BANGKO SENTRAL NG PILIPINAS
ECONOMIC Newsletter

No. 11-06
Nov-Dec 2011

Was It Supply? International Claims and Cross-Border Lending to the Philippines During the Global Financial Crisis[1]

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Introduction

International banking activity expanded significantly from the second half of the 1990s to the latter part of 2006 until the global financial crisis in 2007. The considerable increase in international banking was caused by the growing world trade, the increase of multinational firms, growth in financing of global payments imbalances and the integration of some transition economies into the global banking system.

However, the global financial crisis that started in 2007 shook the foundation of international banking and finance. International financial markets were heavily affected while some international banks had to be rescued from bankruptcy. In turn, international claims and cross-border bank lending to emerging markets dropped sharply, raising a serious policy question: did declines in international claims and cross-border bank lending in advanced countries transmit financial shocks to emerging markets? Or, did they simply reflect the lower need for financing?

Understanding the economic drivers of international claims and cross-border bank lending to emerging markets is key to analyzing financial vulnerabilities. However, one needs to consider a larger lending picture.

This study examines the drivers of international claims and cross-border lending to the Philippines and the role of foreign banks during financial crises by modifying the Siregar and Choy (2010) gravity model from 1995 to 2009. The study intends to provide insights to three related questions:

(1) Do "push" or "pull" factors or a combination of both drive the international claims and cross-border lending to the Philippines? ;

(2) Is there any evidence to suggest that foreign banks contributed to the spread of financial crises in the Philippines? ; and

(3) Has the story of the global financial crisis in 2007 been a different one than the past crises in the Philippines?

The rest of the article is organized as follows: Section 2 presents the structure and variables included in the model while Section 3 reveals the main findings of the study. Section 4 concludes.

The model

This study modifies the gravity model for trade in assets of Siregar and Choy (2010) by building a single-equation regression framework for the Philippines. The modified gravity model takes the form in equation 1 as,

$$ln(A_t^f) = \alpha + \beta ln(trade_t) - \rho_t ln z(originating country "push" factors) + \ell_t ln z(host country "pull" factors) + \kappa_t z(country dummies) + \kappa_t z(country dummies * exposure) + \varepsilon_t, \quad (1)$$

where, A^f refers to foreign assets of banks, *trade* refers to trade openness (or distribution of trade in some studies), the *originating country (supply) or "push" factors* include volatility in the stock market or bond market transactions, *host country (demand) or "pull" factors* include real GDP growth, interest rate

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This article is a condensed version of the country paper of the SEACEN Research Project on International Claims and Cross-Border Lending and Implications in SEACEN Countries: Balance Sheet Perspectives which was finalized in December 2011. The views expressed in this Newsletter are those of the author and do not necessarily represent those of the BSP or BSP policy.

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differential, size of stock market capitalization, *country dummies* such as the Asian currency and financial crisis in 1997-1998 and the global financial crisis in 2008-2009, an interaction term between dummies of past crises and exposure of foreign banks in host country, and an error term ε.

In equation 1, foreign assets refer to foreign assets of banks reporting to the Bank for International Settlements (BIS) vis-à-vis the Philippines. Foreign assets of these banks increased almost six times, while foreign liabilities rose by almost nine times between end-December 1997 and end-December 2009. A closer look at the trend also reveals that while foreign assets and liabilities appeared to be matched during the 1997 crisis, foreign liabilities appeared to have outpaced foreign assets of banks in 2008, leading to a net liability position. These developments indicate that the nature of international (foreign) transactions of foreign banks has evolved since the Asian crisis in 1997.

In this model, foreign assets are indicated by gross international claims and cross-border loans from the BIS database. Gross international claims ***(CLAIMS)*** refer to financial assets, such as loans, debt securities and equities, including equity participation of foreign banks, in their subsidiaries or affiliates.[3]

Moreover, foreign assets are also represented by cross-border loans. Cross-border loans represent, on average, more than 50 percent of foreign assets of foreign banks reporting to the BIS vis-à-vis the Philippines. These loans refer to loans extended abroad by foreign banks from their headquarters; hence, booking of such transaction is made outside the recipient country ***(SBORDER)***.[4] The rise in cross-border loans was most pronounced between 2005 and 2007. On a bilateral basis, European banks account for the bulk of outstanding stock of cross-border loans to the Philippines, followed by the US and Japanese banks.

Meanwhile, total trade (exports and imports of goods and services) as share of nominal GDP is used to indicate openness of the Philippines to trade transactions ***(TRADE)***.[5] It is expected that the relationship between trade openness and foreign assets of foreign banks is positive in equation 1.

The model uses the volatility (indicated by the coefficient of variation) of the S&P 500 financial index ***(SPCV)*** as the global supply factor (or the originating country "push" factor).[6] The S&P 500 is a market value weighted index. Volatility of the S&P 500 financial index tends to be high in periods of stress, which in turn is negatively related to credit supply. Higher volatility also implies that it is more difficult for banks to raise additional capital, which also limits credit supply. In turn, the relationship between foreign assets of foreign banks (international claims and cross-border loans of foreign banks) in equation 1 is expected to be negative.

The most important demand factor (or "pull" factor) in the model is real GDP growth ***(RGDP).***

Another "pull" (demand) factor is the stock market capitalization as share of nominal GDP ***(MCAP)***.[7] The market capitalization of a stock exchange is the total number of issued shares of domestic companies, including their several classes, multiplied by their respective prices at a given time. This indicator reflects the comprehensive value of the market at a certain period.

The risk adjusted interest rate differential ***(RISKADJ)*** is also used as a demand factor. This is computed as the difference between the BSP overnight RRP rate and the Federal Funds Rate and the risk premium, or the difference between the Philippine 10-year Treasury note and the US 10-year Treasury note. This indicates home country factor that could explain the supply of international claims to the Philippines.

[3] International claims to the Philippines are taken from the BIS (Table 6A) in million US dollars.
[4] Data on cross-border lending are taken from the BIS (Table 7A) in million US dollars.
[5] Total exports and imports of goods and services are taken from the Quarterly National Income Accounts in million pesos.
[6] The coefficient of variation is computed as standard deviation divided by the mean.
[7] The stock market capitalization is taken from the World Federation of Exchanges.

Meanwhile, the impact of total assets of foreign banks in the Philippines and dummy variable for crisis to international claims and cross-border loans addresses foreign banks' role in the propagation of crises in the Philippines. The interaction term also sheds light on whether the story of the global financial crisis in 2007 been a different one than the past crises in the Philippines.

Total assets of foreign banks scaled to nominal GDP ***(FB)*** is used to capture the growing presence of foreign banks in the Philippines. The arguments for and against foreign bank entry and foreign banks' impact on the efficiency and stability of domestic banking systems continue to be a subject of debate in the literature. Factors that have stimulated international banking institutions to expand into overseas markets and those that have influenced host countries' decisions to accept foreign financial institutions are closely related to these arguments. But the precise role of foreign banks in the run-up and during the global financial crisis in 2007 is yet to be fully ascertained.[8]

Total assets of foreign banks in the Philippines refer to the sum of all assets, adjusted to net off the accounts "Due from Head Office/Branches/Agencies" and "Due to Head Office/Branches/Agencies" of foreign bank branches.[9]

A dummy variable is included to account for the effects of the Asian currency and financial crisis in 1997 to 1998 ***(ASIANDUMMY)***. Hence, 1 is denoted for the quarters starting from third quarter 1997 to the fourth quarter of 1998 while 0 for non-crisis quarters.

A dummy variable is included to account for the effects of the global financial crisis 2008 to 2009 ***(GFCDUMMY)***. Hence, 1 is denoted for the quarters starting from second quarter 2008 to the fourth quarter of 2009 while 0 for ordinary quarters.

Interaction terms are included to determine the role of foreign banks in propagating financial crises (***ASIANDUMMY*FB*** for Asian crisis and ***GFCDUMMY*FB*** for global financial crisis). A positive (negative) coefficient of the interaction term indicates that higher exposure of foreign banks in the Philippines has been (has not been) translated to more stable financing. This finding underscores the benefits (disadvantage) of having foreign banks in the Philippines.

Main findings

The model is estimated using the Generalized Method of Moments (GMM). The definition of variables used in the estimation is presented in the previous section. Higher-order diagnostic tests are used to check the robustness of results. The results in Tables 1 and 2 yielded the following insights:

Table 1

Dependent Variable: DLOG(CLAIMS)
Method: Generalized Method of Moments
Date: 11/08/10 Time: 22:33
Sample (adjusted): 1995Q3 2009Q4
Included observations: 58 after adjustments
Kernel: Bartlett, Bandwidth: Fixed (3), No prewhitening
Simultaneous weighting matrix & coefficient iteration
Convergence achieved after: 121 weight matrices, 122 total coef iterations
Instrument list: MCAP RISKADJ SPCV RGDP(-2) (ASIANDUMMY*FB) (GFCDUMMY*FB) (ASIANDUMMY*TRADE) (GFCDUMMY*TRADE)
Lagged dependent variable & regressors added to instrument list

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.059192	0.017527	3.377209	0.0015
SPCV	-0.329585	0.099711	-3.305397	0.0018
RGDP(-2)	0.021435	0.001693	3.847536	0.0040
ASIANDUMMY*FB	0.006109	0.003719	2.642729	0.0811
GFCDUMMY*FB	0.067628	0.005146	13.14285	0.0000
ASIANDUMMY*TRADE	-0.001601	0.000498	-3.215923	0.0023
GFCDUMMY*TRADE	-0.009193	0.000630	-14.60424	0.0000
DLOG(CLAIMS(-1))	-0.552957	0.070514	-7.841771	0.0000
AR(1)	0.649412	0.059188	10.97198	0.0000
AR(2)	-0.000161	0.076554	-0.002106	0.9983

R-squared	0.379138	Mean dependent var	0.016077
Adjusted R-squared	0.262726	S.D. dependent var	0.063025
S.E. of regression	0.054116	Sum squared resid	0.140571
Durbin-Watson stat	2.026530	J-statistic	0.012495

Inverted AR Roots	.65	.00

[8] The earliest quarterly data is 1999. For the period 1995 to 1998, the quarterly levels are assumed to move based on the annual growth.

[9] Foreign banks are classified into commercial and expanded foreign banks and offshore banking units. Commercial foreign banks, the biggest group of foreign banks, are further classified into non-expanded foreign commercial banks and subsidiaries of foreign commercial banks.

Table 2

Dependent Variable: SBORDER
Method: Generalized Method of Moments
Date: 11/10/10 Time: 22:33
Sample (adjusted): 1996Q3 2009Q4
Included observations: 54 after adjustments
Kernel: Bartlett, Bandwidth: Fixed (3), Prewhitening
Simultaneous weighting matrix & coefficient iteration
Convergence achieved after: 298 weight matrices, 299 total coef iterations
Instrument list: SPCV RGDP(-2) (ASIANDUMMY*FB) (GFCDUMMY*FB) (ASIANDUMMY*TRADE) (GFCDUMMY*TRADE) SBORDER(-1)
Lagged dependent variable & regressors added to instrument list

	Coefficient	Std. Error	t-Statistic	Prob.
C	16.63866	3.742505	4.445862	0.0001
SPCV	-40.58540	10.95100	-3.706092	0.0006
RGDP(-2)	0.379920	0.177567	2.138880	0.0379
ASIANDUMMY*FB	1.911647	0.269040	7.105450	0.0000
GFCDUMMY*FB	-1.264099	1.107504	-2.145600	0.0259
ASIANDUMMY*TRADE	-0.235148	0.034537	-6.808595	0.0000
GFCDUMMY*TRADE	0.043934	0.107627	0.408210	0.6851
SBORDER(-1)	0.816308	0.051443	15.86828	0.0000
AR(2)	-0.005291	0.076014	-0.069609	0.9448
AR(1)	-0.283082	0.082228	-3.442657	0.0013

R-squared	0.820464	Mean dependent var	57.95181
Adjusted R-squared	0.783741	S.D. dependent var	14.18691
S.E. of regression	6.597431	Sum squared resid	1915.148
Durbin-Watson stat	1.988800	J-statistic	0.012350

Inverted AR Roots	-.02	-.26

The positive and significant constant terms (***C*** in Tables 1 and 2) in the estimation of international claims and cross-border loans signify that both variables grew from the first quarter of 1995 to the fourth quarter of 2009.

The results also imply that changes in the volatility of the S&P 500 financial index and real GDP growth contributed to movements of international claims and cross-border lending to the Philippines. In addition, other demand factors such as risk adjusted interest rate differential and stock market capitalization drove changes in international claims and cross-border lending, albeit indirectly.[10]

The relevance of risk adjusted interest rate differential in the estimation connotes that changes in monetary policy are significant in driving claims and cross-border lending to the Philippines. The results further signify that a combination of "push" and "pull" factors affects changes in international claims and cross-border lending. However, when these two factors are compared, it appears that the impact of supply or "push" factor is stronger than that of demand. The coefficients of *SPCV* and *RGDP* in Tables 1 and 2 are divided with the standard deviation of 2.0. From the computation, it appears that the *SPCV* or the supply factor is bigger than the demand factor, *RGDP*.

Meanwhile, trade openness did not do much in stabilizing the financial crises. This is seen as the coefficient of the interaction term *ASIANDUMMY*TRADE* and *GFCDUMMY*TRADE* are both negative, albeit significant (at 5 percent level of significance) in Tables 1 and 2, except in Table 2 when the coefficient of *GFCDUMMY*TRADE* is positive but not significant (at 5 percent level of significance). This indicates that trade transactions had been equally volatile.

The results also reveal that the role of foreign banks to the run-up of the Asian crisis and the global financial crisis had been a stabilizing one. This means that higher exposure of the Philippines to international claims had been translated into more stable financing. This is seen as the coefficient of interaction terms, *ASIANDUMMY*FB* and *GFCDUMMY*FB* are positive and significant (at 5 percent level of significance), except for *GFCDUMMY*FB* in Table 2. This finding underscores the benefits of having foreign banks in the Philippines.

Although it had a stabilizing role during the Asian crisis in 1997, cross-border lending failed to exhibit a stabilizing role during the global financial crisis. This is seen as the coefficient of interaction term *GFCDUMMY*FB is* negative although significant (at 5 percent level of significance) in Table 2. This implies that cross-border lending had been significantly volatile, possibly putting stress on the balance of payments.[11]

The insights in this study show that the story of the global financial crisis had been a different one than the past crises in the

[10] In the empirical estimation in Tables 1 and 2, risk adjusted interest rate differential and stock market capitalization were identified as instrument variables.

[11] This finding confirms Cetorelli and Goldberg (2009; 2010) finding that cross-border lending is a major transmission channel through which stresses in international financial markets are transmitted to emerging market economies.

Philippines. As Cohen and Remolona (2008) emphasized, certain elements are new to the episode of financial turmoil in 2007-2008, while many elements have remained the same.

The new elements include structured credit, the broader use of the originate-to-distribute business model by some international financial institutions, and new arrangements in the repurchase markets that allow the use of almost any financial asset as collateral. These are fundamentally good innovations but their reckless use has helped to underpin the global financial crisis. The elements that have remained the same are those processes that underpin the basic pro-cyclicality in the system, that is, the tendency for a build-up of risk-taking and leverage to occur in benign economic environments and the abrupt withdrawal from risk and an unwinding of leverage that typically happens once the environment turns bad. These elements have in general affected the flow of capital to emerging markets, including the Philippines.

Conclusion

The study finds that supply factors mainly drove international claims and cross-border bank lending during the global financial crisis. In other words, the stress experienced by major internationally-active banks have reduced the supply of international claims and cross-border lending to the Philippines. This finding is consistent with the general understanding that the global financial crisis originated outside the emerging markets, including the Philippines. However, the results show that foreign banks in the Philippines managed to stabilize the surge of international claims but not cross-border lending especially during the global financial crisis in 2007. This finding indicates that the global financial crisis in 2007 has been a different one from the past financial crises in the Philippines.

These findings imply a trade-off for economic policy. On the one hand, cross-border lending seems to be a two-way prong for contagion. Crises can be transmitted from advanced countries to emerging markets, not just the other way around. In addition, cross-border lending can transmit advanced country credit booms. Policymakers might want to reduce the resulting vulnerabilities. On the other hand, cross-border lending is typically a channel for efficient international capital allocation. Philippine financial markets could continue to benefit from this access to international lending and financing.

The findings of this study bring us to a broader issue on the importance of prudential regulation. It can be recalled that cross-border lending in the BIS banking statistics measures foreign bank lending relevant for balance of payment financing. This is a fundamental variable for emerging markets, which have experienced balance of payment crises in the past decades. The increased presence of foreign banks in the domestic banking system necessitates the development of effective cross-border prudential supervision. Although the key objective of the supervisors of internationally-active banks has been to ensure that no transaction of these banks escapes effective supervision and that coordinated immediate action can be undertaken when necessary, a closer cooperation between home- and host-country authorities with vigilant sharing of information has become far more important (Mathieson and Roldos 2001).[12]

References

Cetorelli, Nicola and Linda S. Goldberg (2009; revised in 2010), "Global Banks and International Shock Transmission: Evidence from the Crisis", NBER Working Paper No. 15974.

Cohen, Ben and Eli Remolona (2008), "The Unfolding Turmoil of 2007–2008: Lessons and Responses ADB Institute Working Paper No. 124, ADB.

Mathieson, Donald J., and Jorge Roldos (2001), "The Role of Foreign Banks in Emerging Markets," paper presented at the third Annual Financial Markets and Development Conference in New York in April 2001.

[12] One of the most glaring was the failure of Bank of Credit and Commerce International (BCCI) in 1991. In recent years, Song (2004) noted that the development of foreign banks in Argentina also could raise many supervisory issues deserving interesting discussions.

McCauley, R, P McGuire and G von Peter (2010): "The architecture of global banking: from international to Multinational?" *BIS Quarterly Review*, March, pp 25–37.

Siregar, Reza and Keen Meng Choy (2010), "Determinants of International Bank Lending from the Developed World to East Asia," IMF Staff Paper Vol. 57, No. 2, IMF, USA.

Song, I (2004): "Foreign bank supervision and challenges to emerging market supervisors", IMF Working Paper no 04/82, May.

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ECONOMIC Newsletter
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