Chapter 14

International Bank Claims to East Asian Economies: Stabilizers or Destabilizers?

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Chapter 14

International Bank Claims to East Asian Economies: Stabilizers or Destabilizers?

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This study seeks to address a number of rising policy concerns from the aftermath of the recent sub-prime crisis. Did foreign bank lending decline sharply and transmit the financial shocks from the advanced economies to the emerging markets in East and Southeast Asia? Was the decline driven by the drying up in supply of cross-border loans or more by the sharp decline in the demand for this funding? Does greater exposure of foreign banks to a host country lower the sensitivity of their claims to shocks originating from their own economies? Do countries that owe claims from the same international banks affected by movements in international banks' claims on another country? At the outset, we want to assess the stability of these foreign bank loans. In the final analysis, our study confirmed the role of international bank lending, particularly cross-border lending as a channel of shock transmission from home economies to host countries. This then suggests, going forward, more in-depth examination should be carried out of the roles, activities and impacts of these large global banks on the local economy, including that of host authorities' policies on the local presence of these systemically important global banks.

Keywords: International bank claims, cross-border lending, bank exposure, sub-prime crisis, East and Southeast Asian economies

JEL Classifications: F34, F36, G01, O57, C23

[1] The views expressed in this study are those of the authors alone, and do not represent the official views of the SEACEN Center.

1. Introduction

There is an intense, ongoing debate about the consequences of increased internationalization or globalization of banking. In the past, foreign banks often looked more attractive to host-country authorities because they seemed to provide greater transfer of know-how and technology to emerging markets. At the outset of the recent global sub-prime financial crisis, the focus of the host-country authorities shifted more towards financial stability concerns. There is evidence to support the view that foreign bank entry into domestic banking systems is a stabilizing force for the host economy and results in more efficient allocation of scarce resources. Much of the analysis, however, has been in the context of shocks originating in emerging countries.

The claim that the globalization of banking has brought forth stable financial markets in host economies is in fact at odds with the view that such financial linkages have 'fueled the fire' of the transmission of financial stress from advanced economies to emerging countries as evidently illustrated in the recent Global Financial Crisis (GFC) of 2007–09. During the recent sub-prime financial crisis, cross-border bank lending has also been found to be a key transmission channel through which stresses in the international financial markets were transmitted to emerging markets (Cetorelli and Goldberg, 2008, 2010).

Against this backdrop, understanding the determining factors behind the flows of lending of these international banks is therefore critical, especially for domestic policymakers. Our study examines push and pull factors that drive movements in the cross-border loans of banks from three of the Organization for Economic Cooperation and Development (OECD) countries (the United Kingdom, the United States and Japan) to five major Southeast Asian economies (Indonesia, Malaysia, the Philippines, Thailand and Singapore) and Korea.

We extend limited works on the cross-border lending to East Asian economies, such as Siregar and Choy (2010), by focusing on the periods before and after the sub-prime financial crisis. At the peak of the sub-prime crisis—the second half of 2008 to the first half of 2009—international banks' consolidated lending contracted sharply, driven predominantly by the sudden reversal of cross-border lending (Takats, 2010).

Furthermore, the recent trend indicates that cross-border loans of these international banks to emerging markets in Asia dropped more significantly than the local claims of their subsidiaries or branches. This is in sharp contrast with the experience of the Latin American emerging economies. As will be elaborated further, banks from the three OECD economies have predominantly been responsible for the volatilities and significant fall in international bank claims to these major Asian economies during the last global financial meltdown.

While there is a general decline in international bank lending, affecting all the emerging Asian economies included in our study, some of these countries have experienced a much worse, sudden stop of bank flows than others during the GFC (Figure 1). It is therefore worthwhile to compare and contrast these cross-country experiences and draw lessons from their diversity. The contagion effect is also interesting and important to examine here. For example, van Rijckeghem and Weder (2003) have shown that fluctuations in foreign bank claims in one country might spill over to other countries that hold claims from the same foreign banks.

In short, this study seeks to address a number of rising policy concerns from the aftermath of the recent sub-prime crisis. Did foreign bank lending decline sharply and transmit the financial shocks from the advanced economies to the emerging markets in East and Southeast Asia? Was the decline driven by the drying up of supply of foreign bank loans or more by the sharp decline in the demand for this funding? Does the greater exposure of foreign banks to a host country lower the sensitivity of its claims to shocks? Do countries that owe claims from the same international banks affected by movements in international banks' claims on another country? At the outset, we want to assess the stability of these foreign bank loans. If there are any lessons to be learned from the GFC, it is that central banks around the globe have come to appreciate that monetary stability—particularly price stability during the great moderation in the early to mid-2000s—does not necessarily lead to financial stability. Hence, it is timely to revisit the role of foreign banks and ask: has the cross-border bank lending of foreign banks been a stabilizing or a destabilizing effect?

The outline of the study is as follows. The next section presents a number of stylized facts on the relevant cross-border lending. Data description, the working model and empirical testing are presented in Section 3. Discussion of the empirical findings

and, more importantly, policy implications will be covered in Section 4. The paper ends with a brief concluding remark.

2. Stylized Facts and Motivation

Foreign banks' operations in emerging markets across the global banking system, including those of the Asian economies, increased dramatically starting in the second half of the 1990s. The emerging markets, in general, do not rely on foreign deposits for funding, but they usually turn to international banks for credit lines for exports (Mihaljek, 2010). For most East and Southeast Asian economies, the rise of the international banks' presence started with the first phase of reform and deregulation of the banking sector in the late 1980s and early 1990s. For instance, as reported in Table 1, across the six Asian economies examined in this paper, the total foreign bank claims of three major Southeast Asian economies—namely, Indonesia, Malaysia and Thailand—grew at an annual average of 16 percent to 30 percent for the period 1989–96. It is unfortunate, however, that, along with Singapore, Thailand and Indonesia also experienced the most severe declines in foreign bank claims across the six economies, at about 6 percent and 13 percent, respectively, about the time of the most severe impact of the 1997 East Asian Financial Crisis.

Table 1. Annual Average Growth of International Bank Claims in Major East and Southeast Asian Economies

Countries	1983–88	1989–96	1997–2000	2001–02	2003–07	2008	2009
Indonesia	8.59	16.11	–6.27	–13.33	15.16	-0.85	14.01
Korea	–0.97	20.09	–7.49	6.85	34.50	–19.98	16.76
Malaysia	0.84	16.12	15.88	1.39	16.69	–5.91	2.75
Philippines	–2.98	6.08	10.30	–2.0	8.44	–20.35	10.89
Singapore	18.79	9.98	–10.45	–0.95	15.34	–4.23	5.34
Thailand	8.45	30.65	–13.35	–9.19	9.32	1.61	19.38

Source: BIS Consolidated Banking Statistics for the basic data and authors' calculations.

Moreover, about the time of the reversal of the information technology (IT) bubble in the United States in 2001–02, the drastic retreat of foreign banks' claims to these six

economies was also felt, with the exception of Korea and Malaysia, to a lesser extent (Table 1). Meanwhile, as a testament to its mark as an established financial center, Singapore was already experiencing strong double-digit inflows of international bank lending way back in the 1980s. The Philippines, on the other hand, had experienced a reasonable size of international bank flows only in the 1980s and 1990s compared with the rest of the economies. Apart from the case of Malaysia, however, which imposed capital controls during the peak of the Asian Financial Crisis (AFC), it is the only other economy, among the four remaining Asian countries examined here that did not experience a sudden reversal of international bank claims during the East Asian Crisis (Table 1).

The loosening of ownership regulation, most especially during the post-AFC, also significantly facilitated the rise in the activities of international banks in Asia. Indonesia, South Korea and Thailand, for instance, have raised the allowance for foreign equity participation in local banks of up to 100 percent. Meanwhile, the Philippines permitted 60 percent foreign ownership. As a consequence, the significantly more liberal ownership policy that facilitated an aura of stability and confidence in the respective economies' banking systems has frequently been recognized as an important contributing factor to the return of sustained surges of foreign bank inflows to these economies from 2003 to 2007—just before the outbreak of the recent sub-prime crisis in the United States (Table 1).

The total foreign claims of international banks, in general, continued to sustain strong momentum into some of the emerging markets of the Asian region even until the first half of 2008. Only during the weeks and months in the immediate aftermath of the Lehman Brothers debacle were countries in East and Southeast Asia engulfed in a sharp and sudden reversal of international bank claims such that the unimaginable, sheer size of these reversals in international bank flows out of these six Asian economies saw the annual growth rate of these flows hitting negative territory by the end of 2008—with the exception only of Thailand.[2] More recent data reveal that, across the board, inflows of international bank lending to these six economies have returned (Table 1).

[2] Though Thailand only experienced a very marginal increase in international bank inflows.

As for the nationality of the sources of these international bank flows, it is interesting that before the AFC, Japanese banks were the largest sources of funding for the banks and corporations in East and Southeast Asia.[3] For example, at its peak in the period 1989–96, Japanese lending amounted to 56 percent and 54 percent in the cases of Thailand and Indonesia, respectively (Table 2).[4] Not far from these two economies are Korea and Malaysia, which recorded lending by Japanese banks of 28 and 40 percent, respectively. As presented in Table 2, in the aftermath of the AFC, a consistent waning in the share of lending by Japanese banks was experienced by all six economies, and this diminishing dominance in lending by Japanese banks has 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 accounts for about half of the combined lending by developed countries into these six Asian countries (Table 2).

Table 2. Average Share of Japanese, UK and US Banks in Foreign Bank Lending to Major East and Southeast Asian Economies

Country	Nationality of foreign banks	1983–88	1989–96	1997–2000	2001–02	2003–07	2008	2009
Indonesia								
	Japanese	40.48	54.22	30.82	22.57	15.37	14.09	14.66
	UK	8.40	4.85	8.48	10.08	12.30	13.31	13.20
	US	19.06	8.96	10.56	9.08	9.32	12.75	13.27
Korea								
	Japanese	31.30	28.48	18.72	13.48	8.86	8.94	9.52
	UK	7.78	4.80	7.72	10.45	19.44	25.02	24.37
	US	29.88	18.12	18.93	22.27	23.88	18.91	25.46
Malaysia								
	Japanese	43.57	40.91	22.48	11.98	7.73	8.16	8.71
	UK	8.65	6.40	20.09	26.51	28.12	26.73	27.67
	US	19.88	24.04	19.19	15.15	14.52	11.51	13.15
Philippines								
	Japanese	21.46	19.00	13.45	13.47	10.39	12.97	13.67
	UK	10.69	8.46	9.78	11.75	12.98	14.60	16.92
	US	41.13	42.74	27.52	21.99	17.55	17.46	19.58
Singapore								
	Japanese	40.01	47.24	20.46	16.40	13.26	16.35	16.91
	UK	8.32	9.43	19.96	22.11	23.91	23.77	23.78
	US	12.40	5.51	8.11	12.42	13.18	11.25	11.44
Thailand								
	Japanese	47.33	56.39	38.70	26.62	27.17	31.15	32.39
	UK	3.18	2.79	6.58	10.95	15.26	16.38	16.50
	US	23.94	11.44	9.87	10.68	12.70	10.33	12.00

Source: BIS Consolidated Banking Statistics for the basic data and authors' calculations.

[3] An exception is the Philippines, which is heavily dominated by lending from US-owned banks.

[4] See, for instance, Siregar and Choy (2010), who examine the driving factors behind the total claims of seven Organization for Economic Cooperation and Development (OECD) countries' banks to nine East and Southeast Asian economies.

As discussed above, while international bank lending retreated substantially in almost all of the six Asian economies in the immediate aftermath of the bankruptcy of Lehman Brothers, it could be that a key component of this international bank lending in the form of the local claims of these foreign banks operating within the domain of these Asian economies remained strong and was less adversely affected by the external shock that originated from the United States. As depicted in Figure 1, while these local claims booked by offices of foreign banks in these economies also retreated in Indonesia, Korea, the Philippines and Thailand, this was not the case for Malaysia and Singapore.

In retrospect, when we look back at previous crises such as the AFC and the 2001–02 collapse of the IT bubble in the United States, as emphasized above, the majority of our six Asian economies experienced sharp reversals in total international bank flows for these two separate crisis periods similar to the one that recently occurred at the end of 2008. Remarkably, however, these local claims have continued to register positive average annual growth rates during the past three crisis episodes—namely, the 1997 East Asian Crisis, the 2001–02 IT bubble and the 2007–08 sub-prime crisis.[5] In fact, it is illustrated in Figure 1 that the more volatile and crisis-sensitive component of the total claims of these foreign banks to our Asian economies has been cross-border lending. The swings and sudden reversals of cross-border lending have been the dominant drivers of the overall fluctuations in the total claims of foreign banks in these six East and Southeast Asian economies during the past three decades, but particularly during the past financial crisis. This is in contrast with the Latin American experience wherein the local claims of foreign banks played a more detrimental part in explaining the overall boom and bust of foreign bank claims (Takats, 2010). As for the recent sub-prime crisis years of 2008–09, the average growth rates of cross-border lending to the rest of the economies included in this study were significantly lower than those of the local claims, with the exception of the Philippines case. In fact, the local claims of the foreign banks continued to grow positively in Indonesia, Malaysia, Singapore and Thailand during the height of the sub-prime crisis (Figure 1).

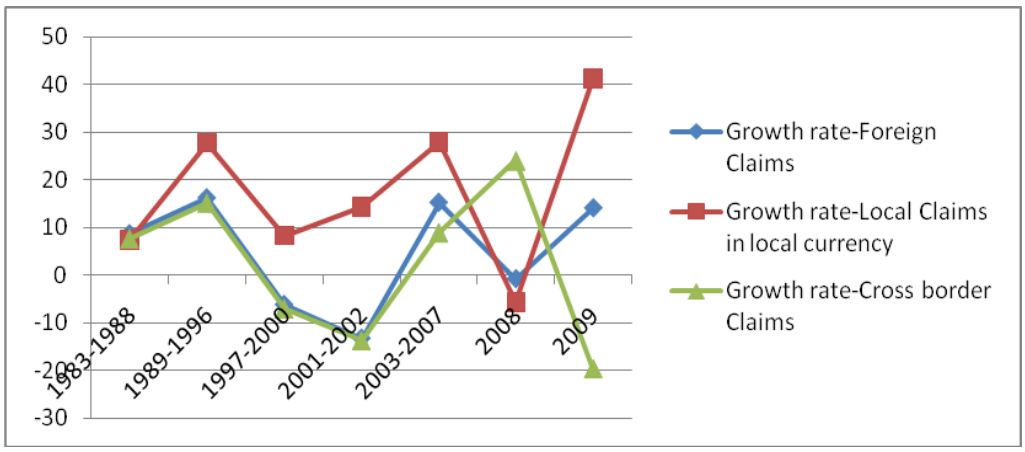
In summary, the cross-country experiences of our six economies highlight the seemingly indisputable evidence that global banks act as a channel of financial shock

[5] The lone exception is the case of the Philippines, which, during the 2001–02 period, also saw local claims by international banks contract along with total foreign bank claims.

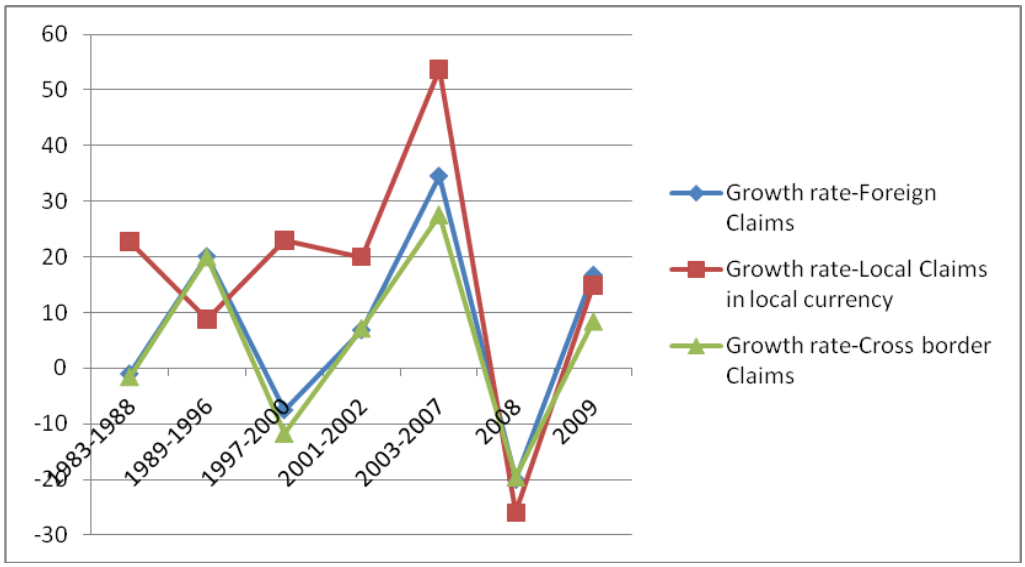
transmission from the global financial markets to the local economy. Formally testing this hypothesis as well as significantly identifying the possible driving factors behind this cross-border lending are therefore imperative and will be the primary objectives of the empirical works of this study.

Figure 1. Average Annual Growth Rate of Foreign and Local Bank Claims in Major East and Southeast Asian Economies

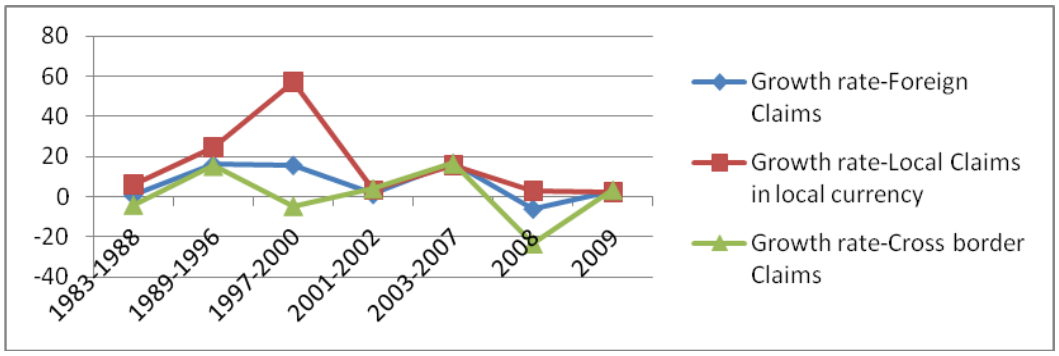
Indonesia



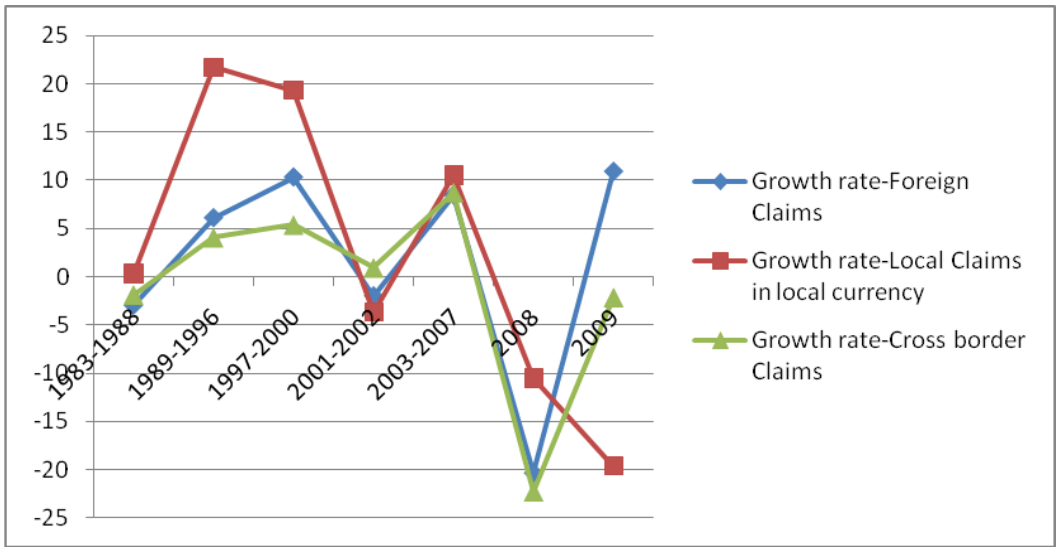
Korea



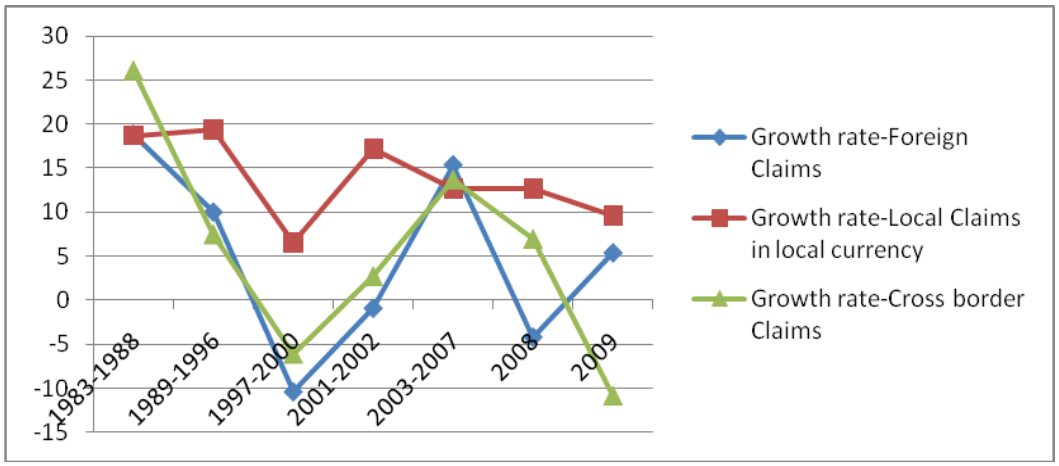
Malaysia



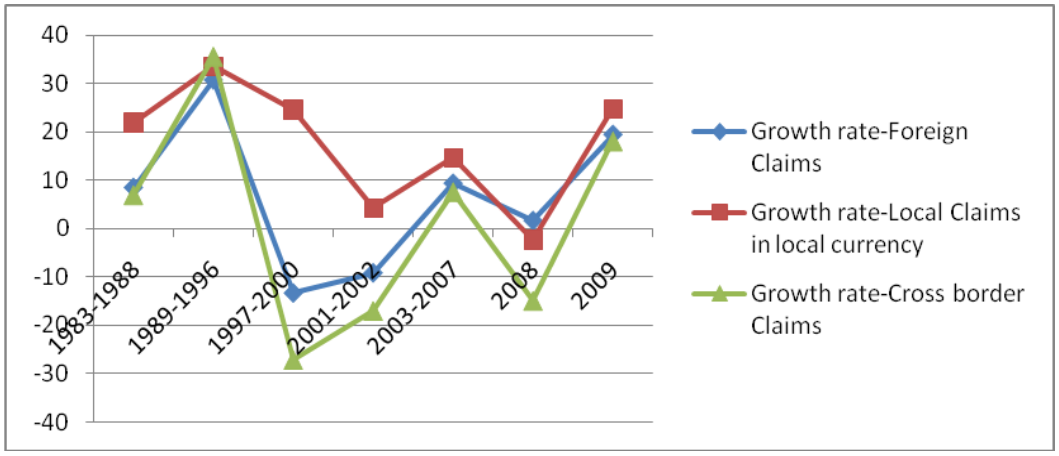
Philippines



Singapore



Thailand



3. Methodology and Empirics

3.1. Dynamic Panel GMM Technique[6]

In a pure cross-sectional regression any unobserved time-invariant country-pair specific effects would be part of the error term, leading to biased estimates of the coefficients. A panel context, however, allows us to control for these unobserved time-invariant country-pair specific effects and, as a result, the problem of biased coefficient estimates is either reduced or eliminated. This is important as there is growing evidence in the literature that cultural biases and differences, for instance, have a substantial impact on a variety of financial flows: portfolio and direct investment (Ekinci et al., 2008; Guiso et al., 2009) as well as foreign bank lending (Giannetti and Yafeh, 2008; Mian, 2006). In addition, the generalized method of moments (GMM) estimator does not require any particular distributions of the error term.

In order to estimate a certain dynamic panel model consistently and efficiently, a GMM estimator introduced by Holtz-Eakin et al. (1990) and Arellano and Bond (1991), and further developed in a series of papers including Arellano and Bover (1995) and Blundell and Bond (1998), is employed. This estimator encompasses a regression equation in both differences and levels, each one with its specific set of instrumental

[6] The discussion that follows draws in part on Calderon and Chong (2001); Chong and Gradstein (2007); and Levine et al. (2000).

variables. We consider the following regression equation for the logarithmic-first differences of international bank claims:

$$y_{ij,t} = \alpha y_{ij,t-1} + \beta X_{ij,t} + \eta_{ij} + \varepsilon_{ij,t}, \quad (1)$$

where y is the logarithmic-first differences of bank claims, X represents the set of explanatory variables apart from the lagged logarithmic-first differences of international bank claims, η is an unobserved, time-invariant country-pair specific effect, ε is the error term, and the subscripts i, j and t represent country pairs and the time period, respectively.

We eliminate country-pair specific effects (η_{ij}) by taking first differences of Equation (1):

$$y_{ij,t} - y_{ij,t-1} = \alpha(y_{ij,t-1} - y_{ij,t-2}) + \beta(X_{ij,t} - X_{ij,t-1}) + (\varepsilon_{ij,t} - \varepsilon_{ij,t-1}) \quad (2)$$

The use of own suitable lagged levels of $y_{ij,t}$ as instruments is required to deal with the problem that by differencing the lagged dependent variable, $(y_{ij,t-1} - y_{ij,t-2})$ is correlated with the error term, $\varepsilon_{ij,t} - \varepsilon_{ij,t-1}$. The same strategy is applied to form instruments for other explanatory variables that are allowed to be endogenous in the sense that they can be affected by current and past realizations of y. This feature enables us to avoid simultaneity bias due to the endogeneity of some of our explanatory variables. Strictly speaking, under the assumption that (i) the explanatory variables, X, are weakly exogenous (no correlation with future realizations of the error term), and (ii) the error term, ε, is not serially correlated, the dynamic panel GMM estimator exploits the following moment conditions:

$$E[y_{ij,t-s} \cdot (\varepsilon_{ij,t} - \varepsilon_{ij,t-1})] = 0 \text{ for } s \geq 2;\ t = 3, \ldots, T \quad (3)$$

$$E[X_{ij,t-s} \cdot (\varepsilon_{ij,t} - \varepsilon_{ij,t-1})] = 0 \text{ for } s \geq 2;\ t = 3, \ldots, T. \quad (4)$$

The resulting GMM estimator based on these conditions is known as the *difference*-GMM estimator. There is, however, an issue with the *difference*-GMM estimator. If lagged dependent variables and explanatory variables are persistent over time, the lagged levels likely represent weak instruments for the first-differenced variables. This causes finite sample bias and low accuracy, which leads to the need to complement the

regression in first differences with a regression in levels. The instruments for the regression in first differences are the same as above. The instruments for the regression in levels, in turn, are the lagged *differences* of the same corresponding variables, under the assumption that although there might be a correlation between the levels of the right-hand-side variables and the country-pair specific effect in equation (1), none exists between the differences of these variables and the country-pair specific effect.

The additional moment conditions for the regression in levels are:

$$E[y_{ij,t-s} - y_{ij,t-s-1}) \cdot (\eta_{ij} + \varepsilon_{ij,t})] = 0 \text{ for } s = 1 \tag{5}$$

$$E[X_{ij,t-s} - X_{ij,t-s-1}) \cdot (\eta_{ij} + \varepsilon_{ij,t})] = 0 \text{ for } s = 1. \tag{6}$$

The consistency of the GMM estimator depends on whether lagged values of the explanatory variables are valid instruments in the regression. To address this issue, we consider two specification tests: the first is the Hansen test of over-identifying restrictions, which tests the overall validity of the instruments. Failure to reject the null hypothesis supports the model. The second test examines the hypothesis that the error term is not serially correlated. We test whether the differenced error term—that is, the residual of the regression in differences—is second-order serially correlated.[7] If the test fails to reject the null hypothesis of absent second-order serial correlation, we conclude that the original error term is serially uncorrelated and use the corresponding moment conditions.

3.2. Measurement and Results

3.2.1. The Evidence from Total Foreign Bank Claims

Our baseline general econometric model lays out the possible determinants of international bank claims represented by the following dynamic panel equation:

$$\begin{aligned}\Delta \log Claims_{ij,t} = \alpha_0 + \alpha_1 \Delta \log Claims_{ij,t-1} + \beta_1 \text{int}\, diff_{ij,t} + \beta_2 VIX_t + \beta_3 Clender_{ij,t} + \\ \beta_4 growthrate_{j,t} + \beta_5 growthrate_{i,t} + growth_{i,t} \times \exp osure_{ij,t} + \upsilon_{ij,t},\end{aligned} \tag{7}$$

[7] Second-order serial correlation of the differenced residual indicates that the original error term is serially correlated and follows a moving-average process at least of order one.

where *i* and *j* represent country pairs *i* and *j*, and *i* = 1 to 3 denotes the major BIS-reporting home-country banks of Japan, the United Kingdom and the United States, while, *j* = 1 to 6 denotes the East Asian host countries of Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. The dependent variable in this section of the paper, $\Delta\log Claims_{ij,t}$, is the logarithmic differences of total foreign bank claims[8] from banks in the home country *i* to host countries *j*; $\Delta\log Claims_{ij,t-1}$ is the lagged of the dependent variable. In equation 7, we assume that $\nu_{ij,t}$ contains the following two effects: i) the unobserved time-invariant country-pair specific effect, $\eta_{ij,}$; and ii) a stochastic error term, $\varepsilon_{ij,t}$, varying across time and cross-section.

We follow the voluminous literature on the fundamental determinants of capital flows by accounting in our empirical model for the home or push and host or pull factors that figure prominently in this extensive literature. On this basis, we include the nominal interest differential between host country *j* and home country *i* ($intdiff_{ij,t}$) as well as the respective real GDP growth of host country *j* ($growthrate_{j,t}$) and home country *i* ($growthrate_{i,t}$). We expect a positive coefficient on the $intdiff_{ij,t}$ variable as higher interest rates in the host country or, conversely, lower interest rates in the home countries, *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. There is, however, 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 might signal a worsening of the capital position of foreign banks, which should then discourage, or worsen, retrenching their lending overseas.

Apart from considering the impact of traditional push and pull factors on international bank claims, we also take into account a measure of the state of the global

[8] Total foreign bank claims are the sum of international claims and local claims in local currency, while international claims comprise cross-border claims in all currencies and local claims in foreign currencies.

financial market, 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] 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, which is denoted by the $Clender_{ij,t}$ variable. More popularly known as the common lender effect, this argues that movements in international banks' claims on one country might be transmitted to other countries that owe claims from the same international banks (Peria et al., 2005). We follow Peria et al. (2005) in accounting for this effect and thus operationalize $Clender_{ij,t}$ as the changes in claims from home-country *i* banks to all major East Asian host countries other than that of the individual East Asian host country *j*.[10,11] We should then expect that if the common lender effect works, the coefficient on $Clender_{ij,t}$ would be positive and significant.

Turning finally to our main variable of interest—that is, in order to test the impact of the financial crisis on the stability of international bank lending to our respective host economies—we interact our home countries' real GDP growth rate variable, $growthrate_{i,t}$, with a measure of foreign banks' exposure to our individual host countries, noting that we measure foreign bank exposure as the ratio of home country *i*'s international bank claims on host country *j* to the total worldwide claims of home country *i*'s banks.[12] Since crises coincide with deterioration in macroeconomic fundamentals such as real GDP growth rates—as happened in developed markets during

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

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

[11] These major East Asian host countries are: China, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand.

[12] This measure of foreign bank exposure is similar to that in Peria et al. (2005), however, based on some unique reason pertaining to the Latin American context, they measured the numerator as home country *i*'s international bank claims on the *private sector* of host country *j*. In this paper, we do not make that distinction between private and non-private sectors.

the recent GFC—this interaction variable recognizes the idea that crises are basically indistinguishable from downturns in GDP. In this view, this allows us to test—depending on the sign and significance of the interaction term—the impact of foreign bank exposure on how they react to a shock originating in 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 its exposure to be positive.

The estimation results of three alternative specifications of the dynamic panel model for the whole sample period of 2000Q1 to 2010Q3 are summarized in Table 3. Altogether, with the exception of the nominal interest rate differential variable (which came out only significant but has the incorrect sign in specification [1]), all of the estimated coefficients are significant and for those variables that have clear *a-priori* signs they came out with their expected signs. Several key findings are worth highlighting. To start, we find evidence that international bank flows increase (decrease) their claims on host markets once these same economies experience stronger (adverse) macroeconomic growth performance. This result confirms the presence of a 'demand factor' influencing the flows of these claims. All these Asian economies experienced slower growth, particularly during the peak of the recent GFC, translating into weaker demand for funding from the international banks.

Table 3. Dynamic Panel Estimation Results of Determinants of Changes in International Total Bank Claims, 2000Q1 – 2010Q3

Variables	(1)	(2)	(3)
$logdiffclaims_{t-1}$	–0.060 (0.081)	–0.097 (0.077)	–0.092 (0.072)
intdiff	–0.403 (0.175)**	–0.284 (0.165)	–0.245 (0.168)
$Growthrate_J$	0.333 (0.113)***	0.222 (0.108)**	0.233 (0.101)**
$growthrate_i$	0.145 (0.116)	–0.709 (0.229)***	–0.717 (0.218)***
vix		–0.215 (0.062)***	–0.155 (0.068)**
Clender			0.231 (0.045)***
$growthrate_i$ * exposure		0.536 (0.168)***	0.573 (0.162)***
Sargan test (p-value)	0.08	0.09	0.10
AB test for AR(2) (p-value)	0.20	0.38	0.43
No. of instruments	762	764	765
No. of lags	2	2	2

Note: Standard errors in parentheses. Significance levels: *** 1%; ** 5%. Numbers in the last two rows of the table are *p*-values.

Similarly, we find a number of 'supply-side factors' have also come into play here. First, the negative and significant coefficient (though insignificant and positive only in specification [1]) on the home countries' real GDP growth rate indicates that foreign banks' behavior veers towards seeking better or higher returns abroad when domestic economic conditions are weak and fragile. The results confirm that a weaker economic outlook in the home country translates into a rise in the foreign banks' claims on the host economy.

Second, we also find evidence in support of the common lender effect in view of the positive and significant coefficient on changes in international bank claims in other countries. This seems to support the argument for the presence of a contagion effect in international banking. In particular, it demonstrates that changes in foreign bank claims on one country might spill over to other countries that hold claims from the same banks (van Rijckeghem and Weder, 2003). Third, consistent with theoretical expectations, a rise in the expected short-term volatility of the global financial market, as proxied by the widely used S&P 100 Volatility Index (VIX_t) of the Chicago Board Options Exchange, has indeed adversely contributed to the overall sharp decline in the total claims of the foreign banks. The overall robustness of the supply-side factors substantiates the role of the international bank claims as a key transmission channel of the impacts of a distressed banking sector in the advanced economies into the emerging markets of Asia.

Finally, the positive and significant coefficient on the main variable of interest, the interaction between home-country foreign banks' real GDP growth rate and its exposure suggest that controlling for macroeconomic conditions in developed economies, crisis episodes or shocks that originate in developed economies do not necessarily translate into less stable financing in international bank claims to host countries in Asia. This is in contrast, however, with the earlier preliminary examination of the flows in international bank claims wherein we observed a sharp and sudden reversal during the GFC. Perhaps one reason for this seemingly conflicting result is that the foreign bank claims data used in this section are not 'pure' cross-border claims data. This is in view of the fact that the foreign bank claims data as consolidated by the BIS do not just comprise the cross-border claims but also the local claims of the foreign banks' offices on residents of the country in which the foreign bank is located. Thus, it is highly likely that the local claims component in the data might be mitigating this effect since this

particular component of the foreign banks' claims held up well during the GFC. To alleviate this concern, we also conduct our estimations using publicly available data on cross-border claims and the results are then discussed in the subsequent section.

3.2.2. The Evidence from Cross-Border Claims

We should emphasize at the outset that bilateral data on cross-border claims similar to those we used in the previous section are not publicly available.[13] What are publicly available are the aggregate cross-border claims of all the BIS-reporting home-country banks to non-BIS reporting countries, including the Asian economies examined here. In short, unlike what was done in the previous section, here, investigation of the respective bilateral claims of the three major home-country banks of Japan, the United Kingdom and the United States is not permitted.[14] Barring this limitation, we again estimated our baseline empirical dynamic panel model (equation 7), and the results of these respective sets of dynamic panel estimations are presented in Table 4.

Table 4. Dynamic Panel Estimation Results of Determinants of Changes in Cross-Border Bank Claims, 2000Q1 – 2010Q3

Variables	(1)	(2)	(3)
$logdiffclaims_{t-1}$	–0.020 (0.064)	–0.095 (0.077)	–0.120 (0.061)
$Growthrate_J$	0.475 (0.121)***	0.762 (0.188)***	0.239 (0.155)
$growthrate_i$	–0.089 (0.195)	0.002 (0.171)	0.015 (0.167)
vix		–0.137 (0.033)***	–0.073 (0.021)**
Clender			0.574 (0.163)***
$growthrate_i$ * exposure		–1.170 (0.432)***	–0.575 (0.294)**
Sargan test (p-value)	0.18	0.26	0.59
AB test for AR(2) (p-value)	0.53	0.35	0.29
No. of instruments	294	294	294
No. of lags	2	2	2

Note: Standard errors in parentheses. Significance levels: *** 1%; ** 5%. Numbers in the last two rows of the table are *p*-values.

Three critical observations stand out from the results. First, only one demand-side factor is robustly significant and comes out consistently with the expected sign and this

[13] Added to this is the difficulty that the BIS does not disaggregate or separately report from the international claims consolidated data the 'pure' cross-border claims from that of the local claims in foreign currency.

[14] This then implies that the subscript *i* in equation (7), presented in the earlier section, is now denoted by all the BIS-reporting banks to the individual Asian host countries.

is the case of the real GDP growth of host country *j* ($growthrate_{j,t}$).[15] This affirms our earlier results that international bank claims, in general, and cross-border claims, in particular, are inherently pro-cyclical—that is, these claims tend to rise during economic booms in host countries but tend to quickly and sharply reverse during periods of economic distress. Second, we confirm the presence of a contagion effect (common lender effect) as well as the negative role of the expected short-term volatility of the global financial market as proxied by the S&P 100 Volatility index to global credit supply. Finally, and more importantly, the negative and significant coefficient in the interaction between the BIS-reporting home countries' real GDP growth rates and their exposure to the Asian host countries suggests that crisis episodes or shocks emanating from these developed economies lead to a further decline in cross-border claims. This is in marked contrast with the results reported in the previous section. This finding confirms the previous trend analyses that cross-border lending has particularly been the channel of transmission of adverse shock to these Asian economies during the financial crisis. Furthermore, this is also very much suggestive of the role of the local lending or claims of foreign banks' offices in the respective countries examined here in resisting or mitigating the adverse consequences of external shocks.

4. Policy Challenges Going Forward

The era of great moderation (low inflation) across the globe has been found to be gravely inadequate to safeguard much-needed stability in the financial sector. Even during the period of sound macroeconomic conditions, the financial system was subject to various self-amplifying mechanisms in upward trends (bubbles), downward trends (busts) and phases of the credit cycle. There has been growing awareness and

[15] The interest rate differential variable was dropped altogether from the estimation as it was highly correlated with most of the variables and came out insignificant in all regressions. The real GDP growth of home country *i* also turned out to be consistently insignificant and this could be caused by the way we generate these data wherein since the left-hand-side cross-border claims are the aggregate positions of all the BIS-reporting home-country banks to individual Asian economies, we deem it appropriate to take a weighted average of the GDP values of all the BIS-reporting home-country banks with the weights being the share of the respective BIS-reporting home-country bank to the total GDP of all BIS-reporting home-country banks.

acceptance of the role of the central banks as a financial stability authority, in addition to a monetary authority.

New responsibility will come with new challenges. In this study, we highlight the role of lending activities of international banks, particularly cross-border lending, as a potential source of financial instability. Going forward, a number of policy responses to manage potential risks associated with international bank lending have been tabled and debated. The following sub-sections will elaborate some of them.

4.1. Cross-Border Supervision

For the most part, the role of the central bank/monetary authority in managing the banking system has largely been unchallenged. Across the world—particularly in emerging markets—central banks play an important role as the lender of last resort, which has been well established and agreed to. In contrast, the supervisory role of the central bank continues to be viewed differently and debated. The 1997 East Asian Crisis sparked an urgency to detach the supervisory role from the central bank/monetary authority. As discussed, the principal argument for the separation of the supervisory role from the central bank is to enhance the effectiveness of the central bank's responsibility as the monetary authority. The recent GFC, on the other hand, demonstrated the need for the central bank to play a greater part in the supervision of financial institutions.

Cross-border banking with the presence of multinational banks (including the newly emerging regional multinational banks) enhances the 'interconnectedness' factor. It is now a well-known fact that globalized banks play a crucial role in the international transmission of monetary policies and economic shocks globally. In the first instance, the lack of cross-border supervisory cooperation has resulted in asymmetrical information on cross-border risk exposures, leading to an under-appreciation by supervisors and regulators of underlying systemic risks and connections (Kodres and Narain, 2009). In addition, it is rather obvious that the existence of asymmetrical information among supervisors in different jurisdictions leads to untimely and uncoordinated responses (Nijathaworn, 2010). Furthermore, adequate cross-country supervisory cooperation and coordination are necessary to overcome loopholes such as

currency substitution, or switching from domestic lending in foreign currency to direct foreign credit.

One potentially effective method to facilitate cross-border policy cooperation and coordination is through a college of supervisors.[16] The college of supervisors is defined as a "permanent, although flexible, structure for cooperation and coordination among the authorities of different jurisdictions responsible for and involved in the supervision of the different components of cross-border banking groups, specifically large group[s]" (CEBS, 2009). As a general rule, the establishment of a supervisory college should be considered for significant financial institutions in terms of size, interconnectedness with other components of the financial system and/or the roles they play in the market, which might cause systemic impacts on the country's financial system, hence affecting the region's financial stability.

A recent survey has identified a number of regional and global banks that have a strong presence in major Asian economies (Siregar and Lim, 2010). The Hong Kong Shanghai Banking Corporation (HSBC), Citibank and the Standard Chartered Bank are among the three major international banks that have wide and extensive branch networks in the Asian region (Table 5). In addition to these three international powerhouses, the Southeast Asian region has also witnessed the emergence of its own multinational banks. In Malaysia, banks such as the Malayan Banking Berhad (Maybank), Commerce International Merchant Bankers Berhad (CIMB) and Rashid Hussain Berhad (RHB) have expanded their networks beyond Southeast Asian countries. A number of Singaporean banks—namely, the Development Bank of Singapore (DBS), the United Overseas Bank (UOB), and the Overseas Chinese Bank Corporation (OCBC)—have achieved similar success in their efforts to become regional banks.

[16] As of September 2009, there are more than 30 colleges to supervise complex institutions.

Table 5. Cross-Border Banks in SEACEN Economies

Countries	Top 3 domestic FIs in your jurisdiction that have significant presence in the region	Top 3 foreign FIs in your jurisdiction that originate from SEACEN member economies	Top 3 other foreign FIs (apart from originating in SEACEN member economies) that have significant presence in your country
Indonesia	- Bank Mandiri - Bank BRI - BCA	- CIMB Niaga (Malaysia) - Bank International Indonesia (Maybank Malaysia controls about 43%)	- Citibank - HSBC - Standard Chartered Bank
Korea	- None	- DBS (Singapore) - UOB (Singapore) - OCBC (Singapore)	- Citibank - HSBC - Standard Chartered Bank
Malaysia	- Maybank - CIMB Group - Public Bank	- OCBC (Singapore) - UOB (Singapore) - Bangkok Bank (Thailand)	- Citibank - HSBC - Standard Chartered Bank
The Philippines	- Metropolitan Bank Corporation (Metrobank) - Philippine National Bank (PNB)	- Chinatrust (Taiwan) - Maybank (Malaysia) - Korea Exchange Bank (Korea)	- Citibank - HSBC - Standard Chartered Bank
Singapore	- DBS Bank Limited - OCBC - UOB	- Maybank (Malaysia) - Bangkok Bank (Thailand) - RHB Bank (Malaysia)	- Citibank - HSBC - Standard Chartered Bank
Chinese Taipei	- Bank of Taiwan - Taiwan Cooperative Bank - Mega International Commercial Bank	- DBS (Singapore) - OCBC (Singapore) - Bangkok Bank (Thailand)	- Citibank - HSBC - Standard Chartered Bank
Thailand	- Bangkok Bank - Kasikorn Bank - Siam Commercial Bank	- UOB (Singapore) - CIMB Thai (Malaysia) - OCBC (Singapore)	- GE Capital - ING - Standard Chartered

Source: Siregar and Lim (2010).

As of May 2010, a number of major central banks in Asia have been invited to participate in colleges of supervisors. Bank Negara Malaysia, for instance, is involved in the colleges of supervisors organized by the Financial Stability Agency of the United Kingdom for the Standard Chartered Group, the BaFIN for the Deutsche Bank Group and the OFSI for the Bank of Nova Scotia Group. Similarly, the Monetary Authority of Singapore (MAS) and Bangko Sentral ng Pilipinas have also participated in a number of colleges of supervisors set up for major European and US banks. In addition, under the

foreign banking laws of a number of Southeast and East Asian economies, one of the conditions for a foreign bank to establish its subsidiary domestically is that the home supervisor of that particular foreign bank must sign a memorandum-of-understanding (MOU) with the host central banks. This MOU facilitates bilateral exchanges of data and information between the two bank supervisors. As of late 2010, however, there has not been any arrangement for supervisory colleges for Asian regional multinational banks such as Malaysian and Singaporean banks discussed earlier.

4.2. Reducing the Complexity of Large Cross-Border Banks through 'Subsidiarization'

An important cross-border banking issue is the relationship between the home and host supervisory agencies and central banks. In the event that a foreign bank that is systemically important in a host country finds itself in a crisis, this could lead to potential conflicts between the home and host-country authorities. These conflicts could be particularly significant if the relative size of the parent bank and its overseas affiliate is substantially different, or if the economic importance of the overseas affiliate to the parent bank is mainly marginal—for example, funding of the overseas affiliate is sourced mainly from local deposits. For instance, home-country authorities will not be keen on supporting a small overseas affiliate, or the overseas affiliate will receive less attention from the parent bank or home supervisor, if the impact of such a failure of the overseas affiliate is relatively low or immaterial to the financial group's overall position, even if the troubled overseas affiliate is relatively systemically important for the host country. On the other hand, host-country authorities could find it politically difficult to use public or taxpayer resources to support a foreign-owned bank when it gets into trouble.

One of the answers to the challenge of a systemically important foreign bank failing in a host country is to ensure local incorporation as a subsidiary rather than as a branch. All else being equal, local incorporation gives host authorities greater supervisory control over local operations such as by making it more difficult for assets to be removed from local operation to the parent bank—that is, ring-fenced. Furthermore, it enables the possible imposition of specific capital-related prudential requirements that

can provide some separation between the subsidiary and the parent bank, thus reducing intra-group contagion risk (Mihaljek, 2008).

4.3. Other Policy Considerations

4.3.1. Increasing Capital Levels and Buffers

Introduced as part of the new capital standard under Basel III, 'ample' or conservation buffers reflect the large perceived negative externality associated with the failure of a large cross-border bank and as such should be available to enable banks to maintain large enough capital levels to offset losses in times of adverse financial shocks. Counter-cyclical capital buffers, on the other hand, rest on the concept that banks should build up extra capital in times of excessive credit growth and as such banks can tap the buffer during periods of financial distress without having to raise new capital immediately. Implementing such types of capital buffers can improve the banking sector's resilience to financial crises as well as mitigate its impact on the entire economy.

4.3.2. Deposit Insurance Scheme

Deposit insurance coverage could be lowered for large cross-border banks. There is a perception that large cross-border banks pursue scale—for example, mergers and acquisitions—in order to become "too big to fail". In order to mitigate such an incentive, a spreading or sharing of the risk in the official financial safety net (a form of co-insurance) can be introduced by reducing the deposit insurance coverage for large cross-border banks. This will also reduce the scope for free riding on the part of large cross-border banks as far as the financial safety net mechanism of the banking sector is concerned.

4.3.3. Establishment of Cross-Border Collateral Arrangements

This involves the central bank in one jurisdiction providing domestic currency liquidity to eligible financial institutions against collateral placed by their offices in another jurisdiction into the liquidity-providing central bank's account at the local central bank. In essence, this is another way for central banks to provide a cross-border bridge to support funding requirements in another jurisdiction should interbank cross-

border intermediation become impaired (Committee on the Global Financial System–Bank for International Settlements, 2010).

4.3.4. A Systemic Risk Charge or a Systemic Risk Levy on "Too Big to Fail" or "Systemically Important" Cross-Border Institutions

In essence, the bigger the financial institution, the higher is the likelihood that it will be rescued in times of financial distress. In other words, the cost of the financial rescue is directly related to the systemic relevance or size of the financial institution. One solution is a systemic risk charge that depends mainly on the size of the cross-border bank. This follows from the basic principle of the theory of externalities, which suggests that a polluter should be charged with a tax that is equivalent to the social costs of the pollution. We can then regard the systemic instability created by the cross-border bank's activities as an externality and a systemic risk charge could be regarded as a way to 'internalize' this problem of too big to fail.

One such suggested approach is for regulators to assign systemic risk ratings to a financial institution and then assess a capital or systemic risk surcharge based on this rating. Banks with higher systemic risk ratings would receive higher capital or risk surcharges. In short, the surcharge is based on the financial institution's corresponding contribution to systemic risk. In principle, under certain assumptions, a surcharge on capital is equivalent to a levy on capital in terms of stifling the incentive for large cross-border banks to engage in systemic risk activities. An important difference between the two is, however, that a levy removes the funds from the financial institutions' balance sheets, whereas a capital surcharge leaves the funds under the control of the financial institutions (Doluca et al., 2010).

In view of this difference, the advantage of the levy is that it can be used to fund a "systemic stability fund" that would act as a private safety net in the event of a financial crisis. The idea is that the accumulated levies can then be reinvested into "convertible" or liquid instruments by the systemic stability fund into the same financial institutions that paid these levies. These liquid instruments serve to fulfill the financial rescue role that in the event a large cross-border bank gets into trouble, these same instruments can be used by the supervisory authorities to "bail-in" the weakened cross-border bank without resorting to the use of public or taxpayer resources.

5. Concluding Remarks

The recent sub-prime crisis forced a rethink of the mandate of central banks in the area of financial stability. Prior to the latest financial crisis, the primary mandate for most central banks in Asia was monetary policy stability—in particular, price stability. Recent crises demonstrate that years of monetary stability during the period of great moderation did not safeguard economies from looming financial instabilities. It clearly illustrated as well that the globalized banking system played a crucial role in transmitting the crisis from the advanced economies to various corners of the world, including the emerging markets of East and Southeast Asia.

For policymakers, it is no longer adequate to view domestic banking systems in particular and financial systems in general from a domestic economy perspective. The increasing interconnectedness of domestic banking liquidity to the global funding environment enhances the links between domestic financial stability and external shocks. Our study examines the role of international bank claims—in particular, cross-border lending—as a critical channel of transmission of worldwide financial shocks to local economies. We focus on the crisis period to garner greater appreciation of the exposure of local financial systems to these external shocks. In addition, we look into a number of home-country indicators of economic fundamentals. The exposure and home-country fundamental variables have been found to be significant factors, and confirmed the role of international bank lending as a channel of shock transmission from home countries to host economies. Furthermore, the common lender effect—whereby movements in international banks' claims on one country can be transmitted to other countries that owe claims from the same international banks—underscores the spill-over effect that was evident as well during the 1997 financial crisis.

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