Global Liquidity and Drivers of Capital Flows to Emerging Economies*

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Abstract

This study examines the drivers of capital inflows to emerging economies. We use panel data on cross-border capital flows among 91 advanced, emerging, and developing economies from 2002 to 2013 to describe regional-specific characteristics. First, we detect the properties of main contributing countries that offer global liquidity among advanced countries in order to understand the impact of recent quantitative easing policies on capital inflows to emerging economies. Second, we identify recipients' or regional characteristics that affect exposure to global liquidity and compare characteristics of Asian and European recipient economies. The results suggest that each country requires strong macroeconomic conditions or regional financial integration.

JEL classification: F21; F32; F41; G21

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I. Introduction

Under increasing financial globalization, the conditions in global financial markets may affect each economy in the world. For emerging and developing economies confronting capital shortages, capital inflows can play a critical role in their economic growth. However, capital inflows can also cause macroeconomic and financial imbalances, leading to financial crises in recipient economies (Borio, 2008). Some financial crises have been even associated with prior economic booms supported by capital inflows, such as the Asian financial crisis, dotcom crisis, and global financial crisis. Moreover, the IMF (2010) discusses the spillover effects on other nations of loose monetary policy following a financial crisis in one advanced economy.

After the global financial crisis, the central banks of some advanced economies adopted strong monetary easing policies, such as quantitative easing by the US FRB and quantitative and qualitative easing by the Bank of Japan. The increased liquidity generated by such monetary easing policies can overflow into emerging and developing economies. The rising spillover effects of this "global liquidity" on these economies through capital flows accompany advancing financial globalization.

This study focuses on the role of global liquidity as a driver of capital flows to emerging and developing economies by confirming the relationship between global liquidity and capital flows to these economies. In particular, this study examines the following three main questions. First, from which developed economies has global liquidity overflowed into emerging and developing economies? Second, into which emerging and developing economies has global liquidity overflowed? Finally, which types of international capital flows (e.g., bank credit, equity, and bond investments) have played the most important role on this overflowing global liquidity?

To answer these questions, this study uses panel data analysis. We examine the bilateral portfolio investment assets and bank credit from 4 representative advanced economies (the G4) to 91 economies over the 2002–2013 period. The G4 comprises the United States, the United Kingdom, Japan, and Euro area economies, while the 91 economies consist of 33 advanced and 58 emerging and developing economies.[1] Of the 33 advanced economies, 16 are Euro area economies. The portfolio investments and bank loans from Euro area economies are aggregates of those from the 16 Euro area economies.

Our empirical analysis based on bilateral capital flow data has the following strengths. First, it allows us to detect the factors related to global liquidity, specifically, the drivers of capital inflows from each of the four advanced economies studied herein. Moreover, we can detect the spillover effects of global liquidity on the donor and recipient economies. Many previous studies are based only on recipient data, neglecting the properties of donor economies (Cerutti *et al.*, 2014; IMF, 2014). Second, we examine spillover effects through three types of cross-border capital flows, namely, equity investments, bond investments, and bank claims. Hence, we can compare the spillover mechanisms of global liquidity for these three types of cross-border capital flows.

The structure of the rest of this paper is as follows. We review the related literature in Section II. In Section III, we introduce the analytical framework and data. Section IV presents the empirical results. Finally, we conclude with a discussion of some policy implications in Section V.

II. Review of Related Literature

This study relates to the context of global liquidity and regional financial integration. Although studies of global liquidity have increased recently, there is no agreed definition for the concept (Eickmeier *et al.*, 2013; IMF, 2014). The Committee on the Global Financial System (CGFS, 2011) defines global liquidity as the "ease of funding" in global financial markets. More formally, Cerutti *et al.*, (2014) and the IMF (2014a) define global liquidity as a vector of the factors that shift the supply function for cross-border portfolios and bank flows.

How can we measure the drivers of global liquidity? Eickmeier *et al.*, (2013) measure global liquidity conditions based on the common global factors in the dynamics of liquidity indicators of 24 advanced and emerging economies. The authors find that the main drivers of monetary policy are the following three factors: implied market volatility (i.e., the VIX indicator), domestic credit growth, and broad money (M2) growth. In addition to these measures, Cerutti *et al.*, (2014) and the IMF (2014a) include the TED spread and the yield curve slope. The TED spread is the difference between the short-term interest rate and government debt (risk-free asset) rates, indicating perceived credit risk. The yield curve slope is the difference between long- and short-term interest rates in major economies.

How can the liquidity conditions in global financial markets, that is, global liquidity, be transmitted to other economies? The transmission of global liquidity can be distinguished among drivers, transmission channels, and financial condition outcomes (IMF, 2014a). The IMF (2014a) considers that ease of global finance is driven by global financial market conditions, is transmitted internationally by the activities of global investors and financial intermediaries, and leads to local financial

condition outcomes, such as credit increases and asset price rises. The transmission channels through the activities of global investors and financial intermediaries can be confirmed by cross-border capital flows. Shinkai and Enya (2014) examine the impacts of capital inflows on asset prices for emerging economies in Asia. The authors find that the impacts vary across economies and across types of capital inflows. While the authors analyze the links between transmission channels and local financial condition outcomes, this study examines the relationship between drivers of global liquidity and transmission channels.

There are three different channels through which global liquidity can be transmitted, that is, international equity portfolios, bond portfolios, and bank flows. Some studies examine the impacts of global liquidity drivers on capital flows. The IMF (2014a) analyzes the impacts on international portfolio and bank flows and finds that the impacts of the VIX indicator and the TED spreads on both portfolio and bank flows are commonly negative, while the impacts of other global variables differ by type of cross-border flows. The yield curve slope has positive impacts on bond flows, negative impacts on bank flows, and insignificant impacts on equity flows. The different impacts might be caused by different channels as well as by substitution effects. Cerutti *et al.*, (2014) examine the impacts of global liquidity drivers on cross-border bank flows. The authors identify the global liquidity conditions originated by the US, UK, Japan, and Euro Area economies as credit and M2 growth in each of the four economies. The authors conclude that important drivers of bank flows are the financial conditions in the UK and Euro Area rather than those in the US.

This study is similar to Cerutti *et al.*, (2014) and the IMF (2014a). However, this study is different in the following aspects. It uses three-dimensional (and bidirectional) panel data, which makes it possible to examine the drivers of the capital

flows from economy *j* to economy *i* at time *t*. The impacts of global liquidity may vary across economies owing to regional characteristics. The more economic globalization proceeds, the more regional economic integration accelerates. In Asia, advanced and emerging economies have become more integrated through regional trade rather than through regional financial activities (BIS, 2008). Borensztein and Loungani (2011) investigate the trends in financial integration within Asia based on cross-border equity and bond holdings data in 2007. One of their main findings is that the ratio of portfolio investments within Asia (38 percent for equity investment and 15 percent for bond investments) is higher than the corresponding figures for Latin America (8 percent for equity investment and 8 percent for bond investments) and Eastern Europe (18 percent for equity investment and 9 percent for bond investments), but much lower than the ratio of portfolio investments within industrialized countries (85 percent for equity investment and 93 percent for bond investments).

Against this background on regional financial and economic integration, this study focus on the regional differences in the impacts of global liquidity drivers on capital flows, and also focuses on the relationships between the impacts and policy responses to capital inflows. He and McCauley (2013) examine the transmission of major economies' monetary policy to East Asia, in particular, China, Hong Kong, and Korea, by focusing on the channel of cross-border foreign currency credit. One of that study's main findings is that foreign currency credit to firms in mainland China and to affiliates of Chinese firms in Hong Kong has been increasing very rapidly, while that to firms in Korea has not been increasing as rapidly. In contrast to the limited growth of foreign currency credit, the stock of foreign currency bonds on nonfinancial corporations in Korea is growing rapidly. The limited growth of foreign currency credit in Korea may be caused by Korean macroprudential policy (Bruno and Shin, 2013; He

and McCauley, 2013). These discussions suggest the impacts of global liquidity drivers on capital flows depend not only on the conditions of donor economies but also on the conditions of recipient economies.

III. Methodology and Data

III.1 Methodology

To examine the effects of global liquidity on capital flows, we estimate the following basic empirical model:

$$\Delta F_{ijt} = \beta_0 + \beta_1 GL1_t + \beta_2 GL2_{jt} + \beta_3 DF_{it} + \gamma_{ij} + \varepsilon_{ijt},$$

where the dependent variable ΔF_{ijt} is the annual log difference in the stock of cross-border financial assets issued by recipient economy *i* owned in donor economy *j* at time *t*. We focus on three types of cross-border financial assets: equities, bonds, and bank credit. $GL1_t$ is the set of global liquidity drivers at time *t*. $GL2_{jt}$ is the set of global liquidity drivers that originate in donor economy *j* at time *t*. DF_{it} is the set of domestic factors that explain the country-specific macroeconomic conditions of recipients. γ_{ij} captures the fixed effects of recipient economy *i* received from donor *j*. ε_{ijt} is the error term. Donor economies are represented by the US, UK, Japan, and Euro area economies, that is *j*=1,…,4 (G4 hereafter), while the recipient economies are the 91 economies in Table 1, that is, *i*=1,…,91. We include Euro area economies as both recipient and donor economies; however, we define a donor Euro area economy as the aggregated economies in the Euro area. The sample covers 12 periods from 2002 to 2013.

To examine into which region of our sample economies and from which economy of the G4 economies global liquidity might overflow, we include the interaction term between $GL1_t$ or $GL2_{jt}$ and a dummy variable as an independent variable. A regional dummy variable (RD_k) takes the value of one if the recipient belongs to region *k* and zero otherwise. By using this regional dummy variable, we can identify whether global liquidity overflowed into a particular region *k*, such as emerging economies in Asia and Europe:

$$\Delta F_{ijt}$$

$$= \beta_0 + \beta_1 GL1_t + \beta_2 GL2_{jt} + \beta_3 DF_{it} + \beta_{41} GL1_t * RD_k + \beta_{51} GL2_{jt} * RD_k + \gamma_{ij} + \varepsilon_{ijt}$$

Here, β_1 and β_2 show the sensitivity of capital inflows to *GL*1 and *GL*2, respectively, for the economies not included in region *k*, while $\beta_1 + \beta_{41}$ and $\beta_2 + \beta_{51}$ show the sensitivity of capital inflows to *GL*1 and *GL*2, respectively, for the economies included in region *k*. A donor dummy variable (DD_j) takes the value of one if the capital inflows are from donor *j* and zero otherwise. By using this donor dummy variable, we can identify whether global liquidity overflowed from a particular donor economy:

$$\Delta F_{ijt}$$

$$= \beta_0 + \beta_1 GL1_t + \beta_2 GL2_{jt} + \beta_3 DF_{it} + \beta_{42} GL1_t * DD_j + \beta_{52} GL2_{jt} * DD_j + \gamma_{ij} + \varepsilon_{ijt}$$

Here, β_1 and β_2 show the sensitivity of capital inflows from all donor economies except for donor *j* to *GL*1 and *GL*2, respectively, while $\beta_1 + \beta_{42}$ and $\beta_2 + \beta_{52}$ show the sensitivity of capital inflows from donor *j* to *GL*1 and *GL*2, respectively.

To investigate whether the effects of global liquidity on capital flows change over the sample period, we include a period dummy variable (PD_{2009}), which takes the value of one for the period from 2009 (after the global financial crisis) and zero

otherwise. We can catch the structural change in the sensitivities by including the interaction of a period dummy with a global factor ($GL1$ or $GL2$).

Moreover, to examine the relationship between the sensitivity of capital inflows to global factor and the recipient's policy regimes, we estimate the augmented regression model replacing a regional dummy variable (RD_k) with policy regimes characteristics variable (PR_i). We focus on exchange rate flexibility and capital openness of recipient economies.

III.2 Data

The dependent variable in our basic model is the rate of change of cross-border financial assets. Our data on cross-border financial assets are derived from the Coordinated Portfolio Investment Survey (CPIS) provided by the IMF and the International Banking Statistics (IBS) provided by the Bank for International Settlements (BIS). The CPIS covers the two types of portfolio investment assets issued by nonresidents and owned by residents: equity securities and bond securities (see Tables 1.1 and 1.2 of the CPIS). The IBS covers cross-border bank claims in reporting countries and consists of two datasets: locational banking statistics and consolidated banking statistics (CBS). The latter, on which our analysis is based (see Table 9B of the CBS), covers bilateral cross-border bank claims, although it does include the claims of foreign affiliates.[2]

Our measures of the drivers of global liquidity are based on previous empirical studies (IMF, 2014; Cerutti *et al.*, 2014). We divide these drivers into global drivers ($GL1_t$) and local drivers ($GL2_{jt}$). Global drivers are related to global financial conditions, while local drivers are related to domestic economic circumstance and

monetary policy stances in advanced economies that affect the conditions of global financial markets.

First, regarding global drivers ($GL1_t$), we focus on the risk attitudes of global investors and liquidity conditions of global financial markets. As a proxy of the former, we use the CBOE volatility index (VIX), which is a key measure of the market expectations of near-term volatility conveyed by S&P500 stock index options prices (CBOE webpage). The VIX has been considered to reflect investors' risk attitudes. Hence, it tends to be low under the better liquidity conditions in global financial markets, which encourages investment in more risky assets. The coefficient sign of the VIX is expected to be negative.

As a proxy of the liquidity conditions in global financial markets, we use the TED spread indicator, defined as the difference between the three-month London Inter-Bank Offered Rate (LIBOR) and the three-month Treasury bill (T-bill) rate. T-bills are considered risk-free assets, while the LIBOR reflects the liquidity conditions in global financial markets. Under loose global financial market conditions, the TED spread tends to decrease and global investors prefer more risky assets. The coefficient sign of the TED spread must be negative.

Second, regarding regional (i.e., the donor's own) drivers ($GL2_{jt}$), we use the yield curve slope, M2 growth, and real credit growth indicators in the US, UK, Japan, and Euro area economies. The slope of the yield curve is defined as the spread between long- and short-term interest rates. Monetary easing policy makes the yield curve steeper through a decline in short-term interest rates. Therefore, a steep slope of the yield curve is considered to facilitate domestic investments or reduce external investments. Hence, this coefficient sign is expected to be negative.

In addition, we control for how the recipient's conditions affect capital flows in order to identify the effects of global liquidity. We consider that global investors refer to the recipient's economic conditions when they decide on their investment destinations. The variables included in our model are real GDP growth, inflation, interest rate spread between domestic and US rates, exchange rate flexibility, financial openness, and political stability in each recipient economy. The exchange rate flexibility index is from the Exchange Rate Regime by Reinhart and Rogoff Classification. Financial openness is from the Chinn–Ito Index, which is the de jure measure of financial openness.[3]

The trends of capital inflows are shown in Figure 1. The averages of growth rates of equity and bank inflows to emerging European economies are higher than those to Asian NIES4 and ASEAN4 economies before 2007, while those of bond inflows to emerging European economies are lower than those to Asian economies. This trend of capital flows, however, seems to change in the opposite direction after 2008.

The global factor variables are shown in Figure 2.

IV. Empirical Results

IV.1 Main results

First regressions simultaneously include all drivers of global liquidity (US VIX, US TED spread, G4 yield curve slope, G4 M2 growth, and G4 real credit growth indicators). The results in Table 5 indicate that the US VIX remains significant with an expected negative sign in the case of cross-border equity and bank flows, while the TED spread remains significant in the case of cross-border bond flows. This

significance indicates the importance of global risk-taking attitudes in determining cross-border equity and bank flows or that of global liquidity conditions in determining cross-border bond flows. Moreover, G4 yield curve slopes are significant determinants of cross-border claims on banks. However, the EU yield curve slope has an expected highly negative sign, which signals that a steeper yield curve makes EU investors reduce cross-border bank lending. One of the advantages of this study is its use of bilateral data. Thus, this result suggests that the monetary institution of each country responds to the country's yield curve slope, not to the common US yield curve slope. As shown in Table 5, the correlation among the individual global liquidity drivers is negligible. Accordingly, this section compares the explanatory power of various global liquidity factors individually.

Table 6 refers to the empirical results on global equity investments. Table 6(a) examines to which economies global liquidity is transmitted through equity flows. Column 1 reports results from the benchmark regression. The VIX is statistically significant with an expected negative sign, while the significance of the other global liquidity indicators is lower than that of the VIX indicator. So, the VIX can contribute to global equity flows as the drivers of global liquidity, suggesting that higher risk is associated with lower growth in global equity investments. Moreover, lower inflation can increase equity inflows. Column 1' shows the results of augmented specification with the VIX and its interaction with the dummy of the periods after 2009. The interaction is positively significant, suggesting that the VIX become less sensitive to equity flows after 2009 (the global financial crisis)..

Columns 2–7' show the results of the augmented specification with the interactions between the VIX and some regional dummies and their interactions with the dummy after 2009. The coefficient of the interaction of the VIX with the regional

dummy of emerging Europe is significantly negative (column 7 and 7'). The equity inflows to emerging European economies are more sensitive to global factors compared with those to other regions during the whole period. After the global financial crisis, the equity flows to ASEAN4 economies become less sensitive to global factors than before (column 6 and 6').

Column 8–9 show the results of the specification with the VIX and its interactions with policy variables, such as exchange rate flexibility and capital openness. We cannot find a significant result on policy variables.

Table 6(b) examines from which economies to which economies global liquidity is transmitted. Column 1 and column 1' are results when the regions that recipients belong to are not distinguished (RD = 1 for all). Column 1 shows the result of the benchmark regression, which is equal to the column 2 of Table 6(a), while column 1' shows the result when the donor's own regionality (or nationality) are distinguished by donor dummy variable (DD). The risk attitudes of global investors are unchanged regardless of the donor's own regionality (or nationality) before 2009 (the global financial crisis). The interactions of a donor's regionality with the VIX after this crisis suggest that such equity investors in the US and the UK after 2009 are less sensitive to global factors compared with those before 2009 (columns 1'). Column 2-5' are the results when the regions that recipients belong to are distinguished by regional dummy variable (RD). There are no statistically significant differences in the sensitivities to global factors between the equity flows from G4 economies (Japan (JP), the economies in EURO area (EU), the US, and the UK), except for the equity flows to emerging European economies (column 3' and 4'). The equity flows to emerging European economies are more sensitive to global factors than those to other regions (column 5). Moreover, the equity flows from EU to emerging European economies

more sensitive to global factors compared with those from JP, US, and US before 2009 (column 5').

Table 7 refers to the empirical results on global bond investments. Tables 7(a) examine to which economy global liquidity is transmitted through bond flows, respectively. In cases of global bond investment, the US TED spread is statistically significant with an expected negative sign (column 1 of Table 7(a)), while the other global liquidity indicators are less significant than the US TED spread. So, the US TED spread can contribute to global bond flows as the drivers of global liquidity, suggesting that loose global liquidity conditions are associated with higher growth in global bond investments. Moreover, lower inflation and a smaller interest rate spread can increase bond inflows (column 1 of Table 7(a)). The negative sign of the interest spread is puzzling. It may be caused by the sample coverage herein, which includes many developing countries that have immature financial systems and government-controlled (not market-based) interest rates.

When we consider the possibility that the G4 donors also can become recipients of cross-border bond flows, the sensitivities of global bond inflows to global factors are lower for the G4 recipients than that for the other recipients (column 2 of Table 7(a)). This result suggests the existence of regional bias, that is, preference for the bonds issued by main players in the global bond markets. After the global financial crisis, global bond investors turn out to be less sensitive to global liquidity conditions for all recipient countries (column 1' of Table 7(a)), much less for emerging European economies (column 7' of Table 7(a)). Columns 8–9 of Table 7(a) show the results of the specification with the VIX and its interactions with policy variables, such as exchange rate flexibility and capital openness. We find that bond inflows to economies with higher exchange rate flexibility are less sensitive to global factors. In addition, we

find that bond inflows to economies with higher capital openness are less sensitive to global factors.

Tables 7(b) examine from which economy to which economy global liquidity is transmitted through bond flows. UK and EU investors have higher sensitivity than JP and US investors have during the whole period (columns 1'). Bond flows from UK to G4 and EU are more sensitive to global factors than those from other regions to G4 and Euro economies after 2009 (column 2' and 3'). After 2009, Bond flows to emerging European economies, especially bond flows from UK and US to those economies, become less sensitive (column 5 and 5').

Table 8 refers to the empirical results on cross-border claims on banks. Table 8(a) examines to which economies global liquidity is transmitted through bank flows. The US VIX is statistically significant with expected negative signs, while the other global liquidity indicators are less significant than the VIX (column 1 of Table 8(a)). The VIX can contribute to cross-border bank flows as the drivers of global liquidity, suggesting that higher risk is associated with lower growth in cross-border bank investments. Interestingly, the sensitivity of bank inflows to the VIX is smaller than that of equity inflows (cullumn 1 in Table 6 and 8). Moreover, higher GDP growth and a smaller interest rate spread can increase bank inflows (column 1 of Table 8(a)). Not only global factors but also recipient's real GDP growth plays an important role in the driver of bank inflows.

The interactions of the VIX with some regional dummies are not significant (column 2, 3, 4, 5, 6, and 7). However, some their interactions with period dummy of the period after 2009 are significantly negative. The Bank inflows to G4 economies, EURO economies, and emerging European economies become more sensitive to global

factors after 2009 (column 2', 4', and 7'). The sensitivities of the Bank inflows to Asian economies (NIES4 and ASEAN4 economies) to global factors are not change significantly before and after 2009 (column 5' and 6'). Why do the sensitivities of the bank inflows to emerging European economies to global factors become higher after 2009? The main drivers of bank inflows to emerging European economies might change from factors other than global factors, such as recipient's GDP growth, to global factors before and after 2009.

Columns 8–9 of Table 8(a) show the results of the specification with the VIX and its interactions with policy variables, such as exchange rate flexibility and capital openness. We find that bank inflows into economies with higher capital openness are less sensitive to global factors (column 9).

Table 8(b) examines from which economy to which economy global liquidity is transmitted. Before 2009, although bank flows from JP and UK are sensitive to global factors, those from EU are not sensitive (column 1'). Bank flows from EU, especially Bank flows from EU to G4, EU, and emerging European economies, become sensitive after 2009 (column 1', 2', 3', and 5'). Bank flows from UK to G4 and EU become more sensitive after 2009 (column 2' and 3'). In the contrast with high sensitivity of bank flows to G4, EURO economies, emerging European economies after 2009, the sensitivity of bank flows to ASEAN 4 economies do not become more sensitive (column 2', 3', 4' and 5').

Here, we summarize our main findings. From which economies and into which economies is global liquidity transmitted through equity, bond, and bank flows during 2002–2013? For all three flow types, the sensitivity to global factors is highly significant. Interestingly, the sensitivities depend on donor's and recipient's regionality

and change before and after 2009. The equity flows into the emerging economies in Europe, especially equity flows from the economies in EURO area to emerging economies in Europe, are more sensitive to global factors during 2002 to 2013 than those to other region. The bond flows from the UK and economies in EURO area are more sensitive while those from Japan are less sensitive during 2002 to 2009. After 2009, the bond flows from the UK and economies in EURO area to G4 economies and economies in EURO area become more sensitive, the bond flows from the US and the UK to emerging economies in Europe become less sensitive. Before 2009, the bank flows from the economies in EURO area are not sensitive. After 2009, the bank flows from the economies in the EURO area and those into the G4 economies, the economies in EURO area, and the emerging economies in Europe become more sensitive to global factors, while the bank flows to ASEAN 4 economies become less sensitive.

IV.2 Robustness check

To check robustness of our main result, we estimate a SUR (Seemingly Unrelated Regression) system. Our SUR system consists of equity, bond, and bank flows equations. We estimate the parameters of the system, accounting for heteroskedasticity and contemporaneous correlation in the errors across equations. Although our dependent variables are not share but growth, the errors in three equations assume to be correlated. Table A1-a and Table A1-b in Appendix 1 show the results of SUR. The results imply that our main results are robust.

Table A1-a also shows that the bank inflows to emerging European economies are more sensitive to global factors significantly than those to other economies before 2008 and after 2009 they become less sensitive significantly. On the contrary, the bank

inflows to emerging European economies are more sensitive significantly than those to other economies before 2008 and after 2009 they become more sensitive significantly. These evidences seem to reinforce our arguments. That is, not only global factors but also factors other than global factors, such as recipient's GDP growth might contribute to drivers of the bank inflows to emerging European economies before 2008.

V. Concluding Remarks

This study focuses on the role of global liquidity as a driver of capital flows to emerging/developing economies by using bilateral data, which include three types of capital flows, namely, global equity investment, bond investment, and bank lending. According to global equity and bank investments, the VIX turns out to be recognized as a global liquidity index. According to global bond investments, the TED spread is confirmed to be a global liquidity index. In other words, global equity investors are sensitive to risk attitudes, global bond investors are sensitive to global liquidity conditions, and global bank lenders are sensitive to risk attitudes and donors' own macroeconomic conditions. The US, Euro area, UK, and Japan are central in current global equity, bond, and bank networks, and so, global portfolio inflows are strongly involved with global financial conditions, which are determined by these countries' own macroeconomic policies and conditions. As a result, we conclude that the drivers of capital flows and their relative importance vary with (1) the type of fund flows, (2) G4 (donors') and recipients' characteristics, and (3) G4 macroeconomic policies. The unconventional monetary policies implemented by G4 after the global financial crisis caused spillover effects on the emerging economies through international financial linkages. Ghosh et al. (2014) showed with the different method of estimation that

capital flows to emerging economies turned out to be volatile after this crisis and that global factors act as gatekeepers, determining when surges to Emerging economies occur. This result seems to be consistent with our results.

Which is better for recipient economy, more or less sensitive of capital inflows to global factors? High sensitivity implies high vulnerability to global shocks. So, policy makers in emerging economies prefer less sensitive to global factors. However, this study shows that the sensitivities of bank inflows become higher after 2009 for Euro members and emerging European economies, while those remain unchanged for Asian NIES4 and ASEAN4 economies. What is the cause of this difference? We will defer a critical examination of this question to future research, but offer some speculative answers here.

Firstly, the stronger policy responses in Asia could be one reason. Some strong policy responses, such as policy rate changes, macroprudential tools, and capital controls, are effective for capital surge shocks (He and McCauley, 2013, Bruno and Shin, 2013, IMF, 2014b). As an empirical example, Ostry et al. (2012) indicate that capital controls and various prudential policies can help mitigate the damage that may occur during busts by reducing the riskiness of external liability structures. However, this paper lets us aware the importance of understanding carefully the mechanism of capital flows before executing the capital controls and various prudential policies. Although this study examines the effects of recipient's policy regimes on capital inflows, their effects can not be clarified.

Secondly, they could be caused by the issues on regional economic integrations. The economic integration in Asia has deepened with the development of the international production network. The development of the international production

network has had impact on the capital inflows to the economies in Asia. The multinational corporations has strengthen internal finance, that is own savings and intra-firm financing with their headquarters at home, rather than external finance (Kohsaka, 2015). So, the ratio of foreign direct investment type inflows to capital inflows has risen in Asia. However, the lesson from the Asian financial crisis reduced the interest of portfolio and bank inflows which may be less sensitive to global factors than these inflows to the emerging economies in Europe.

Footnotes

[1] The economies covered in this study are shown in Table 1.

[2] Table 9B of the CBS presents foreign claims by the nationality of the reporting bank on an immediate borrower basis, which includes both cross-border international claims and local claims in the local currency by a particular country.

[3] For more details, refer to Chinn and Ito (2008).

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Table 1: Regional Distributions of Sample Economies

Asia (17)	Europe (32)	Africa (16)	Other regions (26)
Advanced economies	**Advanced economies**	Cameroon	**Advanced economies**
Japan *	Czech Republic	Congo, Republic of	United States *
Hong Kong (N)	Denmark	Cote d'Ivoire	Australia
Korea (N)	Iceland	Egypt	Canada
Singapore (N)	Norway	Gabon	Israel
Taiwan (N)	Sweden	Gambia, The	New Zealand
	Switzerland	Ghana	
Emerging and developing	United Kingdom	Kenya	**Emerging and developing**
	Euro Area(16) *	Liberia	
Bangladesh	Austria	Mali	Argentina
China PR: Mainland	Belgium	Mauritius	Bahamas, The
China, PR: Macao	Cyprus	Morocco	Bahrain, Kingdom of
India	Estonia	Namibia	Barbados
Indonesia (A)	Finland	Nigeria	Belize
Lao People's Democratic Republic	France	South Africa	Botswana
Malaysia (A)	Germany	Zambia	Brazil
Pakistan	Greece		Chile
Philippines (A)	Ireland		Colombia
Sri Lanka	Italy		Georgia
Thailand (A)	Luxembourg		Jordan
Vietnam	Malta		Kuwait
	Netherlands		Lebanon
	Portugal		Mexico
	Slovenia		Oman
	Spain		Panama
			Papua New Guinea
	Emerging and developing		Peru
	Bulgaria (EE)		Russian Federation
	Croatia (EE)		Saudi Arabia
	Hungary (EE)		Venezuela
	Latvia (EE)		
	Lithuania (EE)		
	Poland (EE)		
	Romania (EE)		
	Turkey (EE)		
	Ukraine (EE)		

Source: Author

Notes: Country classification is based on the IMF's World Economic Outlook.

* represents donor economies. namely, Japan, the UK, Euro area, and US. (N) represents the newly industrialized economies' dummy economies (NIES4), comprising Hong Kong, Korea, Singapore, and Taiwan. (A) represents the ASEAN4 dummy economies, namely, Indonesia, Malaysia, the Philippines, and Thailand. (EE) represents emerging economies in Europe dummy, namely Bulgaria, Croatia, Hungary, Latvia, Lithuania, Poland, Romania, Turkey, and Ukraine.

Table 2: Data Definitions and Sources

Variables	Definitions	Sources
Drivers of global liquidity		
VIX: CBOE VIX index	The implied market volatility	Chicago Board Options Exchange (CBOE)
TED: TED spread in the US	3-month LIBOR minus 3-month US T-bill rate	FRD Economic Data
SLP_US: Slope of the yield curve in the US	10-year Government Benchmark bond yield minus 3-month US T-bill rate	FRD Economic Data
SLP_UK: Slope of the yield curve in the UK	Government bond yield (long-term, 20-year) minus 3-month T-Bills for the UK	FRD Economic Data, International Monetary Statistics (IFS)
SLP_JP: Slope of the yield curve in Japan	10-year Government Benchmark bond yield minus 3-month T-Bills for Japan	FRD Economic Data,
SLP_EU: Slope of the yield curve in the Euro area	10-year Government Benchmark bond yield minus Interbank rate (3-month)	FRD Economic Data, IFS
GM2: Real M2 growth in the G4 economies (each)	Growth rate of real M2 (deflated by the Consumer Price Index, CPI)	IFS
GRC: Real credit growth in the G4 economies (each)	Growth rate of real credit to the private sector (deflated by CPI)	IFS
Recipients' characteristics		
R_RGDPG: Real GDP growth rate	Growth rate of real GDP	IFS, World Development Indicators (WDI)
R_INFLATION: Inflation rate	Growth rate of CPI	IFS, WDI
R_Spread: Interest rate spread	Domestic deposit rate or money market rate minus Federal fund rate	IFS, WDI
R_EXFLEX: Exchange rate flexibility	Exchange rate flexibility (stable (low), flexible (high))	Exchange Rate Regime Reinhart and Rogoff Classification
R_KAOPEN: Financial Openness	Financial openness (close (low), open (high))	Chinn and Ito (2008)
R_POLITY2: Political Conditions	POLITY IV. Political conditions (corrupt or autocratic (low value), stable or democratic (high value))	Center for Systemic Peace (CSP)

Source: Author

Table 3: Descriptive Statistics: Drivers of Global Liquidity

	US_VIX	US_TED	SLP_EU	SLP_JP	SLP_UK	SLP_US	GM2_EU	GM2_JP	GM2_UK	GM2_US	GRC_EU	GRC_JP	GRC_UK	GRC_US
Mean	20.905	0.468	2.068	1.109	1.214	2.123	5.669	2.238	6.912	5.866	2.493	-0.349	3.123	2.795
Median	19.891	0.314	1.995	1.083	1.000	2.497	6.134	2.304	7.110	5.611	2.566	-0.189	7.214	4.617
Maximum	32.693	1.558	3.487	1.493	3.120	3.100	9.783	3.544	16.38	9.473	10.55	3.955	12.88	11.303
Minimum	12.807	0.195	0.352	0.643	-0.512	0.062	2.101	0.926	-4.518	3.366	-4.729	-6.832	-9.023	-11.394
Std. Dev.	6.662	0.387	1.087	0.259	1.239	1.046	2.847	0.785	6.405	1.943	4.586	2.999	7.617	6.241
Skewness	0.433	1.880	-0.159	-0.068	0.269	-0.898	0.021	-0.166	-0.127	0.577	0.078	-0.527	-0.305	-0.818
Kurtosis	1.916	5.500	1.578	2.133	1.691	2.357	1.474	2.122	1.793	2.259	2.058	2.831	1.384	2.855
Observations	4224	4224	4224	4224	4224	4224	4224	4224	4224	4224	4224	4224	4224	4224

Source: Author

Table 4: Correlations: Across Drivers of Global Liquidity

	US_VIX	US_TED	SLP_EU	SLP_JP	SLP_UK	SLP_US	GM2_EU	GM2_JP	GM2_UK	GM2_US	GRC_EU	GRC_JP	GRC_UK	GRC_US
US_VIX														
US_TED	0.407													
SLP_EU	0.144	-0.615												
SLP_JP	-0.205	-0.088	-0.382											
SLP_UK	0.417	-0.404	0.926	-0.446										
SLP_US	0.589	-0.321	0.635	-0.223	0.688									
GM2_EU	-0.260	0.524	-0.968	0.477	-0.965	-0.685								
GM2_JP	0.396	-0.277	0.590	-0.668	0.706	0.533	-0.693							
GM2_UK	-0.201	0.590	-0.933	0.398	-0.868	-0.548	0.918	-0.673						
GM2_US	0.252	0.458	-0.157	-0.326	-0.155	-0.088	0.128	0.003	-0.025					
GRC_EU	-0.209	0.423	-0.847	0.681	-0.797	-0.607	0.876	-0.770	0.850	-0.186				
GRC_JP	-0.390	0.131	0.183	-0.280	0.098	-0.376	-0.118	0.008	-0.056	-0.087	-0.180			
GRC_UK	-0.136	0.455	-0.932	0.554	-0.892	-0.435	0.919	-0.689	0.932	-0.036	0.884	-0.350		
GRC_US	-0.730	-0.527	0.021	0.140	-0.200	-0.269	0.055	-0.303	0.072	-0.578	0.158	0.157	0.110	

Source: Author

Table 5: Regression Results: Effects of all Global Liquidity Indicators on Equity, Bond, and Bank Flows

	Equity_1	Equity_2	Bond_1	Bond_2	Bank_1	Bank_2
Constant	**0.715*** **	**0.724*** **	**0.300***	**0.327**	**0.264*** **	**0.498*** **
	(0.001)	***(0.007)***	***(0.059)***	***(0.106)***	***(0.005)***	***(0.000)***
R_RGDPG	**0.001**	**-0.001**	**-0.009***	**-0.010***	**0.003**	**0.002**
	(0.922)	***(0.880)***	***(0.081)***	***(0.072)***	***(0.429)***	***(0.574)***
R_INFLATION	**0.005**	**0.005**	**-0.001**	**-0.001**	**0.007*** **	**0.006*** **
	(0.362)	***(0.322)***	***(0.826)***	***(0.732)***	***(0.003)***	***(0.008)***
R_Spread	**-0.029*** **	**-0.021** **	**-0.011**	**-0.010**	**-0.017*** **	**-0.013*** **
	(0.001)	***(0.019)***	***(0.100)***	***(0.162)***	***(0.000)***	***(0.001)***
R_EXFLEX	**-0.022**	**-0.034**	**0.029**	**0.027**	**0.024**	**0.017**
	(0.669)	***(0.504)***	***(0.459)***	***(0.499)***	***(0.321)***	***(0.485)***
R_KAOPEN	**-0.076**	**-0.099**	**0.038**	**0.028**	**-0.103**	**-0.109**
	(0.725)	***(0.643)***	***(0.804)***	***(0.855)***	***(0.277)***	***(0.243)***
R_POLITY2	**0.002**	**0.007**	**-0.006**	**-0.006**	**-0.005**	**-0.001**
	(0.896)	***(0.633)***	***(0.575)***	***(0.598)***	***(0.451)***	***(0.873)***
Global Liquidity Index						
US_VIX	**-0.011*** **	**-0.004**	**-0.001**	**0.002**	**-0.005*** **	**0.001**
	(0.001)	***(0.333)***	***(0.628)***	***(0.610)***	***(0.003)***	***(0.723)***
US_TED	**-0.357*** **	**-0.426*** **	**-0.224*** **	**-0.275*** **	**0.003**	**-0.114*** **
	(0.000)	***(0.000)***	***(0.000)***	***(0.000)***	***(0.899)***	***(0.003)***
EU_SLP*DF_EU		**-0.122*** **		**-0.030**		**-0.051*** **
		(0.001)		***(0.307)***		***(0.008)***
JP_SLP*DF_JP		**0.018**		**0.035**		**-0.130** **
		(0.876)		***(0.697)***		***(0.021)***
UK_SLP*DF_UK		**0.088**		**0.063**		**0.101*** **
		(0.112)		***(0.149)***		***(0.006)***
US_SLP*DF_US		**0.221**		**-0.204**		**-0.255*** **
		(0.277)		***(0.171)***		***(0.006)***
EU_GM2*DF_EU		**-0.093*** **		**0.000**		**-0.045*** **
		(0.000)		***(0.977)***		***(0.000)***
JP_GM2*DF_JP		**0.025**		**0.031**		**-0.026**
		(0.564)		***(0.363)***		***(0.278)***
UK_GM2*DF_UK		**0.019***		**0.005**		**0.016***
		(0.063)		***(0.562)***		***(0.052)***
US_GM2*DF_US		**-0.189*** **		**-0.162*** **		**-0.151*** **
		(0.008)		***(0.003)***		***(0.000)***
EU_GRC*DF_EU						**0.000**
						(0.978)
JP_GRC*DF_JP						**0.008**
						(0.259)
UK_GRC*DF_UK						**0.015***
						(0.056)
US_GRC*DF_US						**0.003**
						(0.666)
Method	**fixed**	**fixed**	**fixed**	**fixed**	**fixed**	**fixed**
Adjusted R-squared	**0.009**	**0.030**	**0.009**	**0.013**	**-0.010**	**0.024**

Notes: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

The numbers in parentheses are probability value.

Table 6: Regression Results: Effects of Global Liquidity Indicators on Equity Flows

(a) Into Economies

Dependent variable: Equity (dl_Equity)															
Into economies	**1**	**1'**	**2**	**2'**	**3**	**4**	**4'**	**5**	**5'**	**6**	**6'**	**7**	**7'**	**8**	**9**
C	0.725***	0.679***	0.725***	0.717***	0.723***	0.725***	0.718***	0.725***	0.725***	0.725***	0.723***	0.731***	0.714***	0.724***	0.709***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
R_INFLATION	-0.020***	-0.011	-0.020***	-0.019***	-0.019***	-0.020***	-0.019***	-0.020***	-0.020***	-0.020***	-0.018***	-0.019***	-0.017**	-0.019***	-0.020***
	(0.004)	*(0.108)*	*(0.004)*	*(0.005)*	*(0.004)*	*(0.004)*	*(0.005)*	*(0.004)*	*(0.004)*	*(0.004)*	*(0.007)*	*(0.005)*	*(0.013)*	*(0.005)*	*(0.004)*
R_RGDPG	-0.002	0.003	-0.002	-0.001	-0.002	-0.002	-0.001	-0.002	-0.002	-0.002	-0.002	-0.003	-0.001	-0.002	0.000
	(0.735)	*(0.593)*	*(0.735)*	*(0.911)*	*(0.779)*	*(0.740)*	*(0.882)*	*(0.739)*	*(0.759)*	*(0.738)*	*(0.751)*	*(0.582)*	*(0.845)*	*(0.771)*	*(0.936)*
R_SPREAD	-0.005	-0.011	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.006	-0.005	-0.006	-0.004	-0.004	-0.006	-0.003
	(0.533)	*(0.201)*	*(0.534)*	*(0.558)*	*(0.552)*	*(0.544)*	*(0.566)*	*(0.538)*	*(0.487)*	*(0.534)*	*(0.444)*	*(0.606)*	*(0.648)*	*(0.468)*	*(0.685)*
VIX	-0.023***	-0.025***	-0.022***	-0.022***	-0.024***	-0.022***	-0.022***	-0.023***	-0.022***	-0.022***	-0.022***	-0.020***	-0.020***	-0.024***	-0.025***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Regional Dummy															
VIX × RD_G			0.000	-0.002	0.001	0.004	0.004	0.000	0.000	0.000	0.000	-0.003	-0.002	0.001	-0.002
			(0.971)	*(0.732)*	*(0.827)*	*(0.809)*	*(0.801)*	*(0.989)*	*(0.989)*	*(0.944)*	*(0.963)*	*(0.664)*	*(0.698)*	*(0.921)*	*(0.732)*
VIX ×RD_AD_EXCL_G4					0.006										
					(0.380)										
VIX ×RD_Euro						-0.004	-0.006								
						(0.777)	*(0.690)*								
VIX ×RD_Asia_NIES4								0.002	-0.003						
								(0.875)	*(0.787)*						
VIX ×RD_Asia_ASEAN4										-0.003	-0.010				
											(0.388)				
VIX×RD_EmergingEurope												-0.020**	-0.024**		
												(0.027)	*(0.011)*		
Structural Change															
VIX × SD_After2009		0.007***													
		(0.000)													
VIX ×RD_G4 × SD_After2009				0.004											
				(0.263)											
VIX ×RD_Euro × SD_After2009							0.003								
							(0.370)								
VIX ×RD_Asia_NIES4 × SD_After2009									0.009						
									(0.184)						
VIX ×RD_Asia_ASEAN4 × SD_After2009											0.014**				
											(0.037)				
VIX×RD_EmergingEurope × SD_After2009													0.008		
													(0.137)		
Policy															
VIX ×R_EXFLEX														0.001	
														(0.618)	
VIX ×R_KAOPEN															0.005
															(0.494)
Fixed Effects	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Cross-sections (i × j)	**331**	**331**	**331**	**331**	**331**	**331**	**331**	**331**	**331**	**331**	**331**	**331**	**331**	**327**	**320**
Observations	**3388**	**3388**	**3388**	**3388**	**3388**	**3388**	**3388**	**3388**	**3388**	**3388**	**3388**	**3388**	**3388**	**3340**	**3272**

Notes: ***, **, and * indicate significance at 1, 5, 10 percent level, respectively.
The numbers in parentheses are probability value.

Table 6: Regression Results: Effects of Global Liquidity Indicators on Equity Flows
(b) From whom to whom

Equity Flows	1	1'	2	2'	3	3'	4	4'	5	5'
Regional dummy(RD) (into whom)	not specified	not specified	G4	G4	EURO	EURO	ASEAN4	ASEAN4	EM_ EUROPE	EM_ EUROPE
C	0.679***	0.672***	0.681***	0.680***	0.682***	0.681***	0.681***	0.681***	0.679***	0.678
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
R_INFLATION	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.010	-0.010
	(0.108)	*(0.125)*	*(0.131)*	*(0.135)*	*(0.124)*	*(0.128)*	*(0.113)*	*(0.114)*	*(0.156)*	*(0.148)*
R_RGDPG	0.003	0.003	0.003	0.002	0.002	0.002	0.003	0.003	0.003	0.003
	(0.593)	*(0.548)*	*(0.660)*	*(0.668)*	*(0.671)*	*(0.680)*	*(0.625)*	*(0.625)*	*(0.667)*	*(0.655)*
R_SPREAD	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.009	-0.009
	(0.201)	*(0.198)*	*(0.169)*	*(0.168)*	*(0.170)*	*(0.169)*	*(0.187)*	*(0.188)*	*(0.256)*	*(0.259)*
VIX	-0.025***		-0.026***	-0.026***	-0.026***	-0.026***	-0.025***	-0.025***	-0.024***	-0.024***
	(0.000)		*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
VIX × Regional dummy (RD)										
VIX×RD			0.003		0.002		-0.007		-0.020**	
			(0.699)		*(0.773)*		*(0.570)*		*(0.029)*	
VIX ×Regional dummy(RD) ×donor dummy(DD)										
VIX ×RD ×DD_JP		-0.024***		0.015		0.015		-0.011		-0.034
		(0.000)		*(0.225)*		*(0.275)*		*(0.644)*		*(0.194)*
VIX ×RD ×DD_EU		-0.025***		0.002		0.003		-0.013		-0.030
		(0.000)		*(0.830)*		*(0.819)*		*(0.567)*		*(0.049)*
VIX ×RD ×DD_US		-0.029***		-0.009		-0.011		-0.003		-0.016
		(0.000)		*(0.438)*		*(0.384)*		*(0.887)*		*(0.308)*
VIX ×RD ×DD_UK		-0.023***		0.004		0.004		0.000		-0.003
		(0.000)		*(0.755)*		*(0.768)*		*(0.988)*		*(0.854)*
Structural change dummy(SD)										
VIX ×SD_after2009	0.007***		0.008***	0.008***	0.008***	0.008***	0.007***	0.007***	0.007***	0.007***
	(0.000)		*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
VIX ×RD ×SD_after2009			-0.003		-0.004		0.008		0.003	
			(0.397)		*(0.369)*		*(0.229)*		*(0.577)*	
VIX ×RD ×DD_JP ×SD_after2009		0.002		-0.006		-0.007		0.011		-0.003
		(0.499)		*(0.376)*		*(0.362)*		*(0.419)*		*(0.825)*
VIX ×RD ×DD_EU ×SD_after2009		0.005		-0.006		-0.008		0.013		0.005
		(0.101)		*(0.319)*		*(0.259)*		*(0.340)*		*(0.553)*
VIX ×RD ×DD_US ×SD_after2009		0.009***		0.001		0.001		0.007		-0.002
		(0.003)		*(0.873)*		*(0.875)*		*(0.618)*		*(0.837)*
VIX ×RD ×DD_UK ×SD_after2009		0.012***		-0.001		-0.001		0.003		0.011
		(0.001)		*(0.868)*		*(0.916)*		*(0.842)*		*(0.299)*
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cross-sections included (iro)	331	331	331	331	331	331	331	331	331	331
Observations	3388	3388	3388	3388	3388	3388	3388	3388	3388	3388

Notes: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.
The numbers in parentheses are probability value.

Table 7: Regression Results: Effects of Global Liquidity Indicators on Bond Flows
(a) Into Economies

Dependent variable: Bond (dl_Bond)																
Into economies	**1**	**1'**	**2**	**2'**	**3**	**4**	**4'**	**5**	**5'**	**6**	**6'**	**7**	**7'**	**8**	**9**
C	0.313***	0.274***	0.314***	0.331***	0.314***	0.314***	0.328	0.315***	0.311***	0.315***	0.312***	0.315***	0.269***	0.318***	0.329***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
R_INFLATION	-0.010*	-0.008	-0.008	-0.009*	-0.008	-0.008	-0.009	-0.008	-0.008	-0.008	-0.008	-0.008	-0.006	-0.007	-0.007
	(0.051)	*(0.112)*	*(0.113)*	*(0.090)*	*(0.130)*	*(0.112)*	*(0.090)*	*(0.109)*	*(0.106)*	*(0.112)*	*(0.128)*	*(0.128)*	*(0.256)*	*(0.157)*	*(0.184)*
R_RGDPG	0.003	0.006	0.003	0.001	0.003	0.003	0.002	0.003	0.003	0.003	0.003	0.003	0.008*	0.002*	0.001
	(0.425)	*(0.154)*	*(0.466)*	*(0.740)*	*(0.461)*	*(0.457)*	*(0.696)*	*(0.489)*	*(0.425)*	*(0.471)*	*(0.455)*	*(0.485)*	*(0.059)*	*(0.567)*	*(0.730)*
R_SPREAD	-0.012**	-0.014**	-0.014*	-0.014**	-0.014**	-0.014**	-0.014	-0.014**	-0.014**	-0.014**	-0.014**	-0.014**	-0.013**	-0.015**	-0.015***
	(0.045)	*(0.022)*	*(0.022)*	*(0.022)*	*(0.019)*	*(0.022)*	*(0.023)*	*(0.021)*	*(0.020)*	*(0.021)*	*(0.019)*	*(0.019)*	*(0.025)*	*(0.012)*	*(0.010)*
TED	-0.238***	-0.226***	-0.277***	-0.275***	-0.289***	-0.277***	-0.275	-0.270***	-0.270***	-0.275***	-0.276***	-0.257***	-0.263***	-0.390***	-0.408***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Regional Dummy															
TED × RD_G			0.146*	0.124	0.159**	0.205	0.201	0.140*	0.140*	0.144*	0.145*	0.126*	0.131*	0.189**	0.088
			(0.052)	*(0.108)*	*(0.044)*	*(0.250)*	*(0.259)*	*(0.065)*	*(0.065)*	*(0.058)*	*(0.056)*	*(0.099)*	*(0.084)*	*(0.019)*	*(0.297)*
TED ×RD_AD_EXCL_G4					0.044										
					(0.590)										
TED ×RD_Euro						-0.068	-0.087								
						(0.716)	*(0.644)*								
TED ×RD_Asia_NIES4								-0.089	-0.055						
								(0.518)	*(0.694)*						
TED ×RD_Asia_ASEAN4										-0.032	-0.011				
										(0.816)	*(0.935)*				
TED×RD_EmergingEurope												-0.16	-0.051		
												(0.125)	*(0.632)*		
Structural Change															
TED × SD_After2009		0.153*													
		(0.064)													
TED ×RD_G4 × SD_After2009				-0.220											
				(0.156)											
TED ×RD_Euro × SD_After2009							-0.219								
							(0.188)								
TED ×RD_Asia_NIES4 × SD_After2009									0.322						
									(0.290)						
TED ×RD_Asia_ASEAN4 × SD_After2009											0.196				
											(0.520)				
TED×RD_EmergingEurope × SD_After2009													0.932***		
													(0.000)		
Policy															
TED ×R_EXFLEX														0.051*	
														(0.099)	
TED ×R_KAOPEN															0.193**
															(0.048)
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cross-sections (i × j)	337	337	337	337	337	337	337	337	337	337	337	337	337	333	326
Observations	3373	3373	3373	3373	3373	3373	3373	3373	3373	3373	3373	3373	3373	3328	3272

Notes: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.
The numbers in parentheses are probability value.

Table 7: Regression Results: Effects of Global Liquidity Indicators on Bond Flows
(b) From whom to whom

Bond Flows	1	1'	2	2'	3	3'	4	4'	5	5'
Regional dummy(RD) (into whom)	not specified	not specified	G4	G4	EURO	EURO	ASEAN4	ASEAN4	EM_ EUROPE	EM_ EUROPE
C	0.274***	0.277***	0.281***	0.280***	0.281***	0.281***	0.275***	0.275***	0.248***	0.246***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
R_INFLATION	-0.008	-0.008	-0.006	-0.006	-0.007	-0.007	-0.008	-0.008	-0.007	-0.007
	(0.112)	*(0.139)*	*(0.226)*	*(0.226)*	*(0.188)*	*(0.189)*	*(0.116)*	*(0.111)*	*(0.214)*	*(0.188)*
R_RGDPG	0.006	0.005	0.005	0.005	0.005	0.005	0.006	0.006	0.009**	0.009**
	(0.154)	*(0.189)*	*(0.264)*	*(0.259)*	*(0.263)*	*(0.260)*	*(0.162)*	*(0.164)*	*(0.030)*	*(0.031)*
R_SPREAD	-0.014**	-0.014**	-0.017***	-0.017***	-0.016***	-0.016***	-0.014**	-0.014*	-0.013**	-0.012**
	(0.022)	*(0.020)*	*(0.005)*	*(0.005)*	*(0.007)*	*(0.008)*	*(0.021)*	*(0.022)*	*(0.030)*	*(0.037)*
VIX	-0.226***		-0.255***	-0.255***	-0.247***	-0.247***	-0.223***	-0.223***	-0.218***	-0.217***
	(0.000)		*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
VIX × Regional dummy (RD)										
VIX×RD			0.109		0.091		-0.059		-0.091	
			(0.157)		*(0.261)*		*(0.672)*		*(0.392)*	
VIX ×Regional dummy(RD) ×donor dummy(DD)										
VIX ×RD ×DD_JP		0.012		0.270*		0.251		0.454*		-0.029
		(0.861)		*(0.066)*		*(0.112)*		*(0.092)*		*(0.893)*
VIX ×RD ×DD_EU		-0.276***		0.130		0.106		-0.161		-0.100
		(0.000)		*(0.322)*		*(0.457)*		*(0.551)*		*(0.579)*
VIX ×RD ×DD_US		-0.158***		0.065		0.067		-0.055		0.143
		(0.014)		*(0.629)*		*(0.638)*		*(0.839)*		*(0.477)*
VIX ×RD ×DD_UK		-0.455***		-0.020		-0.049		-0.537*		-0.329
		(0.000)		*(0.890)*		*(0.745)*		*(0.061)*		*(0.154)*
Structural change dummy(SD)										
VIX ×SD_after2009	0.153*		0.254***	0.254***	0.234***	0.234***	0.149*	0.148*	0.092	0.089
	(0.064)		*(0.005)*	*(0.005)*	*(0.009)*	*(0.009)*	*(0.078)*	*(0.080)*	*(0.277)*	*(0.289)*
VIX ×RD ×SD_after2009			-0.423**		-0.406**		0.063		0.868***	
			(0.014)		*(0.025)*		*(0.841)*		*(0.000)*	
VIX ×RD ×DD_JP ×SD_after2009		0.094		-0.389		-0.393		0.489		0.587
		(0.551)		*(0.228)*		*(0.256)*		*(0.415)*		*(0.215)*
VIX ×RD ×DD_EU ×SD_after2009		-0.065		-0.616**		-0.569*		-0.084		-0.090
		(0.640)		*(0.036)*		*(0.074)*		*(0.889)*		*(0.825)*
VIX ×RD ×DD_US ×SD_after2009		0.430***		-0.070		-0.028		0.036		1.717***
		(0.003)		*(0.815)*		*(0.930)*		*(0.952)*		*(0.000)*
VIX ×RD ×DD_UK ×SD_after2009		0.069		-0.639**		-0.685**		-0.337		1.475***
		(0.676)		*(0.047)*		*(0.047)*		*(0.601)*		*(0.009)*
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cross-sections included (i×j)	337	337	337	337	337	337	337	337	337	337
Observations	3373	3373	3373	3373	3373	3373	3373	3373	3373	3373

Table 8: Regression Results: Effects of Global Liquidity Indicators on Bank Flows
(a) Into Economies

Dependent variable: Bank (dl_Bank)

Into economies	1	1'	2	2'	3	4	4'	5	5'	6	6'	7	7'	8	9
C	0.210***	0.215***	0.209***	0.217***	0.211***	0.209***	0.217***	0.209***	0.209***	0.209***	0.209***	0.211***	0.221***	0.210***	0.215***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
R_INFLATION	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.001	0.002	0.003
	(0.520)	*(0.780)*	*(0.471)*	*(0.587)*	*(0.486)*	*(0.473)*	*(0.592)*	*(0.468)*	*(0.468)*	*(0.434)*	*(0.377)*	*(0.453)*	*(0.695)*	*(0.392)*	*(0.316)*
R_RGDPG	0.008***	0.008***	0.008***	0.007***	0.008***	0.008***	0.007***	0.008***	0.008***	0.008***	0.008***	0.008***	0.007***	0.008***	0.008***
	(0.000)	*(0.001)*	*(0.000)*	*(0.002)*	*(0.000)*	*(0.000)*	*(0.002)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.004)*	*(0.000)*	*(0.002)*
R_SPREAD	-0.015***	-0.015***	-0.015***	-0.016***	-0.015***	-0.015***	-0.016***	-0.015***	-0.015***	-0.015***	-0.016***	-0.015***	-0.015***	-0.016***	-0.015***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
VIX	-0.005***	-0.005***	-0.006***	-0.006***	-0.005***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.005***	-0.005***	-0.007***	-0.009***
	(0.000)	*(0.001)*	*(0.000)*	*(0.000)*	*(0.003)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.001)*	*(0.001)*	*(0.004)*	*(0.000)*
Regional Dummy															
VIX × RD_G4			0.002	0.005	0.002	0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.003	0.001
			(0.379)	*(0.107)*	*(0.565)*	*(0.604)*	*(0.621)*	*(0.370)*	*(0.371)*	*(0.321)*	*(0.317)*	*(0.471)*	*(0.506)*	*(0.322)*	*(0.709)*
VIX ×RD_AD_EXCL_G4					-0.003										
					(0.277)										
VIX ×RD_Euro						-0.001	0.0013								
						(0.863)	*(0.853)*								
VIX ×RD_Asia_NIES4								0.001	0.000						
								(0.855)	*(1.000)*						
VIX ×RD_Asia_ASEAN4										0.005	0.002				
										(0.353)	*(0.695)*				
VIX×RD_EmergingEurope												-0.003	-0.001		
												(0.421)	*(0.834)*		
Structural Change															
VIX × SD_After2009		-0.001													
		(0.166)													
VIX ×RD_G4 × SD_After2009				-0.004***											
				(0.007)											
VIX ×RD_Euro × SD_After2009							-0.005***								
							(0.006)								
VIX ×RD_Asia_NIES4 × SD_After2009									0.002						
									(0.601)						
VIX ×RD_Asia_ASEAN4 × SD_After2009											0.004				
											(0.165)				
VIX×RD_EmergingEurope × SD_After2009													-0.004*		
													(0.053)		
Policy															
VIX ×R_EXFLEX														0.000	
														(0.603)	
VIX ×R_KAOPEN															0.005*
															(0.060)
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cross-sections (i × j)	343	343	343	343	343	343	343	343	343	343	343	343	343	339	332
Observations	3744	3744	3744	3744	3744	3744	3744	3744	3744	3744	3744	3744	3744	3693	3621

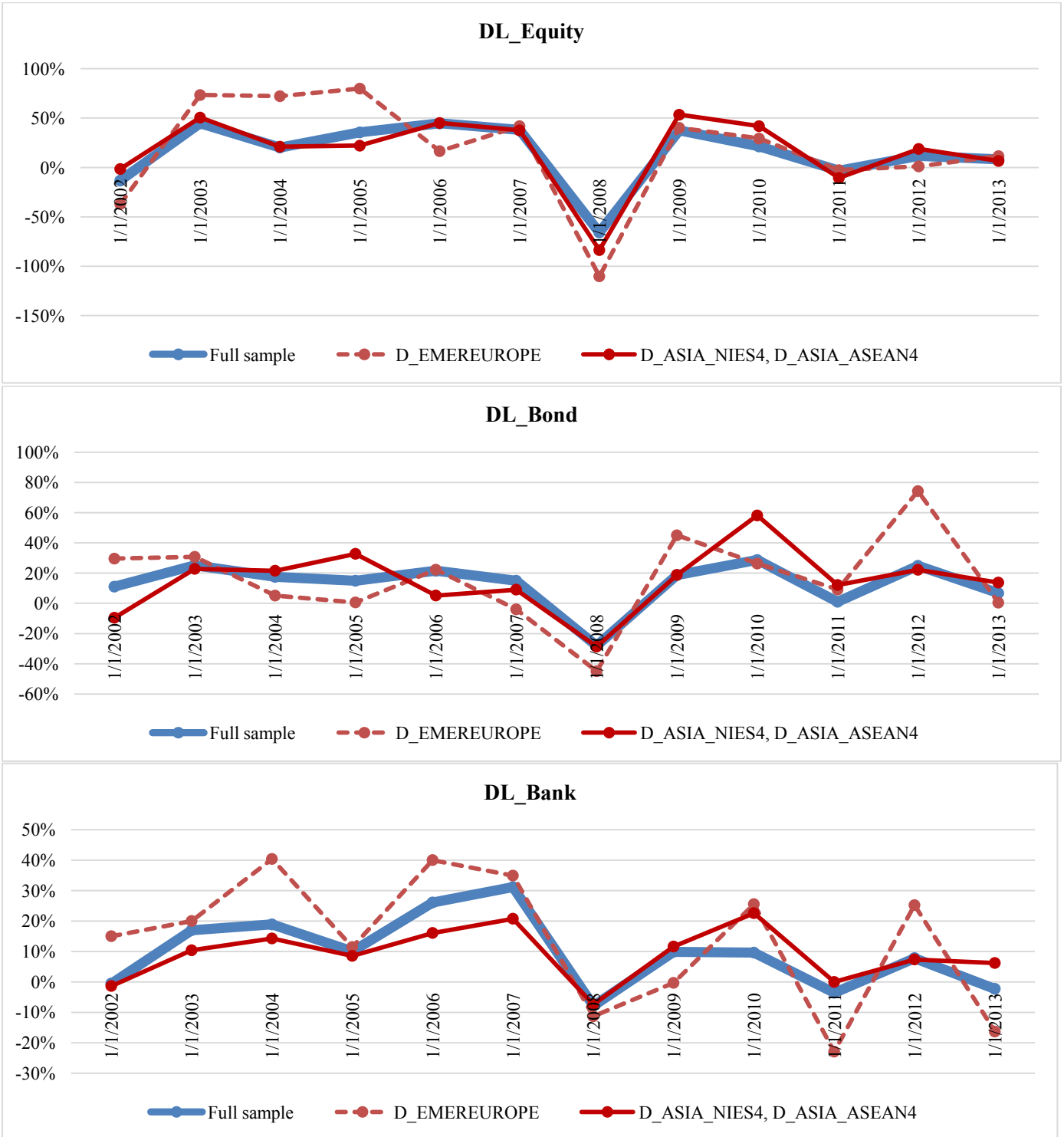
Notes: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.
The numbers in parentheses are probability value.

Table 8: Regression Results: Effects of Global Liquidity Indicators on Bank Flows
(b) From whom to whom

Bank Flows	1	1'	2	2'	3	3'	4	4'	5	5'
Regional dummy(RD) (into whom)	not specified	not specified	G4	G4	EURO	EURO	ASEAN4	ASEAN4	EM_ EUROPE	EM_ EUROPE
C	0.215***	0.216***	0.217***	0.217***	0.218***	0.218***	0.216***	0.216***	0.224***	0.224***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
R_INFLATION	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
	(0.780)	*(0.790)*	*(0.627)*	*(0.632)*	*(0.658)*	*(0.659)*	*(0.721)*	*(0.711)*	*(0.893)*	*(0.899)*
R_RGDPG	0.008***	0.008***	0.007***	0.007***	0.007***	0.007***	0.007***	0.007***	0.007***	0.007***
	(0.001)	*(0.001)*	*(0.003)*	*(0.003)*	*(0.003)*	*(0.003)*	*(0.002)*	*(0.002)*	*(0.006)*	*(0.006)*
R_SPREAD	-0.015***	-0.014***	-0.016***	-0.016***	-0.016***	-0.016***	-0.015***	-0.015***	-0.015***	-0.015***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
VIX	-0.005***		-0.006***	-0.006***	-0.005***	-0.005***	-0.005***	-0.005***	-0.004***	-0.004***
	(0.001)		*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*
VIX × Regional dummy (RD)										
VIX×RD			0.005		0.004		0.001		-0.002	
			(0.119)		*(0.153)*		*(0.883)*		*(0.676)*	
VIX ×Regional dummy(RD) ×donor dummy(DD)										
VIX ×RD ×DD_JP		-0.006***		0.003		0.003		-0.006		-0.008
		(0.012)		*(0.543)*		*(0.569)*		*(0.579)*		*(0.311)*
VIX ×RD ×DD_EU		-0.002		0.005		0.006		0.000		0.009
		(0.393)		*(0.292)*		*(0.261)*		*(0.997)*		*(0.195)*
VIX ×RD ×DD_US		-0.005*		-0.001		-0.003		0.002		0.000
		(0.052)		*(0.882)*		*(0.619)*		*(0.841)*		*(0.958)*
VIX ×RD ×DD_UK		-0.006**		0.011		0.012**		0.010		-0.011
		(0.025)		*(0.051)*		*(0.049)*		*(0.438)*		*(0.169)*
Structural change dummy(SD)										
VIX ×SD_after2009	-0.001		0.000	0.000	0.000	0.000	-0.001*	-0.001*	-0.001	-0.001
	(0.166)		*(0.872)*	*(0.873)*	*(0.792)*	*(0.792)*	*(0.085)*	*(0.086)*	*(0.350)*	*(0.354)*
VIX ×RD ×SD_after2009			-0.004**		-0.004**		0.006*		-0.004*	
			(0.018)		*(0.017)*		*(0.085)*		*(0.099)*	
VIX ×RD ×DD_JP ×SD_after2009		-0.002		-0.007**		-0.008**		0.009		-0.007
		(0.212)		*(0.030)*		*(0.019)*		*(0.149)*		*(0.108)*
VIX ×RD ×DD_EU ×SD_after2009		-0.007***		-0.009***		-0.009***		0.003		-0.015***
		(0.000)		*(0.004)*		*(0.006)*		*(0.653)*		*(0.001)*
VIX ×RD ×DD_US ×SD_after2009		0.006***		0.007**		0.007**		0.006		0.006
		(0.000)		*(0.026)*		*(0.032)*		*(0.335)*		*(0.152)*
VIX ×RD ×DD_UK ×SD_after2009		-0.003		-0.008**		-0.008**		0.003		0.001
		(0.119)		*(0.015)*		*(0.016)*		*(0.628)*		*(0.818)*
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cross-sections included (i×j)	343	343	343	343	343	343	343	343	343	343
Observations	3744	3744	3744	3744	3744	3744	3744	3744	3744	3744

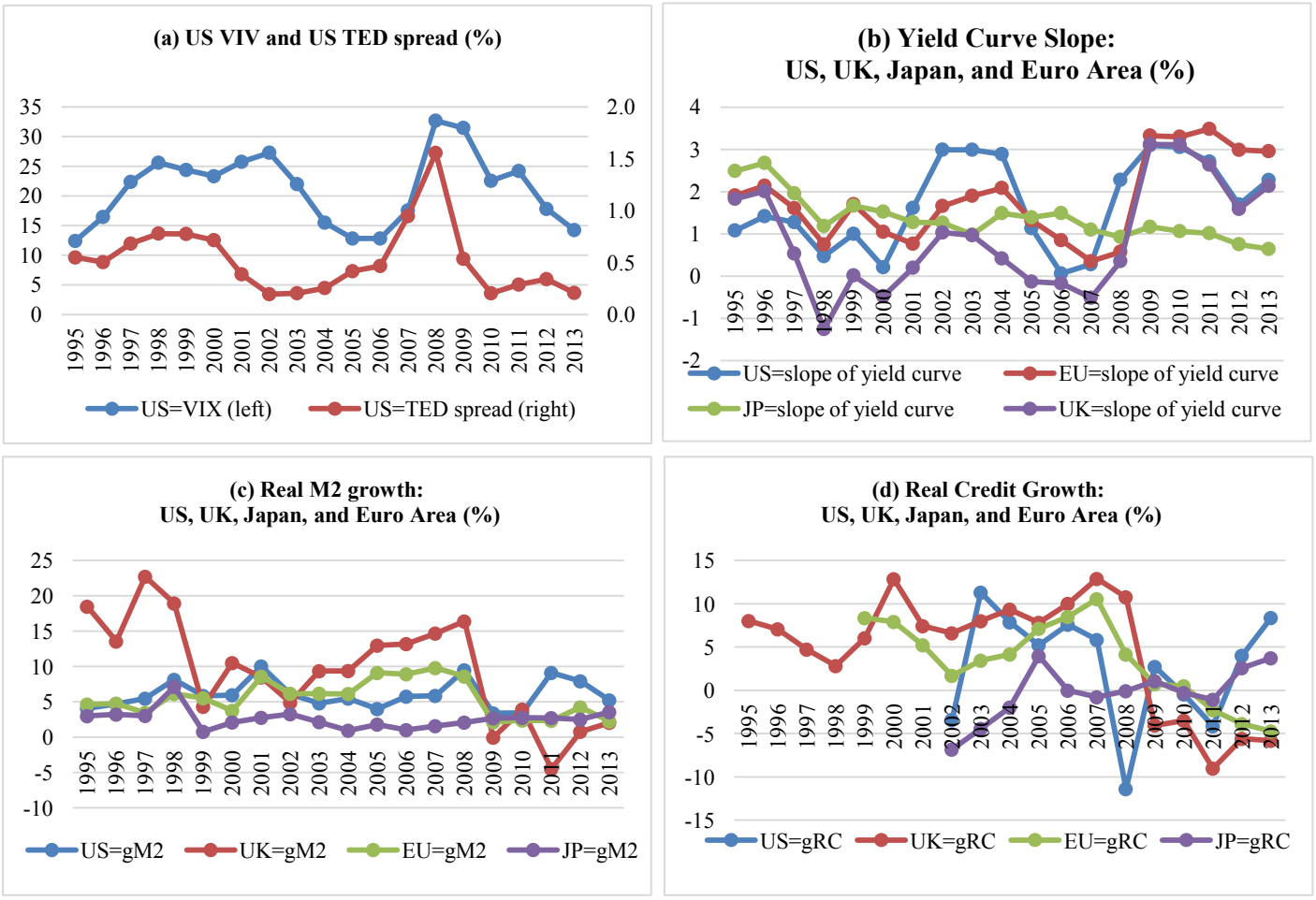
Notes: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.
The numbers in parentheses are probability value.

Figure 1: The trends of average capital inflow growth from G4 economies (US, Euro, UK, and JP)



Sources: The Coordinated Portfolio Investment Survey (CPIS) provided by the IMF for Equity and Bond inflows, and the consolidated banking statistics (CBS) by the Bank for International Settlements for bank flows.

Figure 2: Drivers of global liquidity



Source: Chicago Board Options Exchange (CBOE), FRD Economic Data, and International Monetary Statistics (IFS).

Appendix 1: Estimation Method: Seemingly Unrelated Regression (SUR)
Table A1-a:. Into economies

System								
Dependent Variable	**DL_EQUITY**			**DL_BOND**			**DL_BANK**	
C	**0.655**	***		**0.208**	***		**0.206**	***
	(0.000)			*(0.000)*			*(0.000)*	
R_INFLATION	**-0.010**	**		**-0.007**	**		**0.000**	
	(0.035)			*(0.042)*			*(0.870)*	
R_RGDPG	**0.006**			**0.011**	***		**0.010**	***
	(0.168)			*(0.000)*			*(0.000)*	
R_SPREAD	**0.006**			**0.004**			**-0.003**	
	(0.233)			*(0.232)*			*(0.166)*	
VIX (TED for Bond Equation)	**-0.023**	***		**-0.230**	***		**-0.007**	***
	(0.000)			*(0.000)*			*(0.000)*	
Regional Dummy								
VIX × RD_G	**-0.004**	**		**0.039**			**0.001**	
	(0.037)			*(0.428)*			*(0.548)*	
VIX ×RD_AD_EXCL_G4								
VIX ×RD_Euro								
VIX ×RD_Asia_NIES4								
VIX ×RD_Asia_ASEAN4	**-0.004**							
	(0.325)							
VIX×RD_EmergingEurope	**-0.007**	**		**-0.127**	*		**0.004**	***
	(0.045)			*(0.066)*			*(0.009)*	
Structural Change								
VIX × SD_After2009								
VIX ×RD_G4 × SD_After2009								
VIX ×RD_Euro × SD_After2009								
VIX ×RD_Asia_NIES4 × SD_After2009								
VIX ×RD_Asia_ASEAN4 × SD_After2009	**0.013**	**						
	(0.043)							
VIX×RD_EmergingEurope × SD_After2009	**0.010**	**		**0.821**	***		**-0.004**	*
	(0.036)			*(0.000)*			*(0.074)*	
Policy								
VIX ×R_EXFLEX								
VIX ×R_KAOPEN								
VIX ×R_DEV_CR_FC								
Cross-sections								
Fixed Effects	**NO**			**NO**			**NO**	
Observation	**3388**			**3373**			**3744**	

Notes: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.
The numbers in parentheses are probability value.

Appendix 1: Estimation Method: Seemingly Unrelated Regression (SUR)

Table A1-b: From economies

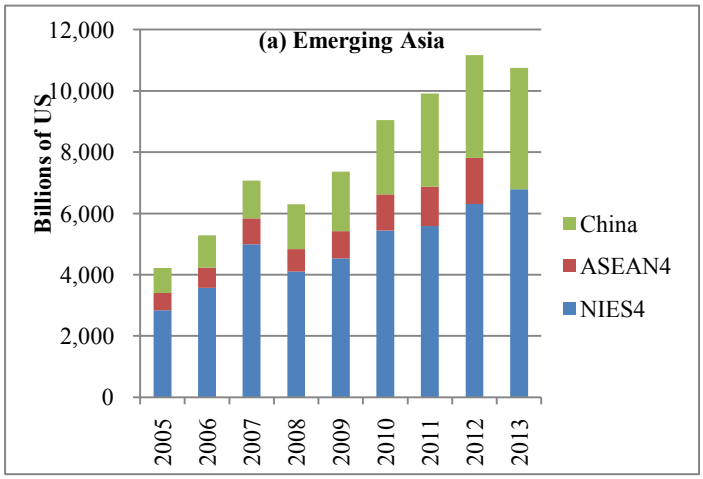
system			
From which economies	**DL_EQUITY**	**DL_BOND**	**DL_BANK**
C	0.632***	0.239***	0.205***
	(0.000)	*(0.000)*	*(0.000)*
R_INFLATION	-0.009*	-0.009**	0.000
	(0.076)	*(0.013)*	*(0.934)*
R_RGDPG	0.010**	0.008**	0.010***
	(0.026)	*(0.011)*	*(0.000)*
R_SPREAD	0.005	0.006	-0.003
	(0.262)	*(0.101)*	*(0.184)*
VIX	-0.025***	-0.195***	-0.006***
	(0.000)	*(0.000)*	*(0.000)*
Donor Dummy			
VIX × DD_US	-0.003		-0.002
	(0.179)		*(0.110)*
VIX × DD_EU	0.000		0.002*
	(0.979)		*(0.077)*
VIX × DD_UK		-0.189***	
		(0.000)	
VIX × DD_JP		0.033	
		(0.516)	
Structural change			
VIX × DD_US ×SD_After2009	0.009***		0.006***
	(0.002)		*(0.000)*
VIX × DD_EU ×SD_After2009	0.006**		-0.007***
	(0.043)		*(0.000)*
VIX × DD_UK ×SD_After2009		0.1223	
		(0.299)	
VIX × DD_JP ×SD_After2009		-0.260**	
		(0.041)	
Cross-sections (i × j)			
Fixed Effects	NO	NO	NO
Observation	3388	3373	3744

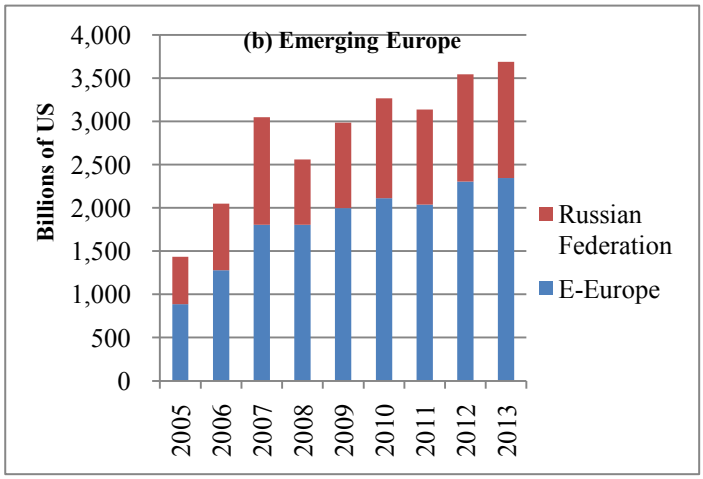
Notes: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.
The numbers in parentheses are probability value.

Appendix 2: Stocks of External Liabilities for emerging Asia and Europe

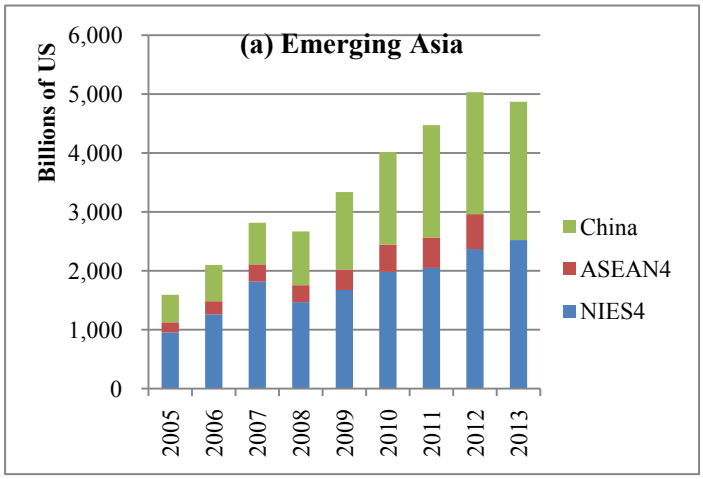
Figure A2: Stocks of External Liabilities for emerging Asia and Europe

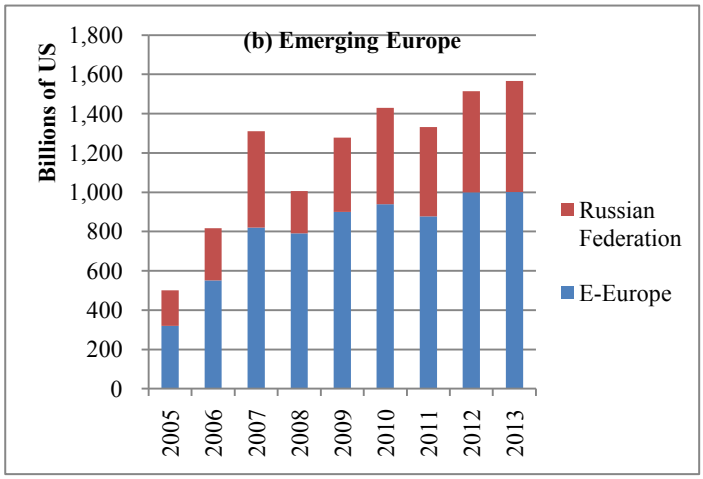
(1) Total Liabilities



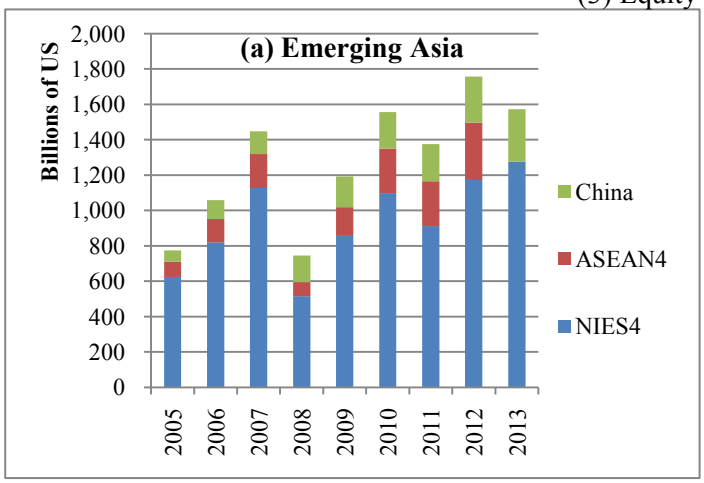


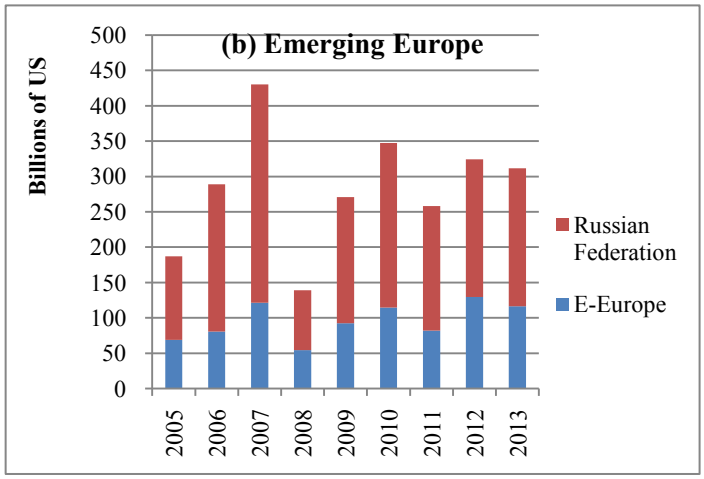
(2) Foreign Direct Investments (FDI)





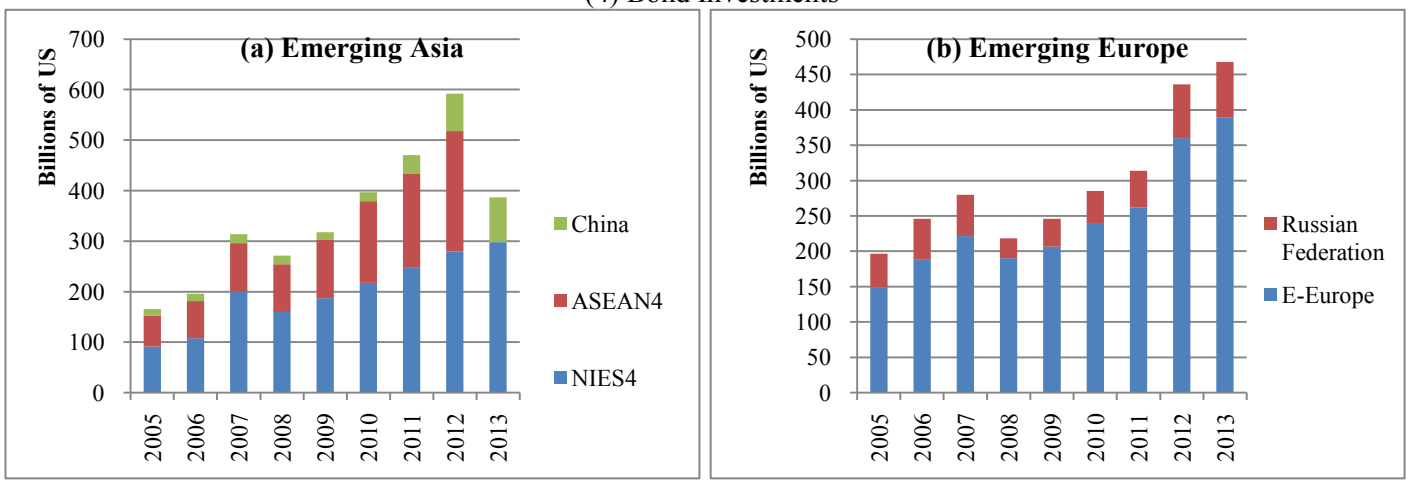
(3) Equity Investments



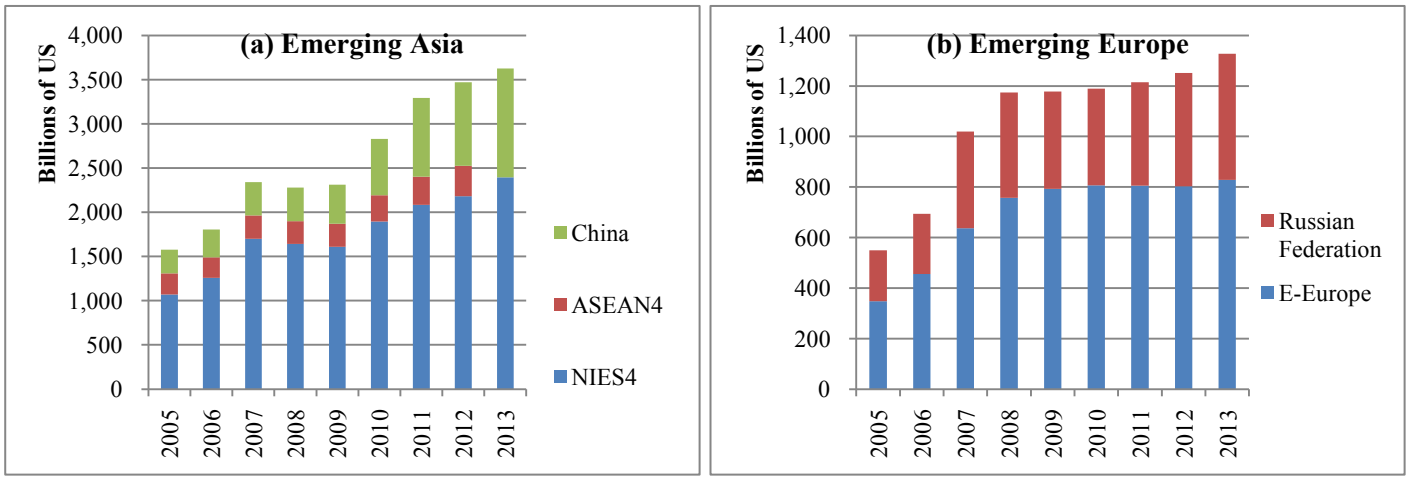


Appendix 2: Stocks of External Liabilities for emerging Asia and Europe (continued)

(4) Bond Investments



(5) Other Investments including Bank Loans



Source: IMF, *International Financial Statistics*

Notes: The ASEAN 4 group includes the Philippines, Thailand, Malaysia, and Indonesia. The NIEs 4 group includes Korea, Singapore, Hong Kong, and Taiwan. The NIEs 3 group excludes Singapore. E-Europe, that is emerging Europe, includes Bulgaria, Croatia, Hungary, Latvia, Lithuania, Poland, Romania, Turkey, and Ukraine. The line shows the ratio of the liabilities issued by G4 economies, that is, the United States, the United Kingdom, Japan, and Euro area economies.