 [0.03]**
Square of interest rate (home)	-0.06 [0.72]	-0.06 [0.72]	1.00 [0.00]***	1.00 [0.00]***	2.44 [0.00]***	2.67 [0.00]***	0.51 [0.11]	0.34 [0.30]
Growth rate (home)	1.04 [0.02]**	1.04 [0.02]**	0.91 [0.12]	0.91 [0.12]	0.90 [0.00]***	1.10 [0.00]***	0.67 [0.02]**	1.27 [0.00]***
Interest rate (host)	1.71 [0.00]***	1.71 [0.00]***	2.94 [0.09]*	2.95 [0.09]*	3.41 [0.00]***	3.04 [0.00]***	1.16 [0.00]***	1.75 [0.00]***
Growth rate (host)	0.17 [0.73]	0.16 [0.75]	0.21 [0.68]	0.21 [0.67]	1.10 [0.00]***	1.23 [0.00]***	1.50 [0.00]***	1.31 [0.00]***
Crisis dummy	-0.70 [0.80]	4.25 [0.17]	0.59 [0.88]	3.24 [0.31]	-3.05 [0.09]*	-89.66 [0.02]**	-3.12 [0.03]**	-57.91 [0.07]*
Crisis dummy × subsidiary dummy		-5.02 [0.18]		-2.71 [0.56]		89.71 [0.02]**		56.71 [0.08]*
Solvency	-0.10 [0.58]	-0.10 [0.62]	1.53 [0.02]	1.53 [0.02]	1.56 [0.00]***	1.13 [0.01]**	-0.94 [0.00]***	-0.89 [0.00]***
Profitability	0.09 [0.96]	0.08 [0.96]	-1.18 [0.55]	-1.17 [0.55]	0.26 [0.89]	0.45 [0.86]	3.20 [0.02]**	2.44 [0.09]*
Size	0.00 [0.67]	0.00 [0.66]	-0.00 [0.00]***	-0.00 [0.00]***	-0.00 [0.00]***	-0.00 [0.00]***	-0.00 [0.33]	-0.00 [0.96]
Weakness	-0.01 [0.42]	-0.01 [0.42]	-0.02 [0.02]**	-0.02 [0.02]**	-0.00 [0.88]	-0.01 [0.75]	-0.05 [0.09]*	-0.02 [0.51]
Interest rate margin	-0.67 [0.29]	-0.68 [0.28]	0.35 [0.70]	0.35 [0.70]	4.62 [0.03]**	5.14 [0.00]***	2.01 [0.00]***	2.08 [0.01]***
Liquidity	0.02 [0.83]	0.02 [0.83]	0.58 [0.00]***	0.58 [0.00]***	1.12 [0.00]***	1.28 [0.00]***	-0.25 [0.00]***	-0.27 [0.00]***
<i>R</i> -squared	0.24	0.24	0.20	0.20				
AB test AR1					0.00	0.00	0.00	0.00
AB test AR2					0.20	0.09	0.86	0.78
Hansen <i>J</i> test difference					0.89	0.93	0.89	0.99
Hansen <i>J</i> test							0.99	0.99

Notes: *p*-values in brackets. 'AB test AR1(2)': *p*-value of the Arellano-Bond test that average autocovariance in residuals of order 1 (order 2) is 0. 'Hansen *J*' and 'difference Hansen *J*': *p*-value of the Hansen *J* test for overidentifying restrictions and for the validity of the instruments used in SYS-GMM in addition to those used for first-diff. GMM, respectively, which are both asymptotically distributed as χ^2 under the null of instrument validity. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

Figure 1: Total Foreign Banks' Lending to Selected Asian Countries^{1/}

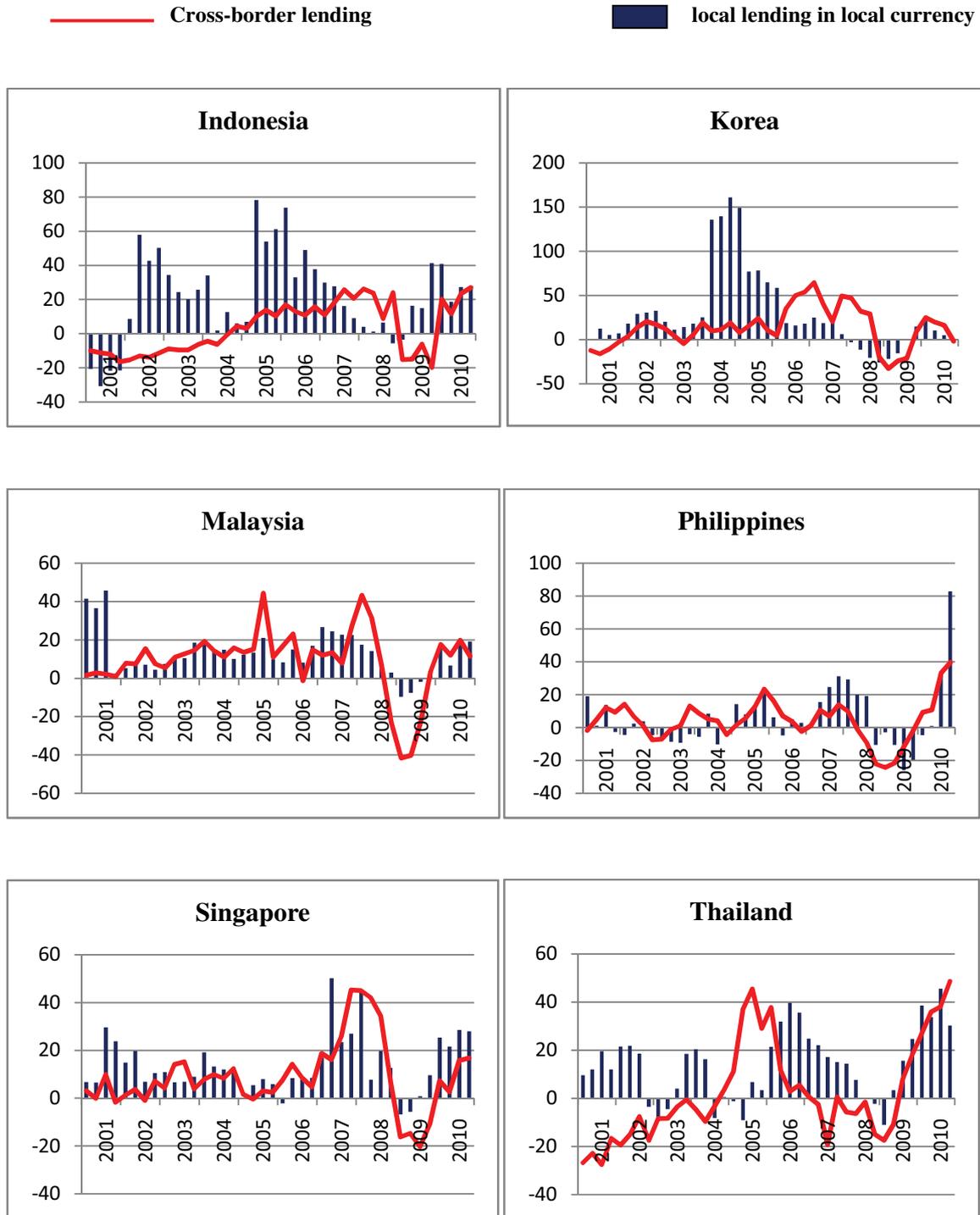
— Total foreign banks' lending (in millions of Nominal US\$, left scale) ■ Growth in foreign banks' lending (quarterly percent change, right scale)



Sources: Raw data from Bank for International Settlements and authors' own calculations.

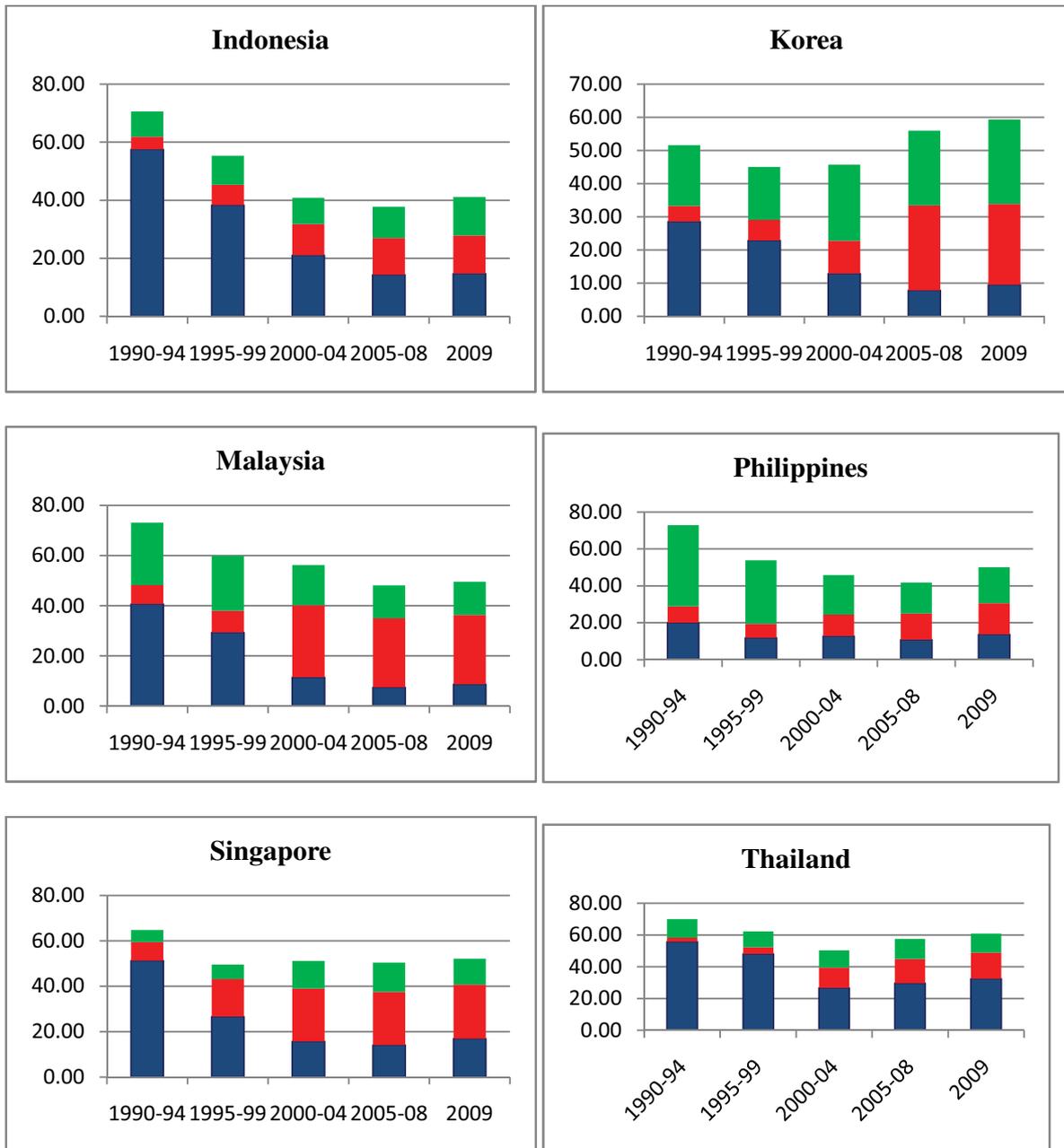
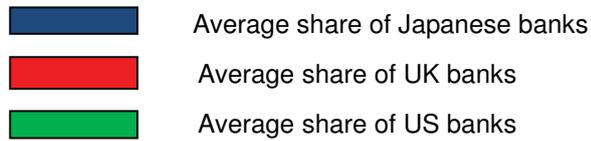
^{1/}Includes cross-border lending and lending in foreign and local currencies by foreign-owned affiliates in each country.

Figure 2: Differences in Behavior of Channels of Foreign Banks' Lending to Selected Asian Countries(quarterly percentage change)



Sources: Raw data from Bank for International Settlements and authors' own calculations.

Figure 3: Period Averages of Shares of Japanese, UK and US Banks' Lending to Total Foreign Bank Lending in Selected Asian Countries(in percentage)^{1/}



Sources: Raw data from Bank for International Settlements and authors' own calculations.

1/ Includes cross-border lending and lending in foreign and local currencies by foreign-owned affiliates in each country.