International bank flows to emerging markets: Influence of sovereign credit ratings and their regional spillover effects

Suk-Joong Kim

Eliza Wu*

School of Banking and Finance, University of New South Wales, Sydney, NSW 2052, Australia.

Abstract

This paper examines whether the sovereign credit ratings history provided by independent rating agencies help to determine international bank flows to emerging countries. We address this issue by focusing on the banking claims of G-7 countries to a wide sample of 51 emerging market borrowers and utilize a comprehensive dataset of sovereign credit ratings from Standard and Poor's for the period 1995-2003. We find strong evidence indicating that sovereign credit rating and outlook movements do have significant positive influences on international bank flows from developed markets even after controlling for other proxies for informational asymmetries. In addition, we document regional differences in ratings spillover effects. These findings have important implications for financial institutions management and international banking regulations.

JEL classification: E44, E65, F33, F34, G15

Keywords: Emerging markets, credit ratings, international banking, sovereign risk

This version: May 2009

* Corresponding author. Email: e.wu@unsw.edu.au; Tel.: +61-2-9385-5889; Fax: +61-2-9385-6347.

1. Introduction

International bank flows provide the necessary external financing for firms in emerging markets as they transition through stages of financial development. As more developed countries have grown progressively wealthier, banks in those countries have channeled more funds to emerging market borrowers in recent years.[1] Although it has been established that there is a causal link between banking sector liquidity and economic growth (Levine, 1997), there are also concerns that international bank financing has exacerbated financial instability in emerging markets during periods of financial turmoil (Van Rijckeghem and Weder, 2003). A clearer understanding of the determinants of international banking activities in emerging markets is therefore needed. In the current literature assessing the determinants of cross-border banking claims (for example, Dahl and Shrieves, 1999; Buch, 2000, 2003; Jeannau and Micu, 2002; Papaioannou, 2009; Garcia-Herrero and Martinez Peria, 2007), the significant roles of geography and informational asymmetries, sound economic performance, banking sector development, institutional quality, political stability and various other determinants have been investigated. However, despite their documented influence on various segments of financial markets, the role of sovereign credit ratings in influencing international bank flows is yet to feature in this literature.

Based on the theoretical work of Diamond (1984), it is well-accepted that financial institutions play a crucial delegated monitoring role in financial intermediation. We hypothesize that in international bank lending this monitoring role is partially shared with rating agencies. Credit rating assessments should work to reduce the information generation efforts and information asymmetry faced by international bank lenders and make them more

[1] BIS reporting banks' cross border claims against emerging market borrowers have been recovering since 2001 following a period of rapid decline (1998-2000). For the period 2003-2005, the claims increased by 164 USD billion and the total claims stood at 713 USD billion at the end of 2005.

inclined to enter into loan contracts with emerging market borrowers. In support of this argument, Merrill Lynch (1999) purports that credit rating agencies can help lenders to 'pierce the fog' of asymmetric information that surrounds lending relationships. In a related line of inquiry, previous studies such as Yi and Mullineaux (2006) have found that syndicated bank loan ratings are informative for financial market participants. In this paper, we examine whether sovereign credit rating assessments have informational value for cross-border bank flows. Sovereign credit ratings provided by rating agencies encapsulate various fundamental aspects of a country's debt history and macroeconomic strength such as the amount of debt outstanding, GDP per capita, economic growth, inflation and debt repayment ability (see *inter alia* Cantor and Packer, 1996; Afonso, 2003; and Mora, 2006). As such, sovereign credit ratings are deemed to be a reference measure of a country's creditworthiness. Much of the existing literature on credit ratings has focused on their short-term information (predictive) content for financial market returns, interdependence and crises (see for example, Kaminsky and Schmukler, 1999; Brooks et al., 2004; Mora, 2006; Gande and Parsley, 2005; and Ferreira and Gama, 2007). It is conceivable that there are many risk factors simultaneously influencing a country's credit rating including political and other expropriation risks, inflation, exchange rate volatility and currency controls, the country's industry composition, economic viability, sensitivity to global economic shocks and so on. This arguably makes sovereign credit ratings a vital determinant of international bank lending to emerging markets.

This paper examines the extent to which the sovereign credit ratings history provided by independent rating agencies determines international bank flows to emerging countries. We address this issue by focusing on the changes in bank claims of G-7 countries on an extensive sample of 51 emerging markets and utilize a comprehensive dataset of sovereign credit ratings from Standard and Poor's for the period 1995-2003. We find strong evidence indicating that sovereign credit rating and outlook changes have significant positive

influences on international bank flows from developed markets even after controlling for other proxies for informational asymmetries in an augmented gravity model specification. Specifically, while both rating and outlook information (for both foreign and local currency denominated debt) were more influential for bank flows to investment grade borrowers, lending decisions to non-investment grade countries appear to be swayed more by outlooks. In addition, we also document significant ratings spillover effects from one region of emerging markets to another. G-7 bank flows to Africa/Middle East, Emerging Europe and Latin America tended to rise, in general, when ratings improved in other regions except for Asia Pacific. However, bank flows to Asia Pacific fell when ratings improved in other regions.

In spite of the large volume of existing studies on international banking, our study is to our best knowledge the first to explicitly analyze the impact of agency ratings[2] and their spillover effects on the flow of those banking claims. There are important implications in this research for financial institution management and international banking regulations. From a financial market integration perspective, our results are encouraging given that international banking markets are typically more fragmented than international bond or equity markets. Yet, we find empirical evidence that country credit assessments and outlooks provided by rating agencies can indeed encourage international bank flows to emerging markets. Our study complements the existing literature and contributes a much needed new perspective on international banking under the new international banking regulatory framework that is Basel II. Under this framework for assessing bank risks, sovereign credit ratings have been introduced as a gauge for banks' lending activities (and ultimately their risky assets). Furthermore, as it is recognized that credit ratings are used as signals for financial decision-

[2] Whilst International Country Risk Guide (ICRG) indicators have been previously used by Papaioannou (2009) and Garcia-Herrero and Martinez Peria (2007) amongst a host of other determinants, sovereign credit ratings provided by rating agencies have never been explored.

making and that credit rating agencies serve a monitoring role as shown by Boot et al. (2006), we provide empirical evidence on the importance of different types of agency sovereign credit rating information on international bank lending activities.

The remainder of the paper is structured as follows. Section 2 discusses the data employed. Section 3 details the empirical methodology used followed by a discussion on the empirical results in Section 4. Finally, conclusions are presented in Section 5.

2. Data descriptions

2.1. Sovereign ratings

We employ Standard and Poor's (S&P) long-term sovereign credit ratings on a total of 51 emerging market countries in four regions – Region 1: Asia-Pacific (AP), Region 2: Latin America (LA), Region 3: Africa/Middle East (AME) and Region 4: Emerging Europe (EE) for the sample period 1995 to 2003 (see Table A.2 in the Appendix for a country list)[3]. The sovereign credit rating information provided by S&P includes long-term ratings and their intermediate outlooks/credit watches for both foreign currency and local currency denominated sovereign debt. The ratings range from AAA (highest credit quality possible) to D/SD (default/selective default) and these ratings are published with ratings outlook that varies from Credit Watch – Positive to Credit Watch – Negative. The ratings of BBB- and above are considered investment grade and the ratings BB+ and below are considered speculative (or non-investment grade). The ratings announcements are irregularly spaced and

[3] We also considered equivalent ratings produced by Moodys and Fitch. However, they produced ratings for fewer sovereign obligors and at less frequent intervals than S&P with largely consistent assessments. It has also been documented in the sovereign credit ratings literature that S&P tends to lead other agencies and are more active (see Brooks et al., 2004; and Gande and Parsley, 2005).Thus, we chose to concentrate on the S&P ratings alone.

by nature are made only when in the rating agency's view, there are sufficient changes in a country's underlying economic and financial conditions to warrant changing the credit quality of the sovereign borrower. For instance, out of a total of 15 rating changes announced for Argentina over the sample period, 8 were made in 2001 alone (during the Argentine debt crisis). Rating guidance is either in the form of a change in the ratings or outlooks with the former indicating an actual change in the perceived credit quality of a sovereign obligor and the latter indicates a potential rating change over the next six months to two years.

In order to facilitate empirical analyses, the S&P sovereign ratings and outlooks/credit watches are linearly transformed (consistent with the ratings literature) into separate annual time series for each of the sample countries in two stages. First, we assign numerical values for each of the rating grades ranging from 0 for default to 20 for AAA. Table A.1 in the Appendix shows the numerical conversion of the ratings to operationalize statistical analyses. In this paper, we first investigate the roles of the long-term ratings and intermediate outlooks separately for the purpose of explaining the G-7 bank flows to the 51 emerging market economies. We first generate four daily time series for each of the ratings and outlooks on foreign and local currency denominated debt by assigning the announced rating and outlook values to the days between their announcements and the date of the next ratings event. For instance, Argentina's long-term foreign currency rating was changed from CCC+ with negative outlook to CC with negative outlook on 30 October 2001, and then to SD on 6 November 2001. Hence, we assign 1 (the numeric value assigned to CC) for the days between 30 October 2001 and 5 November 2001, and 0 (the value for SD) for 6 November 2001 and beyond. The daily rating series are then used to calculate average annual ratings for each of the 51 countries. The outlook series are generated in a similar fashion. Secondly, we use an aggregate (comprehensive) measure of the linearly transformed ratings and outlooks to investigate the potential of inter-regional ratings spillover effects. The extant literature

documents significant ratings spillover effects in international debt and stock markets (Gande and Parsley, 2005 and Ferreira and Gama, 2007, respectively). Our study thus significantly adds to this literature by providing new results on credit rating spillover effects at the regional level and for cross-border bank flows. We generate the comprehensive credit ratings measure by adjusting each rating score with its associated outlook over time. For example, the rating score of CC with negative outlook will be allocated an aggregate score of 0.75 (1, which is the score of CC rating, minus 0.25, which is the score allocated to a negative outlook)

2.2. G-7 bank flows variables

We investigate the role of sovereign ratings on the bank flows from G-7 countries' lending banks to a group of 51 emerging market countries. We rely on the most comprehensive source of international banking data that is available and that is provided by the Bank for International Settlements (BIS) in their Consolidated Banking Statistics dataset. The BIS collects data on foreign claims extended by international banks from more than 20 developed BIS-reporting countries. However, we focus specifically on G-7 countries due to their dominance in international bank lending to emerging markets. The banking flow data used is the yearly change in the G-7 banks' foreign claims on these target 51 countries as reported in the BIS's consolidated banking statistics (Table 9B: Consolidated foreign claims of reporting banks - immediate borrower basis). In addition, the BIS reports foreign banking claims in ultimate risk basis (Table 9D) and international claims on immediate borrower basis (Table CB10). However, the former shows data from 2005 only and the latter has data missing for Germany, one of the more important G-7 countries. We generated bank flows from both foreign and international claims and the estimation results are essentially the same for both measures. We report only the results for the former and interested readers may obtain the results based on the latter measure for our dependent variable upon request.

2.3. Control variables

There is potentially a long list of economic and financial market variables that have been established in the existing literature to explain international bank flows. We narrow the list by firstly considering those control variables that would be of direct relevance to international bank flows as suggested by the existing literature and would not be collinear with our rating and outlook variables.

The country-specific economic controls are independent variables that are customarily used in cross-border banking studies and that we include to reduce model misspecification errors from the omission of important variables and endogeneity issues. The details on our selected control variables are provided in Table A.3 in the Appendix and are discussed further in the next section.

The literature on international bank flows borrows from the international trade literature a 'gravity model' which essentially addresses various measures of linkages between target and donor countries (see for example, Buch, 2005). According to these types of models, bilateral trade between two countries is proportional to market (country) size but inversely related to geographical distance. Variables which capture trade restrictions and information costs (asymmetries) are usually also added. These include cultural and legal linkages and also economic linkages such as total trade flows between the pair. Hence, we include three variables in this spirit. There is much empirical evidence to support the idea that these proxies for information asymmetry significantly influence cross-border exchanges of financial assets (Portes and Rey, 2005). First, we employ a physical distance measure between a donor and a target country measured in (natural log) kilometers to control for geographical proximity.[4]

[4] The geographical distance between two countries (a donor country and a recipient country) in kilometers is calculated as $\text{Distance}_{ij} = \text{ArcCos}(\text{Sin}(\text{Lat}_i) \times \text{Sin}(\text{Lat}_j) + \text{Cos}(\text{Lat}_i) \times \text{Cos}(\text{Lat}_j) \times \text{Cos}(\text{Long}_j - \text{Long}_i) \times 6371$, where

Second, is the total value of merchandise trade in natural logs between each country pair calculated in both directions (sum of import from and export to each of the 51 emerging countries from the viewpoint of G-7 countries). Third, we use the target country's size of economy as measured in log GDP.

In addition, we employ two measures of financial market development. We use stock market capitalization in natural logs as an indication of a representative non-bank source of finance. Second, we employ domestic credit provided by the banking sector in natural logs as a proxy for the size of the banking sector in each country. We then employ two measures of banking sector efficiency, interest rate spread (i.e. difference between lending and deposit rates) and the ratio of liquid reserves to total assets. We also include measures of international capital flows that may compete with bank flows – foreign direct investments (FDI) and portfolio investment inflows both in natural logs.

Finally, we control for various governance issues that may arise during the process of financial development and impact upon international capital flows. We employ the World Bank governance indicators which are designed to measure six dimensions of governance: voice and accountability, political stability, government effectiveness, regulation quality, rule of law and control of corruption. In these series, a higher value is indicative of an improvement in an aspect of the country's governance quality. The details of the construction of these measures are to be found in Kauffman et al. (2005). This is one of the most comprehensive compilations of data on governance across time and countries currently available.

Lat and Long are the latitude and longitude of the capital city of each country, and the subscripts *i* and *j* denote the two countries in each pair-wise calculation.

3. Empirical model

3.1. Overall impact of sovereign ratings information

We start with an overall panel data estimation of the G-7 bank flows where the influence of the long-term sovereign ratings and outlooks for both foreign and local currency denominated debt are investigated. [5] The augmented gravity model specification in equation (1) is estimated with random effects on the basis of Hausman tests where the null hypothesis of random effects could not be rejected for all model specifications.[6]

$$G7BankFlows_{i,t}^{j} = \alpha^{j} + \alpha_{CR}^{j} CreditRating_{i,t} + \alpha_{Outlook}^{j} Outlook_{i,t} + \sum_{k=1}^{p} \alpha_{k}^{j} EconCTRS_{i,t}^{k} + \sum_{m=1}^{q} \alpha_{m}^{j} WBGov_{i,t}^{m} \quad (1)$$

G-7BankFlows are the annual changes in foreign claims of G-7 countries' banks (j = Canada, France, Germany, Italy, Japan, U.K. and U.S.) against the 51 emerging market countries (i = 1 to 51) for the period 1995 to 2003 yielding a potential 459 (= 51 times 9) observations. $CreditRating_{i,t}$ and $Outlook_{i,t}$ are long-term sovereign ratings and ratings outlook on foreign and local currency denominated sovereign debt respectively. Local and foreign currency ratings and outlooks are estimated separately in Eq. (1). $EconCTRS_{i,t}^{k}$ are the economic control variables (k = distance between donor and recipient countries, total trade between the two countries, GDP of target countries, stock market capitalization, domestic bank lending,

[5] In our application, endogeneity is not an issue for two reasons. First, in most cases, rating changes were less frequent than the bank flows. Second, while the dependent variable is an accumulation of bank flows over an annual period, our measure of annual rating is an average of the changing rating levels throughout the period. As such if rating events were not concentrated around the end of each annual period (December), our annual average rating measures occur before the dependent variable. The ratings events were spread out over the annual periods. Thus, our rating variables are exogenous to the bank flows.

[6] In any event, fixed effects estimation is inappropriate in cases where some of the regressors do not vary across time. In our estimations, the distance measure is time invariant for each country.

interest rate spread, liquidity ratio of bank assets, FDI and portfolio investment inflows) and $WBGov_{i,t}^{m}$ are the governance indicators discussed above (m = accountability, political stability, government effectiveness, regulation quality, rule of law and corruption).

We anticipate that, in general, the sovereign credit rating variables (for both local and foreign currencies) should have a positive influence on the G-7 bank flows (i.e. positive coefficients on rating-based variables). This is because of the important leadership role governments play in the early stages of market development in many emerging market countries. In some circumstances, governments' fiscal positions can play a crucial role in providing various financial and non-financial safety nets to companies that are considered to be of some national significance (e.g. utility or national resource companies). As such, improvements in sovereign governments' fiscal positions (as evidenced by improvements in ratings guidance) would have a positive effect on the G-7 bank flows to those countries.

A typical feature of emerging markets is a lack of an external financial market in their own currencies leading to the situation of 'original sin' where countries are forced to borrow in hard currencies to finance domestic developments due to insufficient domestic savings[7]. In such a circumstance, sovereign credit rating in foreign currencies would play a crucial role in determining to what extent external financing of domestic economic development is facilitated through this channel. Sovereigns are capable of generating local currency funds via issuance of debt securities or taxation and so default is thought to be unlikely. However, to the extent that some emerging market sovereigns have shown tendencies to monetize their national debt leading to inflationary pressures, domestic currency credit ratings would reflect this inflation risk among others. Thus, local currency ratings may be regarded as a signal for such an inflation risk rather than sovereign's default risk.

[7] For more detailed discussion on the idea of original sin, see Eichengreen et al (2002) and McKinnon and Schnabl (2004).

3.2. Comparison of Investment and Non-investment grade ratings

We also investigate the possibility that different grades of ratings may have differential impacts on international bank flows. The patterns of bank flows could be markedly different depending on whether the sovereign of the borrower country has an investment grade rating or not. This is because the monetary authorities often act as a lender of last resort and the ones with investment grade ratings are seen to provide better implicit protection for their domestic borrowers. Hence, we estimate equation (1) separately for the two categories of countries, those with investment grade ratings (BBB- or the assigned numerical value of 10 and above) in both local and foreign currencies and those of non-investment or speculative grade sovereigns (BB+ or the assigned numerical value of 9 and below).

3.3. Regional spillover effects of ratings

In addition to the above investigation of the overall influence of ratings and outlooks on bank flows, we examine potential spillover impacts of ratings in various emerging market regions. The G-7 bank flows to a region of emerging countries may depend not only on the target country's own ratings but also the ratings of other emerging regions. There is the potential of a 'crowding out effect' in bank loans going into various emerging market regions. That is, if lending banks have allocated a fixed proportion of their loan portfolios to emerging market regions as a whole then an increase in bank flows to one region would crowd out the flows into other regions. Alternatively, an increase (decrease) in bank flows to one region may coincide with similar increases (decreases) in other regions if an overall increase (decrease) in the credit allocation to emerging market borrowers is the source of the rise. For example, during the various episodes of financial crises in the late 1990s, emerging markets

as a group experienced net international banking outflows (a total reduction of BIS reporting banks' claims on the region by 247.3 USD billion for the period 1998-1999). However, the net banking inflows that started to emerge towards the end of 2002 were more region specific with the emerging European countries receiving relatively more inflows than other emerging market regions.[8] In order to investigate the potential of rating spillover effects in cross-border bank flows, we model this as in equation (2) below.

$$\begin{aligned} G7BankFlows_{k,t}^{j} = {} & \alpha^{j} + \alpha_{CR}^{j} CreditRating_{i,t} + \alpha_{Outlook}^{j} Outlook_{i,t} \\ & + \alpha_{sp1}^{j} CR\_Spillover\,1_{t} + \alpha_{sp2}^{j} CR\_Spillover\,2_{t} + \alpha_{sp3}^{j} CR\_Spillover\,3_{t} \\ & + \sum_{l=1}^{p} \alpha_{l}^{j} EconCTRS_{k,t}^{l} + \sum_{m=1}^{q} \alpha_{m}^{j} WBGov_{k,t}^{m} \end{aligned} \quad (2)$$

The dependent variable, $G7BankFlows_{k,t}^{j}$, are the annual bank flows of each of G-7 country (*j*)'s banks to a regional group of target countries (*k*= AP, LA, AME and EE). Each regional bank flow is firstly modeled by the long-term credit ratings ($CreditRating_{i,t}$) and outlooks ($Outlook_{it}$) of individual countries in the region. We estimate foreign currency and local currency credit ratings and outlooks in separate equations. Secondly, for each regional group *k* we investigate the spillover effects of the other three regions' comprehensive or aggregate ratings (long-term credit rating adjusted for outlooks). That is, the three rating spillover variables, CR_Spillover1, CR_Spillover2 and CR_Spillover3, are the overall average ratings of regions 2, 3 and 4, respectively for region one, and they are the overall comprehensive credit ratings for regions 1, 3 and 4 for region two, etc.[9] Thirdly, we use the same list of control variables as in the estimation of equation (1).

[8] Based on cross border claims of BIS reporting banks as reported in various issues of BIS Quarterly review from June 2002 to June 2006.

[9] In the interest of brevity we chose to use the aggregate (comprehensive) measure of ratings (Ratings adjusted by outlooks) instead of using ratings and outlook for each of the three regions separately which is unwieldy.

A negative coefficient for the spillover variables would suggest the bank flows into one region are crowding out the flows into others. That is, an improvement in the ratings of one region would increase the G-7 bank flows into that region at the expense of the others. On the other hand, a positive coefficient indicates that a rating improvement in one region leads to more bank lending not only to that region itself but also to other emerging market regions. This is the case if the bank flows into one region might be a part of an overall trend of the international bank flows to all emerging market countries.

4. Empirical results

4.1. Effects of ratings information on bank flows to emerging markets

The estimated results for the overall bank flows model (Eq. 1) are shown in Table 1. The main variables of interest in this paper – the rating and outlook variables – have the expected positive sign in all estimations and are significant in most cases. Hence, improvements in sovereign credit ratings in both local and foreign currency denominated borrowings clearly help to encourage international bank flows to emerging market economies. For both types of ratings, the U.K. banks show the highest sensitivity followed by the U.S. banks.

The coefficients for the outlooks are also all positive indicating that outlook and credit watch guidance have incremental informational value over ratings alone and outlook improvements also work to encourage the G-7 banks to lend more. Once again the U.K. bank flows were the most responsive followed by the U.S. banks. The outlook coefficients are much larger compared to those for the ratings. However, this is due to the differences in the range and the magnitudes of the two types of variables and so a direct comparison of their impact is not valid.

Not surprisingly, we find that international bank flows are fairly sensitive to the governance and institutional environment in emerging markets. Improved accountability undoubtedly increases international banks' confidence and willingness to lend to emerging markets. In five cases, accountability shows a strong positive influence. This is most likely due to reduced agency and monitoring costs for international lenders. Government effectiveness is particularly important for the U.K. and the Japanese bank lenders in their dealings with emerging market borrowers. Interestingly, political stability, corruption, rule of law and regulation quality measures have a consistently negative influence. This may suggest that as these measures deteriorate, there is actually an increase in demand for international bank financing as market-based financing dries up.

In general, the impacts of the economic control variables that are intended to capture general international portfolio choice considerations are by and large as expected. Higher G-7 bank flows were associated with larger economies (as measured by log GDP) and larger and more efficient banking sectors (greater bank lending, higher liquid asset ratios and lower interest rate spreads). However, we find some support for a substitution effect in banking and equity financing. Larger stock market capitalization in emerging market borrowers actually discouraged bank flows from the Italian and the U.S. banks. Typically, emerging markets with larger and more developed stock markets tend to be less reliant on international bank financing whilst those with developed banking sectors tend to encourage bank flows from abroad. Furthermore, there is evidence of other forms of international capital flows crowding out G-7 bank lending as shown by significantly negative influences of both FDI and debt and equity portfolio inflows in most cases.

In contrast to the existing evidence showing that closer trading ties promote cross-border financial flows, we find a negative relationship between total trade and bank flows

suggesting that trade activities may effectively provide non-bank sources of funds to emerging markets to make them less reliant on international bank financing.[10]

Another interesting finding is that we find mixed influence of geographical distance in international bank flows to emerging markets. In two cases, France and Germany, we find a significant negative link which is consistent with the literature (Portes and Rey, 2005; Wei and Wu, 2002, Buch, 2005) but we also find a positive relationship for Japan and the U.S suggesting that bank lenders in these technologically advanced countries are not overly concerned with geographical proximity to their borrowers. We hazard a guess that the banks from these two countries may have concentrated on servicing their respective country's multinational clients in target emerging markets, and hence, distance may not have been a factor in their lending decisions.

4.2. Investment grade vs. Non-investment grade rating effects

A comparison of results for bank flows entering into investment and non-investment grade destinations is provided in Table 2. We summarize three salient points of the estimations. First, with the exception of Canada and France, we observe that the G-7 bank lenders are more focused on investment grade rated countries' sovereign rating information in both local and foreign currency debt) in their lending activities to emerging markets. Second, when extending credit to non-investment grade countries, international banks are more swayed by outlook improvements than ratings upgrade. Specifically, for the U.S., U.K. and France, only the outlook improvements stimulated lending activities to the non-investment grade borrowers. Third, outlook improvements contributed to the G-7 bank flows in all cases but actual ratings improvements also had a negative influence in some cases (German bank

[10] The negative relationship is robust to various measures of total trade. We tested import, export and net export as alternative measures of trade activity with the same qualitative result.

flows to investment grade countries and flows from Canada and Japan to the non-investment grade countries).

Moreover, the market-centric bank lenders in U.K. and U.S. are particularly vigilant on all ratings information but interestingly, the outlook guidance on non-investment grade borrowers are significant over actual ratings (on both foreign and local currency denominated debt). Overall, whilst both actual ratings and sovereign credit outlooks significantly influence international bank lending activities, the intermediate information content of outlooks appears to provide more timely information on the creditworthiness of emerging market economies and are thus, particularly important in lending decisions to non-investment grade emerging market borrowers.

As with the overall estimation results in Table 1, we find significant relationships for most governance and information asymmetry proxies with G-7 bank flows indicating that as these aspects improve for emerging markets, international bank financing will be significantly affected on either the demand or supply side and result in a general decline in bank flows. Nonetheless, we also find markedly consistent evidence on the differential importance of governance quality depending on the creditworthiness of target countries. In comparing the results in Tables 1 and 2, we note that the overall estimation results are determined primarily by the investment grade sub-group despite a fairly even number of observations in both grades of emerging markets. To some extent, this suggests that in speculative grade economies, governance quality is immaterial in lending decisions. For the remaining economic control variables, the distribution of the significant responses in the investment grade break-down is consistent with the overall results reported in Table 1. Whilst most of the significant economic control variables are distributed across the two types of countries, we note that in some cases, the significant relationship we report in Table 1 is coming mostly from one type of borrower countries. In particular, the crowding out effect of stock market

capitalization for the bank flows is coming from the non-investment grade countries only (suggesting that the crowding out effect is strongest in the early stages of financial market development), and the negative influence of the FDI flows is mainly concentrated on investment grade countries.

4.3. Regional rating spillover effects on emerging market bank flows

The results on foreign currency rating spillover effects are presented in Table 3 and those for local currency rating spillovers are shown in Table 4. For brevity, we report only the coefficients for own regional ratings and outlook variables and the ratings spillover variables.[11] In the first two columns of Table 5 we summarize the number of significant contemporaneous spillover coefficients across the G-7 lenders reported in Tables 3 and 4. It is shown that the G-7 lenders responded not only to the ratings and outlooks of the target countries but also the average ratings of borrower countries in other regions. For the foreign currency rating spillovers, we note that positive spillovers dominate in all regions except for Asia Pacific (AP). The borrowers in these regions experienced higher bank inflows in response to improvements in credit assessments of the other two emerging regions.

The bank flows to AME were positively influenced by credit condition improvements in Latin America (LA) and EE borrowers whereas EE borrowers benefitted from positive spillovers from LA and AME countries. In addition, LA borrowers benefited from credit improvements in AME countries. However, the credit conditions in AP did not have any significant influence for the other regions. This suggests that the G-7 lenders mostly regard sovereign borrowers in these three regions as a part of an emerging market lending program that encompasses all the emerging market regions except for AP. This is consistent with Van Rijckenghem and Weder's (2003) finding of significant common lender spillover effects

[11] Full estimation results with the control variables are available upon request from the corresponding author.

during financial crises - when bank creditors withdraw funds from a country after experiencing losses in other countries. As for AP, bank flows to the region are negatively influenced by credit conditions in LA, AME and EE countries as shown by the negative spillover coefficients (all significant spillover coefficients are negative). This implies that there was a crowding out effect where G-7 bank flows to AP increased (decreased) when sovereign ratings of borrowers in other regions deteriorated (improved). This implies that the G-7 lenders considered AP as an alternative destination to the other emerging market regions when the credit conditions deteriorated. This is consistent with the significant reversals in international bank lending to AP with the onset of financial crises from 1997. As a result, other emerging market borrowers have become more successful in competing for funds from international banks.[12] During the period 1998 to 2002, Bank for International Settlement reporting banks' total lending to the Asia Pacific fell by 275.3 US billion whereas an increase of approximately 40 US billion was recorded for Latin America and Emerging Europe combined.[13]

Table 4 shows the local currency rating estimations and the summary of the significant contemporaneous spillover coefficients are shown in the third and the fourth columns in Table 5. We still observe the dominance of positive spillover effects of other regions to AME and EE, and negative spillover effects in AP from the other three regions.

In sum, we document the important roles sovereign ratings play in determining the G-7 bank lending flows to emerging markets. International bank flows are influenced not only by the sovereign ratings and outlooks of the recipient countries but also by the average ratings of other emerging market regions. Whilst there is a consistent and strong positive relationship

[12] This is consistent with Van Rijckeghem and Weder (2003) who state that "…spillover caused by banks' exposures to a crisis country help predict flows in third counties after the Mexican and Asian cirses.."

[13] BIS Quarterly Reviews, various issues.

between own country ratings and outlooks with incoming bank flows, spillover influences of other emerging market regions show positive impacts in most regions whilst there are negative crowding out effects for AP.

4.4. Robustness Checks[14]

4.4.1 Lags of sovereign ratings and outlooks

To address the obvious concerns with endogeneity that marks the nature of ratings studies, we also examined regression results with the contemporaneous averaged annual ratings and outlook variables replaced with one year lags. We report the summary of only the ratings and outlook coefficients of both overall and sub-group estimations in Table 6. Also, we report the summary of the spillover effects with lagged ratings in the last four columns in Table 5. The evidence shows that the positive influence of the sovereign ratings on the G-7 banks flow that we report in Tables 1-4 are indeed robust. However, lagged outlooks are less significant than their contemporaneous counterparts but that is to be expected given that outlooks are assessments on the likelihood of imminent changes in ratings and should only be relevant for up to 6 months or so. This result confirms that outlooks only provide short-term informational value for cross-border lending decisions. In addition, the spillover estimation results are not changed even when we consider lagged ratings.

4.4.2 Collinearity of control variables

To minimize problems with multicollinearity, we also examined correlations between individual control variables (which were not unreasonably high) and re-estimated model specifications based on equation (1) with the various informational proxies entering separately.

[14] Additional tables of results from these robustness checks are all available upon request but have been omitted to avoid an overwhelming number of tables being presented.

We find that our key results remained qualitatively the same. Moreover, the estimated results for the control variables are insensitive to the way they are measured. For example, the capital flow, market and economic size variables that are currently measured in natural logs produced the same qualitative results when we measured them as a ratio to GDP.

4.4.3 Aggregate governance indicator

We also used a composite governance index that was created by aggregating the six individual governance measures, as in Butler and Fauver (2006). The rating and outlook coefficients changed very little from what we report above. The composite governance index had a significant negative influence on the international bank flows in all cases. This shows that an improvement in the index discourages bank flows and suggests that alternative forms of international capital flows become more attractive as investor protection improves.

4.4.4 Cultural and legal linkages

To further ascertain the robustness of reported empirical results, we considered additional control variables for ties in cultural and legal origins between lending and borrowing countries as there is much evidence to show that these aspects do affect economic outcomes and financial activities (Guiso et al., 2006; and La Porta et al., 1997). The G-7 lenders based in countries sharing a similar cultural background or legal environment with a borrower may have less of an informational disadvantage in their lending decisions. We find that the Commonwealth membership and Common Law legal origin dummy variables are particularly significant for the U.K. bank flows to emerging markets in some cases. However, we observed that Civil Law legal origin connections were more important for cross-border bank flows and this dummy was mainly significant for bank flows from Japan and Germany. Hence, we find evidence to support the fact that civil law origins are more important for

historically bank-centric countries whereas common law which is more complex and based on intricate precedents and judges discretion do not necessarily encourage bank flows. As the focus of this paper is not on the legal or cultural determinants of international bank flows we do not attempt to exhaust the list of information proxies in this area.

5. Conclusions

In this paper, we investigate the influence of different types of sovereign credit rating information on variations in international bank flows to a large sample of emerging market economies. Specifically, we find the G-7 bank flows were influenced by various measures of credit quality for target emerging market borrowers. Firstly, we find evidence indicating that sovereign credit rating and outlooks have strong positive effects on international bank flows from developed markets to emerging market borrowers even after controlling for various proxies for information asymmetries in an augmented gravity model specification. Secondly, there is evidence suggesting that while both rating and outlook information (for both foreign and local currency denominated debt) were more influential for bank flows to investment grade borrowers, lending decisions to non-investment grade countries were swayed more by outlooks. Thirdly, we report significant rating spillover effects. In general, the G-7's bank flows to Africa/Middle East, Emerging Europe and Latin America benefitted from improvements in credit conditions of one another. However, credit rating movements in the Asia Pacific had no influence for the other regions' bank inflows, and moreover, bank flows to the Asia Pacific were significantly reduced as the credit conditions in the other three regions improved.

From a policy perspective, these findings imply that emerging market governments can play a vital role for banking liquidity and economic development not only in their own countries but also for other emerging markets by cooperating with rating agencies in the

consistent provision of relevant and timely information for the on-going country rating process. The independence of rating agencies is critical for international banking regulatory guidelines to remain effective as credit rating agencies do appear to play a role in ameliorating the monitoring costs in international bank lending activities.

Our study is not without its limitations. As we do not capture off-balance sheet positions of the G-7 banks in emerging markets, it is likely that our results understate the importance of agency credit ratings on international banking activities. Yet our consistently robust results in this study suggest that a significant influence of ratings information on international bank flows cannot be denied. Moreover, although we have only explored the influence of agency credit ratings in the context of 'pull' factors in emerging markets, we are aware that push factors in developed economies themselves may well also have a role to play in international bank flows. However, in the sample period studied, growth in the developed world has been strong and international bank flows have been largely pro-cyclical. Thus, we leave the analyses of push factors to future research conducted with the benefit of data over more business cycles.

References

Afonso, A., 2003, Understanding the determinants of sovereign debt ratings: Evident for the two leading agencies. *Journal of Economics and Finance* 27, 56-74.

Boot, A.W., T.T., Milbourne and A. Schmeits, 2005, Credit ratings as coordination mechanisms, *Review of Financial Studies* 19, 81-118.

Brooks, R., R. Faff, D. Hillier and J. Hillier, 2004, The national market impact of sovereign rating changes, *Journal of Banking and Finance* 28, 233-250.

Buch, C., 2000, Why do banks go abroad? Evidence from German data, *Financial markets, institutions and instruments* 9, 24-67.

Buch, C., 2003, Information or regulation: What drives the international activities of commercial banks? *Journal of Money, Credit and Banking* 35, 851-869.

Buch, C., 2005, Distance and International Banking, *Review of International Economics* 13, 787-804.

Butler, A. and L.Fauver, 2006, Institutional Environment and Sovereign Credit Ratings. *Financial Management*, Autumn, 53-79.

Cantor, R. and F. Packer, 1996, Determinants and impact of sovereign credit ratings. *Federal Reserve Bank of New York Economic Policy Review* 2, 37-53.

Dahl, D., and R.E. Shrieves, 1999, The extensions of international credit by US banks: A disaggregated analysis 1988-1994, *Journal of International Money and Finance* 18, 153-167.

Diamond, D.W., 1984, Financial intermediation and delegated monitoring, *Review of Economic Studies* 51, 393-414.

Eichengreen, B., R. Hausmann and U. Panizza, 2002, Original sin: the pain, the mystery, and the road to redemption, Mimeo (http://www.financialpolicy.org/financedev/hausmann2002.pdf).

Ferreira, M.A. and P.M., Gama, 2007, Does sovereign debt ratings news spill over to international stock markets? *Journal of Banking and Finance*, 31, 3162-3182.

Gande, A. and D.C. Parsley, 2005, News spillovers in the sovereign debt market, *Journal of Financial Economics* 75, 691-734.

Garcia-Herrero, A. and M.S. Martinez Peria, 2007, The mix of international banks' foreign claims: Determinants and implications, *Journal of Banking and Finance* 31, 1613-1631.

Guiso, L., P. Sapienza and L. Zingales, 2006, Does culture affect economic outcomes? *Journal of Economic Perspectives* 20, 23-48.

Jeannau, S, and M. Micu, 2002. Determinants of international bank lending to emerging market countries, *Bank for international settlements*, working paper no. 112.

Kaminsky G. and S.L. Schmukler, 1999, What triggers market jitters? A chronicle of the Asian crisis, *Journal of International Money and Finance* 18, 537-560.

Kaufmann, D., A. Kraay and M. Mastruzzi, 2005, Governance Matters IV: Governance Indicators for 1996-2004. *World Bank Policy Research Working Paper* 3630, Washington, D.C.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer and R. Vishny, 1997, Legal determinants of external finance, *Journal of Finance* 52, 1131-1150.

Levine, R., 1997, Financial development and growth: views and agenda, *Journal of Economic Literature* 35, 688-726.

McKinnon, R. and G. Schnabl, 2004, The east Asian dollar standard, fear of floating, and original sin, *Review of Development Economics* 8, 331–360.

Merrill Lynch, 1999. Why Do Bond Rating Agencies Exist? Extra Credit, November, New York.

Mora, N., 2006, Sovereign credit ratings: Guilty beyond reasonable doubt? *Journal of Banking and Finance*, 30, 2041-2062.

Papaioannou, E., 2009, What drives international bank flows? Politics, Institutions and other determinants, *Journal of Development Economics*, 88, 269-281

Portes, R. and H. Rey, 2005, The determinants of cross-border equity flows, *Journal of International Economics*, 65, 269-296.

Van Rijckeghem, C. and B. Weder, 2003, Spillovers through banking centers: a panel data analysis of bank flows, *Journal of International Money and Finance* 22, 483-509.

Wei, S-J. and Y. Wu, 2002, Negative alchemy? Corruption, composition of capital flows and currency crises: in Edwards, S. (ed.), *Preventing currency crises in emerging market*, University of Chicago Press, hicago.

Yi, H-C. and D.J. Mullineaux, 2006,. The informational role of bank loan ratings, *Journal of Financial Research*, 29, 481-501.

Table 1: Overall foreign and local currency rating estimations, 1995-2003

This table presents the overall results for the panel data specifications shown below:

$$G7BankFlows_{i,t}^{j} = \alpha^{j} + \alpha_{CR}^{j} CreditRating_{i,t} + \alpha_{Outlook}^{j} Outlook_{i,t} + \sum_{k=1}^{p} \alpha_{k}^{j} EconCTRS_{i,t}^{k} + \sum_{m=1}^{q} \alpha_{m}^{j} WBGov_{i,t}^{m} \quad (1)$$

Where G7BankFlows are the annual changes in foreign claims of G-7 countries' banks against 51 emerging market countries. CR and Outlook are sovereign credit ratings and outlooks of the emerging market countries for foreign and local currency denominated debt. The control variables incorporate country-specific governance and economic variables. *, ** and ***, denote significance at 10, 5 and 1 percent, respectively. Numbers in braces are p-values.

	Canada	France	Germany	Italy	Japan	UK	US
	Rating and outlook variables						
Credit Rating_FCurrency	0.1055 ***	0.1698 **	0.2049	0.1338 **	0.1437	1.4455 ***	0.9109 ***
	{0.0073}	{0.0155}	{0.2028}	{0.0408}	{0.5424}	{0.0030}	{0.0000}
Outlook_FCurrency	0.9044	2.1312 **	8.5883 ***	2.9241 ***	9.2504 ***	15.3270 **	11.3289 ***
	{0.1210}	{0.0279}	{0.0002}	{0.0009}	{0.0096}	{0.0285}	{0.0001}
Credit Rating_LCurrency	0.0477	0.2183 ***	0.4386 ***	0.1244 **	0.3531 *	1.4144 ***	0.5706 ***
	{0.1361}	{0.0001}	{0.0005}	{0.0196}	{0.0647}	{0.0001}	{0.0002}
Outlook_LCurrency	1.1547 *	2.4950 **	6.8209 ***	3.8498 ***	12.2554 ***	26.9693 ***	11.8279 ***
	{0.0766}	{0.0206}	{0.0072}	{0.0001}	{0.0021}	{0.0003}	{0.0002}
	Economic control variables						
Distance	0.3862	-1.6290 ***	-3.2347 ***	-0.2937	3.9757 ***	-2.4772	6.5798 ***
	{0.1064}	{0.0000}	{0.0000}	{0.1776}	{0.0000}	{0.1380}	{0.0000}
Total Trade	-0.2646 ***	-1.7414 ***	-4.0905 ***	-0.8118 ***	-1.1171 **	-4.5136 ***	-1.0120 **
	{0.0045}	{0.0000}	{0.0000}	{0.0000}	{0.0370}	{0.0009}	{0.0185}
GDP	-0.1918	1.5476 ***	1.4305 **	0.0826	0.1074	5.6479 ***	-0.3969
	{0.2034}	{0.0000}	{0.0119}	{0.7022}	{0.9092}	{0.0011}	{0.5667}
Stock Market Capitalization	-0.0442	-0.1227	-0.2309	-0.3988 ***	0.4166	-1.5685	-1.9752 ***
	{0.5471}	{0.3417}	{0.4576}	{0.0004}	{0.3704}	{0.1133}	{0.0000}
Banks Credit Extended	0.1250	-0.0666	1.5246 ***	0.5655 ***	0.3317	0.0268	-0.6410
	{0.3641}	{0.7706}	{0.0042}	{0.0043}	{0.6854}	{0.9869}	{0.3410}
Interest Rate Spread	0.0035	-0.0323 ***	-0.1099 ***	-0.0569 ***	-0.0436	-0.0844	-0.1014 ***
	{0.6274}	{0.0071}	{0.0001}	{0.0000}	{0.3271}	{0.3354}	{0.0047}
Bank Liquid Reserves to Asset Ratio	0.0111	0.0215	0.0399	0.0124	0.0484	0.2122 *	0.1308 ***
	{0.2486}	{0.1914}	{0.3038}	{0.4147}	{0.4130}	{0.0662}	{0.0046}
FDI on BOP basis	-0.0398	-0.5942 ***	-0.7396 **	-0.0165	-2.5216 ***	-3.4463 ***	0.3293
	{0.6059}	{0.0000}	{0.0129}	{0.8925}	{0.0000}	{0.0002}	{0.3849}
Total Portfolio inflow	-0.0141	-0.0866 ***	-0.1376 ***	-0.0203	0.0866	0.3039 **	-0.0573
	{0.2099}	{0.0000}	{0.0018}	{0.2292}	{0.2090}	{0.0237}	{0.3000}
	World Bank governance indicator variables						
Accountability	0.3700 **	1.3388 ***	1.5218 **	-0.0898	5.2755 ***	11.1096 ***	0.1453
	{0.0110}	{0.0000}	{0.0102}	{0.6819}	{0.0000}	{0.0000}	{0.8390}
Political Stability	-0.4386 **	-0.8055 ***	-0.7721	-0.5240 **	-0.3048	-4.8805 **	-4.8949 ***
	{0.0115}	{0.0054}	{0.2643}	{0.0455}	{0.7692}	{0.0191}	{0.0000}
Government Effectiveness	0.2967	0.8527	0.1373	0.4330	7.2837 ***	20.3801 ***	2.1432
	{0.3818}	{0.1359}	{0.9202}	{0.3825}	{0.0006}	{0.0000}	{0.1882}
Regulation Quality	-0.7803 ***	-0.5832	1.6883	-0.6840 *	-5.7468 ***	-14.8625 ***	-5.5507 ***
	{0.0030}	{0.1958}	{0.1159}	{0.0838}	{0.0004}	{0.0000}	{0.0000}
Rule of Law	0.2641	-0.5489	-0.9447	0.7608	-7.7517 ***	-5.3593	1.1283
	{0.4901}	{0.3848}	{0.5283}	{0.1901}	{0.0009}	{0.2387}	{0.5583}
Corruption	-0.6175 *	-0.7412	-2.7849 **	-0.8463 *	-2.0379	-12.9569 ***	-0.5513
	{0.0584}	{0.1800}	{0.0318}	{0.0939}	{0.3273}	{0.0011}	{0.7325}
Hausman test	5.7438	6.1362	5.4267	6.1126	5.3486	5.1293	5.4623
H0: Random effects	{0.6759}	{0.5239}	{0.7111}	{0.5267}	{0.6175}	{0.6442}	{0.4860}
Log Likelihood	-425.207	-593.289	-805.577	-548.226	-927.043	-1108.99	-866.026

Table 2: Investment and non-investment grade estimations

This table presents the separate panel estimation results of Eq (1) for two sub-groups of emerging markets – those with investment grade ratings (BBB- and above) and those with non-investment ratings (BB+ and below).

$$G7BankFlows_{i,t}^{j} = \alpha^{j} + \alpha_{CR}^{j} CreditRating_{i,t} + \alpha_{Outlook}^{j} Outlook_{i,t} + \sum_{k=1}^{p} \alpha_{k}^{j} EconCTRS_{i,t}^{k} + \sum_{m=1}^{q} \alpha_{m}^{j} WBGov_{i,t}^{m} \quad (1)$$

Where G7BankFlows are the annual changes in foreign claims of G-7 countries' banks against the two groups of emerging market borrowers. CR and Outlook are sovereign credit ratings and outlooks of the emerging market countries for foreign and local currency debt. The control variables incorporate country-specific governance and economic variables. *, ** and ***, denote significance at 10, 5 and 1 percent, respectively. Numbers in braces are p-values.

	Canada		France		Germany		Italy		Japan		UK		US	
	Invest	Non-Invest	Invest	Non-Invest	Invest	Non-Invest	Invest	Non-Invest	Invest	Non-Invest	Invest	Non-Invest	Invest	Non-Invest
	Rating and outlook variables													
Credit Rating_FCurrency	0.0864	-0.0434	0.0959	0.1021	-0.6262 ***	0.3616	-0.0786	-0.0107	-0.6318	-0.1085	2.4745 ***	0.1852	0.5861 **	0.2770
	{0.2672}	{0.2201}	{0.3794}	{0.2402}	{0.0079}	{0.2056}	{0.4432}	{0.9174}	{0.1541}	{0.3439}	{0.0021}	{0.1634}	{0.0443}	{0.3234}
Outlook_FCurrency	1.6041 *	0.2498	2.2569	2.3303 **	8.0190 ***	5.2857 *	3.1771 **	1.8575 *	13.3722 **	1.2057	29.0064 ***	6.6156 ***	14.4419 ***	10.0548 ***
	{0.0988}	{0.5289}	{0.1117}	{0.0142}	{0.0065}	{0.0907}	{0.0106}	{0.0950}	{0.0149}	{0.3465}	{0.0063}	{0.0000}	{0.0001}	{0.0015}
Credit Rating_LCurrency	0.1198	-0.0840 ***	0.3745 ***	-0.0311	-0.0331	0.4044 **	0.0594	-0.0029	0.3616	-0.1725 **	3.7285 ***	-0.0180	1.1556 ***	-0.0655
	{0.1600}	{0.0001}	{0.0024}	{0.6074}	{0.8955}	{0.0349}	{0.6019}	{0.9679}	{0.4862}	{0.0187}	{0.0000}	{0.8415}	{0.0002}	{0.7178}
Outlook_LCurrency	1.0604	0.7718 *	1.6776	2.1522 **	6.7152 **	3.1351	3.8110 ***	1.6226	12.6789 **	2.3720	33.0282 ***	7.3052 ***	9.2220 **	9.9250 ***
	{0.3192}	{0.0627}	{0.2933}	{0.0496}	{0.0446}	{0.3920}	{0.0058}	{0.2018}	{0.0423}	{0.1014}	{0.0032}	{0.0000}	{0.0207}	{0.0054}
	Economic control variables													
Distance	0.5996	0.6637 ***	-1.2773 ***	-1.0765 **	-2.3579 ***	-4.2965 ***	-0.4391	-1.8271 ***	6.1463 ***	0.9952 **	2.8094	1.1064 **	6.8177 ***	10.6641 ***
	{0.1382}	{0.0036}	{0.0007}	{0.0145}	{0.0025}	{0.0004}	{0.1948}	{0.0000}	{0.0000}	{0.0173}	{0.2779}	{0.0492}	{0.0000}	{0.0000}
Total Trade	-0.3644 **	-0.0857	-1.8454 ***	-1.1584 ***	-4.1463 ***	-4.1470 ***	-1.1326 ***	-1.3663 ***	-0.1661	-0.7779 **	-7.0031 ***	0.4102	-2.7276 ***	2.1283 ***
	{0.0235}	{0.3715}	{0.0000}	{0.0000}	{0.0000}	{0.0000}	{0.0003}	{0.0000}	{0.8332}	{0.0119}	{0.0021}	{0.1903}	{0.0000}	{0.0040}
GDP	-0.5950 **	0.0625	1.4155 ***	0.8441 ***	1.7883 ***	1.1830	-0.4676	0.7440 *	0.9792	-0.1919	6.8947 ***	0.7763 *	-3.9961 ***	0.5016
	{0.0164}	{0.6585}	{0.0000}	{0.0097}	{0.0081}	{0.2960}	{0.1010}	{0.0518}	{0.5088}	{0.6403}	{0.0076}	{0.1000}	{0.0000}	{0.6394}
Stock Market Capitalization	0.0091	-0.1463 ***	-0.0645	-0.2210 **	0.0135	-0.1908	-0.0067	-0.4727 ***	-0.6278	-0.1246	-3.9657 **	-1.1532 ***	-0.6136	-2.7422 ***
	{0.9595}	{0.0017}	{0.7954}	{0.0477}	{0.9800}	{0.6178}	{0.9752}	{0.0002}	{0.5223}	{0.4450}	{0.0423}	{0.0000}	{0.3491}	{0.0000}
Banks Credit Extended	0.3790	-0.1199	-0.0958	-0.1637	1.0261	0.7993	0.9187 ***	0.3083	0.1234	0.0730	-0.7343	-0.3641	2.0203 **	-3.3518 ***
	{0.1287}	{0.2712}	{0.7974}	{0.4866}	{0.1712}	{0.3214}	{0.0047}	{0.2529}	{0.9319}	{0.8261}	{0.7919}	{0.3451}	{0.0308}	{0.0002}
Interest Rate Spread	0.0089	0.0003	-0.0056	-0.0364 ***	-0.0853	-0.1216 ***	-0.0052	-0.0663 ***	-0.2836 **	-0.0127	-0.5463 **	-0.0918 ***	0.0080	-0.1025 ***
	{0.6887}	{0.9468}	{0.8557}	{0.0002}	{0.2061}	{0.0002}	{0.8544}	{0.0000}	{0.0149}	{0.3261}	{0.0182}	{0.0000}	{0.9187}	{0.0014}
Bank Liquid Reserves to Asset Ratio	0.0334	-0.0007	0.0509	0.0142	0.0968	0.0269	0.0276	0.0309 *	0.4059 ***	0.0215	0.6316 **	0.0459 *	0.2015 **	0.1070 **
	{0.1697}	{0.9050}	{0.1797}	{0.3486}	{0.2238}	{0.6013}	{0.3805}	{0.0816}	{0.0032}	{0.2828}	{0.0245}	{0.0547}	{0.0258}	{0.0255}
FDI on BOP basis	0.0217	-0.0383	-0.5230 ***	0.0820	-0.6666 *	0.7579	0.0488	0.3646 **	-2.9360 ***	0.0499	-2.9799 **	-0.0033	0.6549	0.4582
	{0.8588}	{0.5543}	{0.0030}	{0.5956}	{0.0878}	{0.1397}	{0.7741}	{0.0415}	{0.0000}	{0.8085}	{0.0223}	{0.9894}	{0.1490}	{0.3745}
Total Portfolio inflow	-0.0182	-0.0142	-0.0881 ***	-0.1856 ***	-0.2048 ***	-0.1234	-0.0112	-0.0973 **	-0.0102	0.0215	0.2603	-0.0888	-0.0776	0.0861
	{0.2075}	{0.3531}	{0.0000}	{0.0000}	{0.0000}	{0.2906}	{0.5426}	{0.0132}	{0.9040}	{0.6536}	{0.1015}	{0.1073}	{0.1602}	{0.4752}
	World Bank governance indicator variables													
Accountability	0.4474 **	-0.1990	1.9374 ***	-1.3066 ***	2.6209 ***	-1.9356	0.1497	-0.2946	6.1399 ***	-0.6679	15.5349 ***	-2.2663 ***	0.1874	-2.6460 *
	{0.0358}	{0.2886}	{0.0000}	{0.0033}	{0.0001}	{0.2117}	{0.5827}	{0.5765}	{0.0000}	{0.2829}	{0.0000}	{0.0014}	{0.8233}	{0.0951}
Political Stability	-0.4589 *	-0.2257	-0.7873 **	0.1868	0.0482	-0.8941	-0.2333	-1.1576 **	-0.0097	0.7398	-5.6970 **	-0.2013	-4.7797 ***	-4.3659 ***
	{0.0724}	{0.1810}	{0.0324}	{0.6419}	{0.9509}	{0.5179}	{0.4690}	{0.0124}	{0.9947}	{0.1671}	{0.0404}	{0.7508}	{0.0000}	{0.0010}
Government Effectiveness	0.5048	0.1291	0.9561	-1.5628 **	1.2093	-5.0527 **	0.1115	0.2059	6.9579 **	1.8266 *	28.5736 ***	0.1462	4.5948 **	3.1890
	{0.3486}	{0.6854}	{0.2422}	{0.0187}	{0.4699}	{0.0338}	{0.8693}	{0.7848}	{0.0292}	{0.0661}	{0.0000}	{0.8931}	{0.0257}	{0.2061}
Regulation Quality	-1.2125 **	-0.3997 **	-1.9100 **	0.8125 *	-0.8985	3.4409 **	-0.2599	0.1741	-9.1996 ***	-0.4609	-34.3235 ***	-1.1316	-7.9390 ***	-3.2644 **
	{0.0146}	{0.0386}	{0.0118}	{0.0615}	{0.5599}	{0.0195}	{0.6825}	{0.7158}	{0.0013}	{0.4710}	{0.0000}	{0.1206}	{0.0000}	{0.0128}
Rule of Law	0.9639 *	-0.5715 *	-0.5468	0.7289	-1.5601	1.9322	0.5436	1.1947	-7.1189 **	-3.6133 ***	-1.1800	2.2443 *	4.6293 **	-1.5577
	{0.0806}	{0.0854}	{0.5010}	{0.3312}	{0.3672}	{0.4415}	{0.4409}	{0.1702}	{0.0274}	{0.0005}	{0.8462}	{0.0690}	{0.0292}	{0.5602}
Corruption	-1.2422 ***	0.9954 ***	-0.2373	-0.2848	-1.5836	0.7634	-0.5422	-2.6312 ***	0.7290	1.0893	-13.8743 ***	-2.8144 **	-4.0856 **	2.2163
	{0.0094}	{0.0025}	{0.7371}	{0.7216}	{0.2814}	{0.7750}	{0.3724}	{0.0040}	{0.8017}	{0.2964}	{0.0098}	{0.0283}	{0.0252}	{0.3945}
Hausman test	5.820433	5.554785	4.685794	5.589943	5.030313	5.186854	6.078693	5.867937	5.284197	5.064332	4.192635	5.253095	5.131014	4.351335
H0: Random effects	{0.6673}	{0.4749}	{0.6982}	{0.5884}	{0.6563}	{0.5201}	{0.5306}	{0.5553}	{0.8089}	{0.6521}	{0.7573}	{0.6291}	{0.6440}	{0.6292}
Log Likelihood	-282.146	-76.3441	-360.224	-203.477	-466.244	-307.567	-322.873	-193.661	-572.229	-204.642	-677.316	-258.849	-519.854	-307.382

Table 3: Foreign currency ratings spillover

This table presents the regional rating spillover effects of foreign currency denominated sovereign ratings of Eq (2A) below.

$$G7BankFlows_{k,t}^{j} = \alpha^{j} + \alpha_{CR}^{j} CR\_FC_{i,t} + \alpha_{Outlook}^{j} Outlook\_FC_{i,t} + \alpha_{sp1}^{j} CR\_FC\_Spillover\,1_{t} + \alpha_{sp2}^{j} CR\_FC\_Spillover\,2_{t} + \alpha_{sp3}^{j} CR\_FC\_Spillover\,3_{t} + \sum_{l=1}^{p} \alpha_{l}^{j} EconCTRS_{k,t}^{l} + \sum_{m=1}^{q} \alpha_{m}^{j} WBGov_{k,t}^{m} \quad (2A)$$

Where G7BankFlows are the annual changes in foreign claims of G-7 countries' banks against 51 emerging market countries. CR and Outlook are sovereign credit ratings and outlooks of the emerging market countries' debt denominated in foreign currencies. Spillover 1, Spillover 2, and Spillover 3 are the average foreign currency ratings of the other three regions (regions 2, 3 and 4, respectively for region one, regions 1, 3 and 4 for region two, etc.). The control variables incorporate country-specific governance and economic variables. *, ** and ***, denote significance at 10, 5 and 1 percent, respectively. Numbers in braces are p-values.

	Canada		France		Germany		Italy		Japan		UK		US	
	Region 1 - Asia Pacific (AP)													
Credit Rating_FCurrency	0.0675	{0.3520}	1.0415 ***	{0.0000}	0.8328	{0.1132}	0.2082 ***	{0.0085}	1.2285	{0.4642}	2.8571	{0.1199}	0.6293 **	{0.0207}
Outlook_FCurrency	-0.5964	{0.4626}	7.8580 ***	{0.0016}	14.4977 **	{0.0104}	1.7088 *	{0.0691}	2.7917	{0.8720}	10.9084	{0.6247}	5.2183 *	{0.0771}
Spillover from Asia Pacific	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spillover from Latin America	-0.9155	{0.2154}	-4.1030 ***	{0.0025}	-3.6679	{0.1109}	-1.6739 ***	{0.0045}	-30.5451	{0.1159}	-38.6941 **	{0.0149}	-3.6840 *	{0.0517}
Spillover from Africa and Middel East	-0.5845	{0.7734}	-8.8892 **	{0.0352}	-7.0007	{0.3025}	-4.0208 **	{0.0271}	59.5629	{0.1715}	-31.3239	{0.5089}	-5.0548	{0.4278}
Spillover from Eatern Europe	-0.7991	{0.4574}	-5.5797 ***	{0.0029}	-6.0798 **	{0.0489}	-2.0456 **	{0.0156}	-34.4189	{0.2135}	-65.1433 ***	{0.0043}	-7.0382 ***	{0.0086}
Hausman test, H0: Random effects	2.57139	{0.4625}	1.14321	{0.9502}	1.56785	{0.8146}	0.95579	{0.9661}	1.82293	{0.8731}	0.82082	{0.8445}	0.492327	{0.9206}
Log Likelihood	-29		-89		-138		-43		-179		-192		-94	
	Region 2 - Latin America (LA)													
Credit Rating_FCurrency	-0.2989 **	{0.0384}	0.0979	{0.1927}	0.0070	{0.9342}	0.1716	{0.1752}	-0.0108	{0.7647}	0.1387	{0.3083}	-1.1113 **	{0.0309}
Outlook_FCurrency	-0.2665	{0.8834}	-0.5463	{0.5515}	0.7995	{0.4366}	0.5168	{0.7288}	-0.0296	{0.9483}	1.3295	{0.4332}	15.4245 **	{0.0235}
Spillover from Asia Pacific	0.0255	{0.9313}	0.2657	{0.1469}	0.3292	{0.0938}	0.4804	{0.2193}	0.0718	{0.2994}	0.4219	{0.1876}	-0.4772	{0.7112}
Spillover from Latin America	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spillover from Africa and Middel East	1.4752	{0.2283}	2.5500 **	{0.0411}	3.3926 **	{0.0115}	0.9151	{0.7308}	-0.2023	{0.6203}	3.3201	{0.1303}	14.4287 ***	{0.0001}
Spillover from Eatern Europe	-0.4887	{0.3124}	0.1050	{0.7273}	0.1504	{0.6409}	0.3788	{0.5674}	0.0493	{0.6627}	0.1134	{0.8318}	-2.9893	{0.1604}
Hausman test, H0: Random effects	1.25702	{0.8686}	1.89307	{0.7554}	0.06681	{0.9999}	0.8972	{0.9704}	2.1462	{0.9058}	2.49849	{0.6449}	0.954852	{0.9166}
Log Likelihood	-171		-114		-125		-162		-46		-167		-287	
	Region 3 - Africa and Middle East (AME)													
Credit Rating_FCurrency	-0.0325	{0.1285}	0.0212	{0.7770}	-0.3066 ***	{0.0027}	0.0121	{0.4613}	0.0663 **	{0.0189}	0.0820 *	{0.0813}	0.0102	{0.9072}
Outlook_FCurrency	0.0175	{0.9019}	1.8954 ***	{0.0009}	2.6075 ***	{0.0014}	0.0840	{0.4771}	0.1244	{0.4887}	0.5600 *	{0.0982}	0.0496	{0.9265}
Spillover from Asia Pacific	0.0328	{0.3252}	-0.1560	{0.3311}	0.2323	{0.4139}	0.0318	{0.2789}	0.0725	{0.2107}	-0.0747	{0.4699}	0.0781	{0.4975}
Spillover from Latin America	0.0220	{0.7387}	0.6826 ***	{0.0005}	0.4267	{0.2086}	-0.0286	{0.4321}	-0.0108	{0.9375}	0.8702 ***	{0.0000}	0.8255 ***	{0.0024}
Spillover from Africa and Middel East	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spillover from Eatern Europe	0.1079	{0.3383}	1.0483 ***	{0.0005}	0.9690 **	{0.0463}	-0.0472	{0.4283}	0.0514	{0.7984}	1.1434 ***	{0.0000}	1.1501 **	{0.0136}
Hausman test, H0: Random effects	0.04264	{1.0000}	4.63325	{0.4623}	3.43215	{0.6337}	2.9117	{0.7136}	0.91601	{0.9223}	3.87472	{0.4232}	0.721226	{0.9818}
Log Likelihood	53		-12		-26		61		38		8		-18	
	Region 4 - Eastern Europe (EE)													
Credit Rating_FCurrency	0.0064 *	{0.0574}	0.0978	{0.1536}	0.2317	{0.3041}	0.0843	{0.6060}	0.0394 *	{0.0950}	-0.0141	{0.7391}	0.1024	{0.1387}
Outlook_FCurrency	0.0282	{0.5897}	2.4428 **	{0.0133}	13.2725 ***	{0.0001}	3.7677 *	{0.0823}	0.4028	{0.2243}	-0.7373	{0.1653}	2.1953 **	{0.0401}
Spillover from Asia Pacific	-0.0170	{0.1428}	-0.0417	{0.6998}	0.4645	{0.2197}	0.1379	{0.7777}	-0.0985	{0.1803}	-0.1488	{0.1416}	0.2445	{0.1127}
Spillover from Latin America	-0.0205	{0.1274}	-0.1401	{0.2487}	0.4097	{0.3223}	1.0496 *	{0.0681}	-0.1641 *	{0.0541}	-0.1853	{0.1114}	0.0082	{0.9612}
Spillover from Africa and Middel East	0.1677 **	{0.0197}	1.4665 ***	{0.0079}	2.3865	{0.1664}	-0.5972	{0.6560}	0.5837 **	{0.0157}	0.7207	{0.1170}	0.7561	{0.5722}
Spillover from Eatern Europe	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hausman test, H0: Random effects	0.83453	{0.8412}	2.50661	{0.7755}	0.94888	{0.9875}	1.00383	{0.9092}	0.11174	{0.9904}	0.5567	{0.9899}	0.40544	{0.9820}
Log Likelihood	140		-116		-224		-189		-23		-63		-124	

Table 4: Local currency ratings spillover

This table presents the regional ratings spillover effects of local currency denominated sovereign ratings of Eq (2B) below.

$$G7BankFlows_{k,t}^{j} = \alpha^{j} + \alpha_{CR}^{j} CR\_LC_{i,t} + \alpha_{Outlook}^{j} Outlook\_LC_{i,t} + \alpha_{sp1}^{j} CR\_LC\_Spillover\,1_t + \alpha_{sp2}^{j} CR\_LC\_Spillover\,2_t + \alpha_{sp3}^{j} CR\_LC\_Spillover\,3_t + \sum_{l=1}^{p} \alpha_{l}^{j} EconCTRS_{k,t}^{l} + \sum_{m=1}^{q} \alpha_{m}^{j} WBGov_{k,t}^{m} \quad (2B)$$

Where G7BankFlows are the annual changes in foreign claims of G-7 countries' banks against 51 emerging market countries. CR and Outlook are sovereign credit ratings and outlooks of the emerging market countries debt denominated in local currencies. Spillover 1, Spillover 2, and Spillover 3 are average local currency rating of the other three regions (regions 2, 3 and 4, respectively for region one, regions 1, 3 and 4 for region two, etc.). The control variables incorporate country-specific governance and economic variables. *, ** and ***, denote significance at 10, 5 and 1 percent, respectively. Numbers in braces are p-values.

	Canada		France		Germany		Italy		Japan		UK		US	
	Region 1 - Asia Pacific (AP)													
Credit Rating_LCurrency	0.0813	{0.5012}	1.2043 ***	{0.0001}	0.7986	{0.3166}	0.4074 ***	{0.0003}	3.4429	{0.2129}	2.6766	{0.2973}	0.9634 **	{0.0339}
Outlook_LCurrency	-1.6345 **	{0.0456}	4.5158 *	{0.0696}	17.7978 **	{0.0147}	0.6642	{0.4534}	-14.2492	{0.4180}	12.3119	{0.5836}	2.7192	{0.4084}
Spillover from Asia Pacific	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spillover from Latin America	-0.9573	{0.4355}	-6.3326 **	{0.0255}	-6.2142	{0.1525}	-2.0869 ***	{0.0037}	-34.5906 *	{0.0995}	-40.6663 **	{0.0101}	-4.2225 **	{0.0388}
Spillover from Africa and Middel East	1.9324	{0.5760}	-7.4081	{0.3472}	-21.2068	{0.1170}	-4.6847 **	{0.0260}	59.1541	{0.2819}	-4.3715	{0.9300}	-0.0422	{0.9956}
Spillover from Eatern Europe	-0.3186	{0.8619}	-7.0719 *	{0.0900}	-12.4561 **	{0.0472}	-3.0798 ***	{0.0036}	-44.9179	{0.1414}	-62.5266 ***	{0.0069}	-7.0363 **	{0.0205}
Hausman test, H0: Random effects	2.51336	{0.8670}	1.22049	{0.8747}	0.8203	{0.9757}	2.02022	{0.5682}	1.86743	{0.9315}	0.418185	{0.9987}	0.30733	{0.9893}
Log Likelihood	-28		-75		-117		-35		-154		-163		-81	
	Region 2 - Latin America (LA)													
Credit Rating_LCurrency	-0.2515 ***	{0.0094}	0.0156	{0.7526}	-0.0381	{0.4684}	0.0791	{0.3459}	-0.0520 **	{0.0220}	0.0513	{0.5618}	-0.9069 ***	{0.0081}
Outlook_LCurrency	1.4069	{0.5197}	0.6354	{0.5790}	4.1201 ***	{0.0007}	1.2483	{0.5037}	1.0031 *	{0.0562}	3.8261 *	{0.0612}	17.9756 **	{0.0204}
Spillover from Asia Pacific	0.0298	{0.9193}	0.2250	{0.2059}	0.2486	{0.1555}	0.4413	{0.2519}	0.0643	{0.3105}	0.3432	{0.2637}	-0.0714	{0.9518}
Spillover from Latin America	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spillover from Africa and Middel East	1.3084	{0.2617}	2.5434 **	{0.0367}	2.9463 **	{0.0139}	1.0426	{0.6936}	-0.2097	{0.5642}	2.9235	{0.1708}	15.8052 ***	{0.0000}
Spillover from Eatern Europe	-0.4399	{0.3612}	0.0949	{0.7454}	0.2198	{0.4439}	0.3893	{0.5516}	0.0266	{0.7979}	0.2000	{0.6972}	-2.8796	{0.1403}
Hausman test, H0: Random effects	1.55529	{0.9557}	2.52328	{0.7730}	0.36552	{0.9962}	0.93046	{0.9680}	2.478603	{0.6485}	2.899562	{0.7155}	0.72899	{0.9813}
Log Likelihood	-170		-114		-119		-162		-41		-166		-284	
	Region 3 - Africa and Middle East (AME)													
Credit Rating_LCurrency	-0.0371	{0.1139}	0.1673 **	{0.0376}	-0.2701 **	{0.0271}	0.0298 *	{0.0975}	0.0467 *	{0.0503}	0.1214 **	{0.0125}	-0.0347	{0.7443}
Outlook_LCurrency	0.0314	{0.8349}	1.9445 ***	{0.0017}	2.7113 ***	{0.0045}	0.0873	{0.4968}	0.0696	{0.7246}	0.6510 *	{0.0665}	-0.3133	{0.5876}
Spillover from Asia Pacific	0.0340	{0.2606}	-0.2078	{0.1866}	0.2162	{0.4144}	0.0247	{0.3826}	0.0586	{0.3173}	-0.0969	{0.2950}	0.1018	{0.3825}
Spillover from Latin America	0.0525	{0.4585}	0.7319 ***	{0.0002}	0.7217 **	{0.0315}	-0.0269	{0.4518}	0.0706	{0.5771}	0.8518 ***	{0.0000}	0.8469 ***	{0.0045}
Spillover from Africa and Middel East	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spillover from Eatern Europe	0.1196	{0.2782}	1.1612 ***	{0.0001}	1.0934 **	{0.0253}	-0.0308	{0.6069}	0.2065	{0.2462}	1.2077 ***	{0.0000}	1.1479 **	{0.0161}
Hausman test, H0: Random effects	0.07664	{0.9993}	4.07344	{0.3962}	3.45386	{0.7501}	3.15918	{0.3677}	0.8096	{0.9764}	4.500647	{0.3425}	1.29184	{0.7311}
Log Likelihood	54		-11		-28		62		37		8		-18	
	Region 4 - Eastern Europe (EE)													
Credit Rating_LCurrency	0.0064 *	{0.0649}	0.0465	{0.5240}	0.0605	{0.8158}	0.0294	{0.8589}	0.0184	{0.4434}	-0.0499	{0.2651}	0.0825	{0.2531}
Outlook_LCurrency	0.0647	{0.3166}	1.6940	{0.1765}	9.3574 **	{0.0304}	6.1806 **	{0.0176}	0.6157	{0.1345}	0.0315	{0.9624}	1.1051	{0.4180}
Spillover from Asia Pacific	-0.0190	{0.1652}	-0.0548	{0.6831}	0.5157	{0.2228}	0.1416	{0.7524}	-0.0982	{0.2408}	-0.1135	{0.2296}	0.2128	{0.1724}
Spillover from Latin America	-0.0262	{0.1043}	-0.1828	{0.2484}	0.3022	{0.5445}	0.8223	{0.1206}	-0.1949 **	{0.0487}	-0.1766	{0.1117}	-0.0339	{0.8488}
Spillover from Africa and Middel East	0.1909 **	{0.0107}	1.6361 ***	{0.0063}	2.2635	{0.2078}	-0.6129	{0.6426}	0.5078 **	{0.0457}	1.0057 **	{0.0196}	0.7613	{0.5502}
Spillover from Eatern Europe	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hausman test, H0: Random effects	0.65639	{0.9853}	2.30849	{0.8893}	0.88716	{0.9711}	1.16029	{0.9788}	0.139605	{0.9996}	0.993451	{0.9859}	0.36061	{0.9963}
Log Likelihood	139		-120		-229		-187		-25		-62		-126	

Table 5: Summary of significant spillover effects

This table summarizes the number of significant spillover coefficients in the foreign- and local-currency credit rating spillover estimations reported in Tables 3A and 3B. Total numbers across G-7 lenders are shown for each regional spillover.

	Contemporaneous				Lag			
	Foreign Currency		Local Currency		Foreign Currency		Local Currency	
	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve
Spillover from	Region 1 - Asia Pacific (AP)				Region 1 - Asia Pacific (AP)			
Asia Pacific	-	-	-	-	-	-	-	-
Latin America	0	4	0	5	0	6	0	6
Afirica and Middle East	0	3	0	1	1	1	0	0
Emerging Europe	0	5	0	5	0	5	0	4
Total	**0**	**12**	**0**	**11**	**1**	**12**	**0**	**10**
	Region 2 - Latin America (LA)				Region 2 - Latin America (LA)			
Asia Pacific	0	0	0	0	1	0	1	0
Latin America	-	-	-	-	-	-	-	-
Afirica and Middle East	3	0	3	0	4	0	4	0
Emerging Europe	0	0	0	0	0	0	0	1
Total	**3**	**0**	**3**	**0**	**5**	**0**	**5**	**1**
	Region 3 - Africa and Middle East (AME)				Region 3 - Africa and Middle East (AME)			
Asia Pacific	0	0	0	0	0	0	0	0
Latin America	3	0	4	0	3	0	3	0
Afirica and Middle East	-	-	-	-	-	-	-	-
Emerging Europe	4	0	4	0	4	0	3	0
Total	**7**	**0**	**8**	**0**	**7**	**0**	**6**	**0**
	Region 4 - Eastern Europe (EE)				Region 4 - Eastern Europe (EE)			
Asia Pacific	0	0	0	0	1	0	0	0
Latin America	1	1	0	1	1	1	1	2
Afirica and Middle East	3	0	4	0	4	0	4	0
Emerging Europe	-	-	-	-	-	-	-	-
Total	**4**	**1**	**4**	**1**	**6**	**1**	**5**	**2**

Table 6: Summary of lagged ratings and outlook coefficients

This table summarizes the results of estimations of equation (1) using the rating and outlook variables with a lag of one period (one year) and others unchanged. The first panel reports the overall estimations in both foreign and local currency ratings and outlook coefficients. The second and the third panels report separate estimation results for the investment and non-investment grade country sub-groups. The coefficients for the other control variables are little changed from what we report in Tables 1 and 2, thus we report only the ratings and outlook coefficients to save space.

	Canada	France	Germany	Italy	Japan	UK	US
	Overall estimations						
Credit Rating_FCurrency	0.0854 **	0.0321	-0.0506	0.0938	-0.1203	1.3766 ***	0.6542 ***
	{0.0272}	{0.6398}	{0.7511}	{0.1444}	{0.6058}	{0.0032}	{0.0008}
Outlook_FCurrency	-0.1152	-0.0562	2.1843	1.4862	5.9924	8.9489	6.4794 **
	{0.8483}	{0.9552}	{0.3631}	{0.1090}	{0.1041}	{0.2090}	{0.0339}
Credit Rating_LCurrency	0.035888	0.144751 ***	0.344716 ***	0.092487 *	0.157605	1.380013 ***	0.395601 **
	{0.2559}	{0.0096}	{0.0062}	{0.0847}	{0.4068}	{0.0001}	{0.0127}
Outlook_LCurrency	-0.43537	0.779629	1.947919	2.758214 **	11.09444 **	17.72452 **	4.441504
	{0.5399}	{0.5116}	{0.4855}	{0.0117}	{0.0110}	{0.0296}	{0.2151}
	Investment grade country group estimations						
Credit Rating_FCurrency	0.0779	0.1240	-0.6059 ***	-0.0728	-0.6258	2.4620 ***	0.4674 *
	{0.2817}	{0.2265}	{0.0060}	{0.4467}	{0.1313}	{0.0010}	{0.0920}
Outlook_FCurrency	-0.3992	-1.6570	0.2727	1.1857	8.9655	13.7812	8.0598 **
	{0.7037}	{0.2644}	{0.9315}	{0.3738}	{0.1265}	{0.2101}	{0.0481}
Credit Rating_LCurrency	-0.05939 *	-0.28896 ***	0.081457	0.005466	-0.55981 ***	-0.04501	-0.29779
	{0.0622}	{0.0003}	{0.7604}	{0.9550}	{0.0000}	{0.7154}	{0.2441}
Outlook_LCurrency	0.406559	1.977486 **	2.477202	1.335507	1.775354	5.007249 ***	9.487794 ***
	{0.3156}	{0.0495}	{0.4490}	{0.2546}	{0.1082}	{0.0014}	{0.0034}
	Non-Investment grade country group estimations						
Credit Rating_FCurrency	0.1465 *	0.3496 ***	-0.0909	0.0427	0.3170	3.8272 ***	1.2039 ***
	{0.0548}	{0.0017}	{0.6966}	{0.6858}	{0.5034}	{0.0000}	{0.0000}
Outlook_FCurrency	-1.7515	-1.6950	-0.7718	1.8529	12.2237 *	17.5745	-0.7028
	{0.1316}	{0.3323}	{0.8339}	{0.2280}	{0.0745}	{0.1538}	{0.8725}
Credit Rating_LCurrency	-0.08807 ***	-0.16642 ***	0.52961 ***	0.004988	-0.34693 ***	-0.16585 *	-0.31054 *
	{0.0000}	{0.0044}	{0.0043}	{0.9451}	{0.0000}	{0.0560}	{0.0622}
Outlook_LCurrency	0.823771 *	1.57325	1.172164	1.726059	2.594298 *	4.706295 **	8.586627 **
	{0.0701}	{0.1953}	{0.7668}	{0.2242}	{0.0711}	{0.0134}	{0.0301}

Appendix

Table A.1: Linear transformation of S&P's sovereign credit ratings

Long-term Ratings	
Rating	Conversion
Investment grades	
AAA	20
AA+	19
AA	18
AA-	17
A+	16
A	15
A-	14
BBB+	13
BBB	12
BBB-	11
Speculative grades	
BB+	10
BB	9
BB-	8
B+	7
B	6
B-	5
CCC+	4
CCC	3
CCC-	2
CC	1
D/SD	0
Outlook for Long-term Ratings	
Outlook	Conversion
Credit Watch - Positive	0.5
Positive	0.25
Stable / Not Meaningful	0
Negative	-0.25
Credit Watch - Negative	-0.5

Table A.2: List of emerging market countries studied

Asia (11)	Africa/Middle East (7)	Emerging Europe (18)	Latin America (15)
China	Egypt	Bulgaria	Argentina
Hong Kong	Israel	Croatia	Bolivia
India	Jordan	Cyprus	Brazil
Indonesia	Kuwait	Czech Republic	Chile
Kazahkstan	Lebanon	Estonia	Colombia
Korea	Oman	Greece	Dominican Republic
Malaysia	South Africa	Hungary	Ecuador
Pakistan		Latvia	El Salvador
Philippines		Lithuania	Guatemala
Singapore		Malta	Mexico
Thailand		Poland	Panama
		Portugal	Paraguay
		Romania	Peru
		Russia	Uruguay
		Slovak Republic	Venezuela
		Spain	
		Turkey	
		Ukraine	

Table A.3: Variable definitions and data sources

Variables	Descriptions	Data Sources
G-7 BankFlows	Yearly change in G-7 banks' end-year foreign claims against each of the 51 emerging market countries, in US$ billions.	BIS's consolidated banking statistic, Table 9B: Consolidated foreign claims of reporting banks - immediate borrower basis
Sovereign credit ratings		Standard & Poor's
Credit Rating_FCurrency	Foreign currency sovereign long-term credit rating	
Outlook_FCurrency	Foreign currency outlook of long-term sovereign rating	
Credit Rating_LCurrency	Local currency sovereign long-term credit rating	
Outlook_LCurrency	Local currency outlook of long-term sovereign rating	
Economic control variables		
Distance	Natural log of distance between capital cities of the target and donor country pairs in kilometers	Calculated from coordinates of capital cities obtained from CIA's world factbook: https://www.cia.gov/library/publications/the-world-factbook/
Total Trade	Sum of export and import between the target and donor country pairs in natural logs, US$	IMF's direction of trade statistics: http://fisher.lib.virginia.edu/collections/stats/dot/
GDP	GDP in natural logs, US$	World Bank development indicators CD-ROM, 2005
Stock Market Capitalization	Market capitalization of listed companies at the end of year in natural logs, US$	
Banks Credit Extended	Domestic credit provided by banking sector in natural logs, US$	
Interest Rate Spread	Difference between lending and deposit rates in percentage points	
Bank Liquid Reserves to Asset Ratio	Ratio of liquid assets to total assets	
FDI on BOP basis	FDI inflows in natural logs, US$	
Total Portfolio inflow	Sum of bond and equity portfolio investment inflows in natural logs, US$	
World Bank Governance Indicators	Ranges from -2.5 to 2.5	Kauffman et al., 2005
Accountability	Voice and Accountability	
Political Stability	Political Stability	
Government Effectiveness	Government Effectiveness	
Regulation Quality	Regulatory Quality	
Rule of Law	Rule of Law	
Corruption	Control of Corruption	