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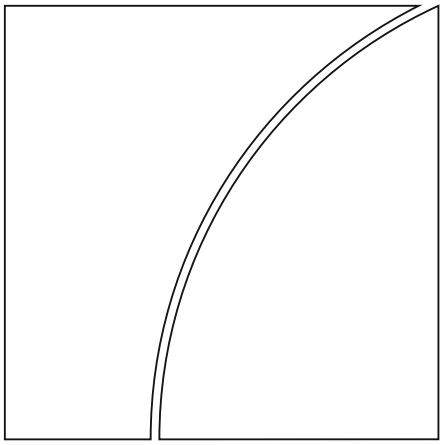

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# Correlations across Asia-Pacific bond markets and the impact of capital flow measures[1]

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## Abstract

Using a novel database on capital flow measures in Asia over 2004–2013, we investigate the impact of bond inflow measures on the cross-market correlations of weekly bond fund flows and of daily bond returns in 12 Asia-Pacific economies, after controlling for global, regional and local factors. We find that a bond inflow measure taken by a country tends to increase the correlation of bond flows into the country with those into other countries in the region. In particular, a country's policy actions to loosen (ie increase) bond inflows significantly increase bond flow correlations, but policy actions to tighten (ie decrease) bond inflows have no significant impact. We also find that bond inflow measures increase bond return correlations in the long run. These results can be explained by the signalling hypothesis, under which global investors expect that when a country takes a bond inflow measure other countries to take similar actions, so that they increase or decrease their investment in the region at the same time.

JEL classification. G15, G28.

Keywords. Bond flow, bond return, cross-market correlation, capital flow measure.

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# 1 Introduction

Asia-Pacific local currency bond markets have developed in recent years against the backdrop of increased foreign interest and cross-border investments. After sharp capital outflows during the financial crisis in 2007−2008, the Asia-Pacific region once again received strong capital flows into local currency bond markets, in which global asset managers and institutional investors played an important role. However, in mid-2013, some emerging Asian economies temporarily faced large capital outflows from their bond markets.

In response to such rapid changes in the direction and amount of bond flows, many jurisdictions in the region have actively introduced various types of capital flow measure (CFM). In particular, China, India, Indonesia, Korea, Malaysia, the Philippines and Thailand introduced bond inflow measures either aiming to tighten or loosen bond inflows in their own markets. Many researchers have investigated whether these measures were effective in controlling bond flows (eg Ahmed and Zlate (2013) and Zhang and Zoli (2014)).

More recently, both policymakers and academic researchers have discussed the possibility of CFMs taken unilaterally by one economy affecting other economies. They have also asked whether there is a need and scope for cross-border coordination of CFMs. In particular, a relatively small number of papers have focused on such cross-country implications of CFMs (eg Jeanne (2012) and Beirne and Friedrich (2014)).

Generally speaking, a unilateral bond inflow measure can affect the cross-country correlation of bond flows under two different hypotheses. The correlation can decline under the substitution hypothesis: when an economy introduces a measure to tighten bond inflows, foreign investors can move their funds from the economy to the bond market of another economy in the region.[4] Also, when a mutual fund manager has a regional investment mandate, if the total amount of funds managed by the fund manager does not change after a unilateral measure is taken by an economy to reduce bond inflows, the fund manager may switch funds invested in the economy to other markets in the region.

By contrast, the correlation can increase when foreign investors in mutual funds simultaneous enter or exit bond markets in the region. This can occur under the signalling hypothesis: after one country takes a CFM, foreign investors may expect (ie take it as a signal) that similar measures will be taken by other countries in the region (Forbes et al (2012)).[5] For instance, when a country imposes restrictions in

[4] It is also possible that a unilateral CFM taken by a country has no impact on bond flows to other countries, ie results in zero correlation. Since the average value of the pairwise correlation of bond flows among the 12 Asia-Pacific economies ranges between 0.35 and 0.98 as shown in Tables 3 and 4, the policy impact of zero correlation is likely to decrease the correlation of bond flows, and thus generate a similar outcome under the substitution hypothesis.

[5] Among 30 separate events of bond inflow measures documented in Table 2, four pairs of loosening measures were taken by two different countries within three weeks from each other for each pair. Also, two pairs of tightening measures and six pairs of loosening measures were taken by two different countries within one month to four months from each other for each pair. In total, 25 out of 30 separate actions were taken adjacent to at least one measure by another country in the same direction, which confirms that a CFM taken by a country tends to precede a CFM by another country within a few months.

response to a shock that is common to other countries, foreign investors may be led to expect other countries to follow. A common shock can be a surge in global liquidity or an increase in the risk appetite of global investors reflected in the VIX. By contrast, a restriction introduced in response to a country-specific external shock, such as changes in the price of commodities exported by a country, would not be expected to get transmitted to countries that don't export them.

To the extent that bond inflows to a country influence foreign investors' return on investing in domestic bonds issued by the country, a CFM affecting bond flow correlations will also affect bond return correlations.

This paper aims to assess the impact of CFMs on bond flow and return correlations and see which hypothesis is supported by empirical evidence. In particular, we try to answer the following two questions. First, what fundamental factors explain the correlations of bond flows and returns in the Asia-Pacific region over 2004−2013? Second, after controlling for these factors, what is the impact of bond inflow measures on the correlations of bond flows and returns across Asia-Pacific economies? As far as we are aware, this paper is the first to systematically consider the impact of CFMs on the correlations of bond flows and returns in Asia and the Pacific.

To perform the empirical analysis, we construct a new comprehensive dataset on the usage of CFMs on different types of capital flow for 12 Asia-Pacific economies from 2004 to 2013: bond inflows, equity inflows, banking inflows, direct investment inflows, other inflows (eg trade flows and remittances) and all types of outflow. We also differentiate between policy measures tightening (ie reducing) flows and those loosening (ie increasing) flows. For data on bond flows and returns, we use weekly EPFR bond fund flows into 12 Asia-Pacific economies and also daily JPMorgan Government Bond Index returns in US dollar terms. To calculate the time-varying correlation of bond flows and returns, we employ a Dynamic Conditional Correlation (DCC) Generalised Autoregressive Conditional Heteroscedasticity (GARCH) model. This model is one of multivariate GARCH models, and has the advantage of parsimonious modelling of correlations using univariate GARCH models. Finally, in order to check the robustness of empirical results, we conduct two different empirical analyses, panel regression and event study.

The empirical results for bond flow correlations obtained from panel regression analysis show that a country's policy action of loosening (ie increasing) bond inflows increases bond flow correlation of the country with other countries. This result supports the signalling hypothesis. By contrast, we find no significant impact of tightening measures. We also find that tighter global liquidity (proxied by the US Libor−OIS spread) and higher risk aversion of global investors (proxied by the VIX) increase bond flow correlations across Asia-Pacific economies, and that a positive surprise in economic data releases in the Asia-Pacific region (proxied by Citi Economic Surprise Index for Asia-Pacific) also increases bond flow correlations.

We obtain generally less conclusive results for bond return correlations. In particular, unilateral policy actions of tightening or loosening bond inflows tend to decrease the correlation of bond returns in hedged US dollar terms (HD) instantaneously and also in the long run, but increase the correlation of bond returns in unhedged US dollar terms (UD) in the long run. The difference in the policy impact on the HD and UD bond return correlations is likely due to exchange rate effects: UD returns contain both local currency bond returns and exchange rate returns, while HD returns in principle contain local currency bond returns only.

Finally, the results from event study gauging the impact of bond inflow measures on the correlations of bond flows and returns generally confirm the findings from panel regressions.

The plan of the paper is as follows. Section 2 provides literature review. Section 3 describes the data used in the analysis, focusing on the key characteristics of the policy action data set. Section 4 describes the econometric methods. Section 5 reports the empirical results involving bond flows, and section 6 provides those involving bond returns. Section 7 concludes.

## 2 Literature review

This paper is related to studies investigating the determinants of bond flows and bond yields/returns and also policy effects on bond flows. Most papers in this literature try to answer the following two questions: (1) what factors explain bond flows (ie foreign investment in local currency bonds) into an economy and also foreign investors' returns?; (2) how effective are capital flow measures (CFMs) in dealing with capital inflows in their own jurisdictions?

This paper is closely related to the rapidly expanding literature on the determinant of capital flows to emerging market economies and the effects of CFMs. Habermeier et al (2011) consider various country-specific and global factors affecting capital flows such as (i) interest rates and business cycles in the respective country and in the United States, (ii) forward premium, (iii) International Country Risk Guide (ICRG) index, (iv) the VIX and (v) current account balances. Gochoco-Bautista et al (2012) use the following variables when they consider the effects of capital controls on the growth of capital flows per capita: (i) the growth of real GDP per capita, (ii) the real interest rate differential between the respective country and the United States, (iii) the ratio of stock market capitalisation to GDP, (iv) the ratio of domestic credit to the private sector to GDP, (v) the ratio of merchandise trade to GDP, and (vi) a good governance indicator. We employ the VIX and a proxy for global liquidity (US Libor−OIS spread) as global factors, Citigroup Economic Surprise Index for Asia-Pacific as a regional factor, and interest rate differential and expected currency appreciation as local factors affecting bond flows and bond returns.

Many papers have discussed how an individual country, considered in isolation, should respond to a surge of capital inflows and how effective those policy actions were. For example, Edison and Reinhart (2001) use a GARCH model to examine whether there was an observed change in interest rate volatility during the capital controls episodes in Brazil in 1999, in Malaysia in 1998 and in Thailand in 1997. More recent papers provide mixed evidence on how effective capital flow measures are in addressing capital flows (banking and portfolio) and asset returns (bond, stock and real estate). For example, Forbes et al (2012) find that an increase in Brazil's tax on foreign investment in bonds caused investors to significantly decrease their portfolio allocations to Brazil in both bonds and equities. Forbes et al (2014) show that certain types of CFMs, especially FX-related prudential measures, can significantly reduce bank leverage, inflation expectations, bank credit growth and exposure to portfolio liabilities. They also find that most capital flow measures do not significantly affect exchange rates, capital flows, interest rate differentials, inflation, equity indices and different volatilities. Ahmed and Zlate (2013) show that

capital control measures introduced in recent years by emerging market economies (EMEs) have discouraged both total and portfolio inflows. By contrast, Zhang and Zoli (2014) find that capital flow measures were not effective in reducing the ratio of portfolio flows to GDP for Asian economies.

More recently, a small number of papers started to look specifically into the cross-border or multilateral impact of capital flow measures. Ostry et al (2012) summarise theoretical papers on prudential capital control policies that justify the benefit of capital controls either because they can promote financial stability or because they can improve macroeconomic adjustment in economics with nominal rigidities and suboptimal monetary policy. In both classes of papers, there is an externality caused by capital flows and asset price changes, which can be corrected by prudential capital flow measures such as Pigouvian taxes. Forbes et al (2012) show that when Brazil increased its capital controls, investors increased their portfolio allocations to other countries that are closely linked to growth in China. They also find that increased capital controls in Brazil caused investors to reduce their portfolio allocations to countries that were perceived to have a higher risk of following Brazil's example and implementing new controls. These results suggest that capital controls affect investors through a signalling effect (ie changes in investor expectations about government policy), and not just through the immediate, direct cost.

We focus on the impact of bond inflow measures (both tightening and loosening actions) on bond flow correlations. We also investigate the policy impact on the correlation of bond returns across markets. We conduct both conventional panel regressions and event study analysis following MacKinley (1997) and Kuttner and Shim (2013). Finally, in terms of measuring time-varying correlations, this paper uses multivariate GARCH modelling, in particular, DCC GARCH methods. For example, Cappiello et al (2006) use DCC GARCH modelling to calculate time-varying correlations of cross-country equity and bond returns.

# 3 Data

## 3.1 Data on bond flows and returns

Regarding bond flows to Asia-Pacific economies, we have access to bond flow data of different frequencies from different sources. On the weekly frequency, we obtained portfolio flows data compiled by EPFR Global, which provides data on country-level flows in mutual funds and exchange-traded funds (EFTs) investing in bonds and equities of advanced economies and EMEs. On the monthly frequency, Balance of Payment (BOP) data are available only for Japan, Korea, the Philippines and Thailand. Finally, on the quarterly frequency, BOP data are available from the IMF and CEIC for all 12 Asian-Pacific economies.[6] In the empirical analysis, we use weekly bond flow data from EPFR Global from the week of 28 September 2005 to the week of 17 October 2013.

[6] It should be noted that no bond flow data in the BOP convention are available for India, while no breakdown of bond and equity flows is available for Singapore.

For bond returns, we use daily data from JPMorgan Government Bond Indices' (GBI) country components. In particular, JPMorgan GBI Broad Index provides daily total return series for Australia, Hong Kong SAR, Japan, Korea, New Zealand and Singapore, and JPMorgan GBI-EM Broad Index provides the daily series for China, India, Indonesia, Malaysia, the Philippines and Thailand. Each index provides three types of returns: in hedged US dollar (HD) terms, in unhedged US dollar (UD) terms and in unhedged local currency (UL) terms.[7] GBI UD series for the Asia-Pacific economies are available from 5 January 2004, GBI UL series from 2 February 2004, and GBI HD series from 3 May 2004.

## 3.2 Factors affecting bond flows and returns

Regarding the potential drivers of bond flows and returns, previous studies suggest that both global and local factors matter (see Taylor and Sarno (1997), Ghosh et al (2012) and Fratzscher (2012)). In this paper, we also consider regional factors.

Global factors are push factors explaining the incidence of a surge or withdrawal of capital flows to EMEs. For example, global liquidity expansion measured by US Libor−OIS spread or the total M2 growth in the United States, the Eurozone, Japan and the United Kingdom, and investors' perception of global risk measured, for instance, by the VIX are frequently used as global factors. We consider the level and change in the VIX as well as the 3-month US Libor−OIS spread as global factors affecting the bond fund flows and bond returns.

Also, regional factors can play some role, which can be either pull or push factors explaining the magnitude of surges and withdrawals. Factors such as favourable regional fundamentals and deep regional financial markets work as pull factors, whereas regional liquidity expansion and low interest rates in the region work as push factors for bond flows into each economy in the region. These regional factors affect all economies in the region, so they have econometrically similar effects to global factors. In this paper, we use Citi Economic Surprise Index for Asia-Pacific, which is defined as a weighted historical standard deviation of data surprises. A positive reading of the index implies that economic data releases have on balance been better than the median value of market forecasts.

Finally, local (or domestic) factors work as pull factors on explaining capital flows to individual EMEs. Macroeconomic indicators (such as GDP growth, inflation, current account, changes in exchange rates and interest rate differential), expectation of currency appreciation (such as forward rates and option implied volatility), structural variables (such as country risk, financial policies, financial linkage, degree of capital account liberalisation and foreign investor share in the local currency bond holding) and institutional quality (such as political stability and the quality of regulation) are potentially important local factors explaining bond flows to EMEs. In this paper, we consider expected currency appreciation and interest rate differential. Expected currency appreciation is calculated as the difference between 3-month forward rate and the spot rate as a percentage of the

[7] The total return for an individual bond is between date $t$-1 and $t$ is calculated by $\left(\frac{P_t+A_t}{P_{t-1}+A_{t-1}}\right)-1$, where $P_t$ is the local market closing clean price of a bond on day $t$ and $A_t$ is accrued interest for a bond on day $t$. For details on how to calculate the total returns for an individual bond and for a portfolio of bonds as well as hedge indices, see JPMorgan Chase (2009).

spot rate against the US dollar. Thus, a positive (negative) number indicates expected appreciation (depreciation) in local currency. Interest rate differential is calculated as the difference between 3-month interbank rate of an Asia-Pacific economy and the 3-month USD Libor.

## 3.3 Capital flow measures in Asia and the Pacific

We constructed a database on capital flow measures introduced by 12 Asia-Pacific economies from 2004 to 2013. In particular, we considered measures directly targeting bond flows as well as policy actions on other types capital flows. We classified them by direction (tightening inflows, loosening inflows, loosening outflows, tightening outflows), by target flow (bond inflows, equity inflows, bank inflows, real estate inflows, direct investment inflows, other inflows (such as remittances and export flows) and outflows), and by target group (non-residents or both residents and non-residents).[8] The data sources for policy actions include IMF Annual Reports on Exchange Arrangements and Exchange Restrictions (AREAERs), national sources, recent publications of the BIS and the IMF, and other research papers including Baba and Shim (2011), Balakrishnan et al (2012), Chantapacdepong (2013), Habermeier et al (2011), Huh and An (2012), McCauley (2008), Pradhan et al (2011) and Yiu (2011).

Capital flow measures in Asia and the Pacific — Table 1

| Type | AU | CN | HK | IN | ID | JP | KR | MY | NZ | PH | SG | TH | Total | Tighten | Loosen |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bond inflow measures | - | 9 | - | 12 | 3 | - | 4 | 3 | - | 1 | - | 4 | 36 | 7 | 29 |
| Equity inflow measures | - | 8 | - | 5 | - | - | 3 | - | - | - | - | 1 | 17 | - | 17 |
| Banking inflow (prudential) measures | - | 18 | 1 | 33 | 7 | - | 28 | 8 | - | 9 | - | 12 | 116 | 59 | 57 |
| Real estate inflow measures | - | 4 | 3 | 3 | - | - | 1 | 4 | - | - | 2 | - | 17 | 11 | 6 |
| Direct inflow measures | - | 6 | - | 4 | - | - | 1 | 1 | - | - | - | 1 | 13 | 3 | 10 |
| Other inflow measures | - | 7 | - | 12 | 2 | - | 2 | 10 | - | 3 | - | 4 | 40 | 17 | 23 |
| Outflow measures | - | 16 | - | 34 | 1 | - | 17 | 22 | - | 19 | - | 16 | 125 | 4 | 121 |
| Total | - | 68 | 4 | 103 | 13 | - | 56 | 48 | - | 32 | 2 | 38 | 364 | 101 | 263 |

AU = Australia; CN = China; HK = Hong Kong SAR; IN = India; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; NZ = New Zealand; PH = the Philippines; SG = Singapore; TH = Thailand.

Sources: IMF AREAER; national sources; authors' calculation.

We have documented 364 distinct CFMs taken by nine Asian economies over 2004−2013 (or latest available). Table 1 summarises the CFMs we have collected by the nature of flows, country and direction (that is, tightening or loosening).

[8] We can also classify CFMs into the following three categories: (1) capital controls (targeting non-residents only) in the form of tax, administrative, prudential measures, (2) foreign currency-related prudential measures including reserve requirements on FX liabilities, and (3) fiscal and prudential measures on specific asset market investors (non-discriminatory).

Appendix 1 provides tables describing CFMs taken by each economy. Among various types of capital flow measure, we use bond inflow measures in this paper. Table 2 provides the breakdown of bond inflow measures by direction and economy. It also shows the number of separate events defined by the measures, which will be used in event study analysis.

Bond inflow measures in Asia

Table 2

| | Tightening | Loosening | Total |
|---|---|---|---|
| China | 0 | 9 (8) | 9 (8) |
| India | 0 | 12 (9) | 12 (9) |
| Indonesia | 3 (2) | 0 | 3 (2) |
| Korea | 1 | 3 | 4 |
| Malaysia | 0 | 3 (2) | 3 (2) |
| Philippines | 1 | 0 | 1 |
| Thailand | 2 | 2 | 4 |
| Total number of measures | 7 | 29 | 36 |
| Total number of measure dates | 6 | 26 | 32 |
| Total number of separate events | 6 | 24 | 30 |

The values in parentheses represent the number of separate events, that is, policy actions after excluding multiple actions taken in one day or adjacent policy actions.

Broadly speaking, there are four types of bond inflow measures: (1) quantitative limits such as a quota for foreign investment in specific asset classes; (2) qualitative changes such as allowing a new type of financial product or relaxing conditions imposed on foreign investment; (3) taxes, fees or additional capital requirements on assets purchased by foreign investors, and (4) minimum holding periods. The first and second types of measure are likely to increase or decrease the amount of assets purchased by foreigners, and thus indirectly lower or raise bond prices. The third and fourth types of measure, by contrast, directly affects costs involved in purchasing assets and thus indirectly affect foreign investments in these assets.

# 4 Empirical approaches

We first use the DCC GARCH model to calculate time-varying pairwise correlations of bond flows and bond returns.[9] The cross-sectional patterns and movements over time of the correlations are examined to gauge the degree of regional financial linkages and risk sharing. Then, we run traditional panel regression on the correlation pairs to gauge the impact of specific types of capital flow measure, after controlling for important global, regional and local factors. Also, we conduct event study analysis by setting the event window immediately before and after the

[9] Appendix 2 provides a detailed description of the DCC GARCH model we use in this paper.

implementation date of a CFM, and the estimation window defined before and after the event window.

We can include CFM variables in the regression either as a dummy for each individual policy action, or as the accumulation of past changes. Using a dummy (1, 0, −1) for a policy change (tightening, no change and loosening, respectively) in the regression implies that the policy action will have only a transitory effect on the dependent variable. By contrast, if we use the accumulation of past policy changes as the policy variable, the dependent variable will be permanently affected by the tightening of the policy variable in the absence of a subsequent reversal. We consider both types of policy variable in our regression specifications.

We first run panel regressions on all 66 correlation pairs of bond flows, and also on the correlation pairs involving each of 12 economies based on the following model:

$$Correlation_{AB,t} = \alpha_{AB} + \beta_1 G_{1,t-1} + \beta_2 G_{2,t-1} + \beta_3 R_{1,t-1} + \beta_4 L_{A1,t-1} + \beta_5 L_{A2,t-1} + \beta_6 L_{B1,t-1} + \beta_7 L_{B2,t-1} + \gamma_A P_{A,t-1} + \gamma_B P_{B,t-1} + \gamma_O \left( \sum_{i=1}^{I} P_{i,t-1} \right) + \varepsilon_{AB,t}$$

where $G_{1,t-1}$ and $G_{2,t-1}$ are global factors lagged by one period, $R_{1,t-1}$ are a regional factor lagged by one period, $L_{A1,t-1}$ and $L_{A2,t-1}$ are local factors of country A in a correlation pair lagged by one period, $L_{B1,t-1}$ and $L_{B2,t-1}$ are local factors of country B in a correlation pair lagged by one period, and $P_{A,t-1}$, $P_{B,t-1}$ and $\left( \sum_{i=1}^{I} P_{i,t-1} \right)$ are bond inflow measures taken by country A, country B and the other 10 countries in the region, respectively, all lagged by one period. We consider a few specifications based on this baseline model. For bond return correlations, we run the same panel regressions on all 55 (or 45) correlation pairs of bond returns, and also on the correlation pairs involving each of 11 (or 10) economies.[10]

Note that in the correlation regressions, we do not use one dummy for both tightening and loosening actions by assigning +1 for tightening actions and −1 for loosening actions, but use two separate dummies, one for tightening actions and the other for loosening actions. This is because a unilateral tightening action does not necessarily affect bond flows or returns in the opposite direction of a unilateral loosening action. Rather it is possible that tightening and loosening actions by an economy in the correlation pair with no action by the other economy in the pair have similar effects on the correlation.

In order to see more clearly what is the impact of policy actions on each economy's bond flows and bond returns, we also run panel regression on bond flows into a country and bond returns for a country as well as country-by-country regressions based on the following model:

[10] Due to the data availability issue, we cannot include in our analysis GBI returns in local currency and unhedged US dollars for the Philippines, and GBI returns in hedged US dollars for Malaysia and the Philippines.

$$Bond\ \ flow\ (or\ \ bond\ \ return)_{A,t} = \alpha_A + \beta_1 G_{1,t-1} + \beta_2 G_{2,t-1} + \beta_3 R_{1,t-1} + \beta_4 L_{A1,t-1} + \beta_5 L_{A2,t-1} + \gamma_A P_{A,t-1} + \gamma_O \left( \sum_{j=1}^{J} P_{j,t-1} \right) + \varepsilon_{A,t}$$

where $G_{1,t-1}$ and $G_{2,t-1}$ are global factors, $R_{1,t-1}$ a regional factor, $L_{A1,t-1}$ and $L_{A2,t-1}$ local factors of country A, and $P_{A,t-1}$ and $\left( \sum_{j=1}^{J} P_{j,t-1} \right)$ bond inflow measures taken by country A and the other 11 countries in the region, respectively. Note that now in the bond flow or return regressions focusing on one country, we can use one dummy for both tightening and loosening actions by assigning +1 for tightening actions and −1 for loosening actions. This is because we expect a country's own tightening action and loosening action will affect bond inflows and bond returns in opposite directions. We again consider a few different specifications based on this baseline model.

For event study, we first identify discrete events (policy actions) and partition time series into two mutually exclusive subsamples: the estimation windows where a forecasting model is fit and the event window around the time a bond inflow measure was taken. A policy measure's effects are calculated by subtracting forecast values from actual values during the event window and summing up the differences over the period of event window.

In particular, setting the week a measure was taken as the event week $t$, we consider the following two cases for event study:

Case 1: event window [$t$-3, $t$+2], estimation windows [$t_0$, t-30] and [t+30, $t_T$]; and

Case 2: event window [$t$-3, $t$+2], estimation windows [$t_0$, t-4] and [t+4, $t_T$],

where $t_0$ is the beginning of the sample period and $t_T$ the end of the sample period.

We use the following model to estimate the normal relationship between the correlation of bond flows (or bond returns) and global/regional/local factors over the estimation window:

$$Correlation_{AB,t} = \alpha_{AB} + \beta_1 G_{1,t-1} + \beta_2 G_{2,t-1} + \beta_3 R_{1,t-1} + \beta_4 L_{A1,t-1} + \beta_5 L_{A2,t-1} + \beta_6 L_{B1,t-1} + \beta_7 L_{B2,t-1} + \varepsilon_{AB,t}.$$

We also investigate the impact of bond inflow measures on bond flows into each country and on bond returns for each country in the context of event study, using the following model for estimation over the estimation windows:

$$Bond\ \ flow\ (or\ \ bond\ \ return)_{A,t} = \alpha_A + \beta_1 G_{1,t-1} + \beta_2 G_{2,t-1} + \beta_3 R_{1,t-1} + \beta_4 L_{A1,t-1} + \beta_5 L_{A2,t-1} + \varepsilon_{A,t}.$$

# 5 Empirical results on bond flows

In this section, we first provide stylised facts on bond flow correlations in the cross-sectional dimension. The next subsection reports the results of traditional panel regressions on bond flow correlations. The last subsection presents the results of event study on bond flow correlations conducted for tightening and loosening bond flow measures separately.

## 5.1 Bond flow correlations: cross-sectional dimension

Before we investigate the time variation of conditional correlations, we look into the cross-sectional pattern of correlations across different pairs of economies in the region. In particular, we calculate the time-varying conditional correlation of bond flows in US dollars for each pair of countries by using a DCC GARCH model, and then calculate the average correlation over the whole sample period for each pair. Table 3 provides the average correlation for each pair of economies. Overall, the correlation of cross-market bond flows (mutual fund flows recorded by EPFR Global) is relatively high, ranging from 0.35 to 0.96, with the median 0.715. The highest correlation of 0.96 is between Indonesia and Malaysia, while the lowest correlation of 0.35 is between Hong Kong SAR and New Zealand.

Average correlations of bond flows in level, September 2005 – October 2013 Table 3

| | AU | NZ | JP | HK | SG | CN | IN | KR | ID | MY | PH | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AU** | 1 | | | | | | | | | | | |
| **NZ** | 0.61 | 1 | | | | | | | | | | |
| **JP** | 0.73 | 0.68 | 1 | | | | | | | | | |
| **HK** | 0.35 | 0.37 | 0.46 | 1 | | | | | | | | |
| **SG** | 0.48 | 0.51 | 0.60 | 0.83 | 1 | | | | | | | |
| **CN** | 0.35 | 0.39 | 0.44 | 0.71 | 0.81 | 1 | | | | | | |
| **IN** | 0.47 | 0.47 | 0.53 | 0.76 | 0.82 | 0.80 | 1 | | | | | |
| **KR** | 0.67 | 0.64 | 0.78 | 0.72 | 0.85 | 0.73 | 0.81 | 1 | | | | |
| **ID** | 0.53 | 0.53 | 0.63 | 0.66 | 0.75 | 0.79 | 0.87 | 0.84 | 1 | | | |
| **MY** | 0.55 | 0.54 | 0.64 | 0.69 | 0.79 | 0.78 | 0.84 | 0.86 | 0.96 | 1 | | |
| **PH** | 0.44 | 0.43 | 0.56 | 0.59 | 0.70 | 0.75 | 0.79 | 0.73 | 0.93 | 0.89 | 1 | |
| **TH** | 0.45 | 0.47 | 0.56 | 0.75 | 0.85 | 0.82 | 0.86 | 0.81 | 0.89 | 0.93 | 0.84 | 1 |

The weekly conditional time-varying correlation of bond flows for a pair of economies is calculated by a DCC GARCH model, and then the average value over the sample period is reported in this table.

Sources: EPFR; authors' calculation.

Fund flows to Australian, Japanese and New Zealand bonds exhibit the lowest correlations with fund flows investing in bonds of other Asia-Pacific markets. This is likely to be associated with completely liberalised capital accounts of Australia, Japan and New Zealand. Fund flows investing in Hong Kong and Singaporean bonds are relatively weakly correlated with flows in other emerging Asian bonds. This may be related to the fact that Hong Kong SAR has open capital account and an exchange rate peg and that Singapore also has open capital account and an exchange rate target.

Fund flows investing in China and India are relatively weakly correlated with fund flows investing in emerging Asian bonds. This may be explained by the fact that China and India have relatively high levels of capital controls.

Finally, fund flows investing in Korean, Indonesian, Malaysian, Philippine and Thai bonds are relatively highly correlated with fund flows investing in emerging

Asian bonds. Correlations among Indonesia, Malaysia, the Philippines and Thailand are especially high, ranging from 0.84 to 0.98.

We find similar patterns for the correlations of bond flows measured as a percentage of the value of bonds held by relevant funds, as we show in Table 4. The difference is slightly higher levels of correlations among Australia, Japan, Korea and New Zealand in Table 4 than those in Table 3.

Average correlations of bond flows in per cent, September 2005 – October 2013 Table 4

| | AU | NZ | JP | HK | SG | CN | IN | KR | ID | MY | PH | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AU** | 1 | | | | | | | | | | | |
| **NZ** | 0.82 | 1 | | | | | | | | | | |
| **JP** | 0.85 | 0.90 | 1 | | | | | | | | | |
| **HK** | 0.36 | 0.35 | 0.40 | 1 | | | | | | | | |
| **SG** | 0.56 | 0.55 | 0.60 | 0.81 | 1 | | | | | | | |
| **CN** | 0.45 | 0.42 | 0.45 | 0.74 | 0.85 | 1 | | | | | | |
| **IN** | 0.48 | 0.44 | 0.48 | 0.76 | 0.84 | 0.85 | 1 | | | | | |
| **KR** | 0.72 | 0.71 | 0.76 | 0.68 | 0.84 | 0.72 | 0.79 | 1 | | | | |
| **ID** | 0.57 | 0.54 | 0.58 | 0.66 | 0.75 | 0.80 | 0.88 | 0.82 | 1 | | | |
| **MY** | 0.62 | 0.58 | 0.62 | 0.70 | 0.79 | 0.80 | 0.86 | 0.87 | 0.97 | 1 | | |
| **PH** | 0.51 | 0.48 | 0.51 | 0.65 | 0.74 | 0.82 | 0.88 | 0.76 | 0.98 | 0.92 | 1 | |
| **TH** | 0.50 | 0.45 | 0.50 | 0.79 | 0.87 | 0.84 | 0.89 | 0.84 | 0.88 | 0.92 | 0.86 | 1 |

The weekly conditional time-varying correlation of bond flow percent shares for a pair of economies is calculated by a DCC GARCH model, and then the average value over the sample period is reported in this table.

Sources: EPFR; authors' calculation.

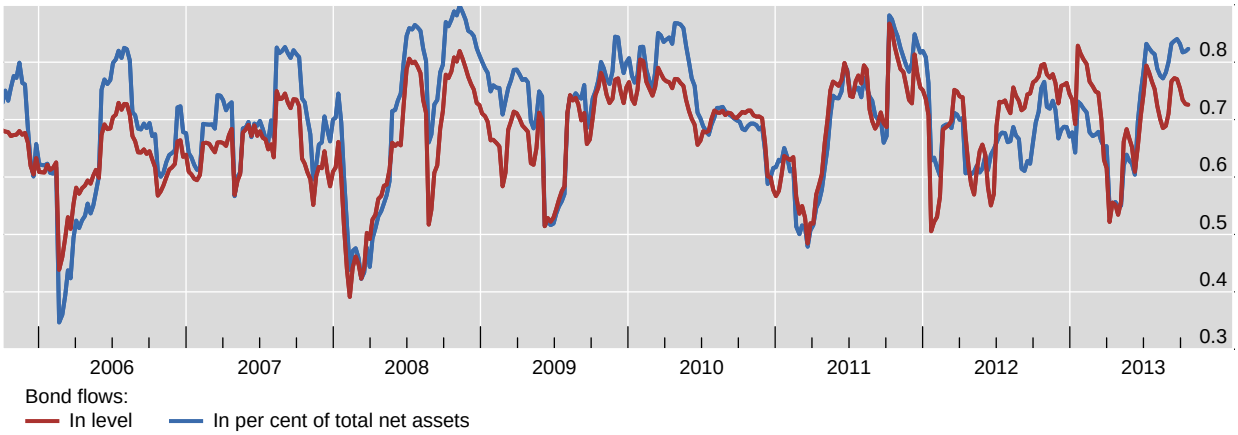
## 5.2 Panel regressions on bond flows

Before we conduct empirical analysis, we consider the time series patterns of conditional correlations for the region as a whole and for each economy. When we calculate bond flow correlations using EPFR data, we can measure bond flows in two different ways: (1) the US dollar amount of bond fund flows to each economy, and (2) the percent share of bond fund flows to an economy out of the total value of bonds issued by the economy and held by relevant funds. Considering that the EPFR database frequently adds new funds in the universe of mutual funds from which their bond flow amount is reported, we use the percent share of flows for empirical analyses. Graph 1 shows that the two series of the regional average correlation based on the two types of bond flow have generally similar dynamics.

The conditional correlation tends to increase sharply during major market turbulences (Graph 1). In particular, the correlation reached a peak just after the Lehman bankruptcy in September 2008, and again reached a high level during the Eurozone debt crisis. We also observe a sharp rise in the correlation from early May 2013 when the market was surprised by the indication of the US Federal Reserve on possible actions to withdraw or reduce the size of quantitative easing policy.

## Conditional correlation of bond flows in Asia and the Pacific

Graph 1




For each pair among 12 Asia-Pacific economies (Australia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore and Thailand), the conditional time-varying correlation of weekly bond flows into mutual funds is calculated by a DCC GARCH model, and then the average value over all 66 pairs of correlations is calculated for each week.

Sources: EPFR; authors' calculations.

Using the time series of bond flow correlations calculated by DCC GARCH model, we first run a panel regression of bond flow correlations for all pairs involving 12 Asia-Pacific economies on global, regional and local factors as well as seven tightening bond flow measures and 29 loosening measures taken by nine Asian economies over the past decade. The regression results provided in the third and fourth columns of Table 5 show that for global factors, tighter global liquidity (proxied by higher US Libor−OIS spread) and a higher level of risk aversion (proxied by the level of the VIX) significantly increase bond flow correlations in the region.[11]

We also find the regional and local factors statistically significant. In particular, we find that positive economic surprises in the region increase bond flow correlations. We also find that two local factors, expected currency appreciation and interest rate differential, have significantly positive impacts on the bond flow correlation. By symmetry in the calculation of correlations (ie double appearances of any country pairs in the panel regression), a local factor (or policy variable) for country A and the same factor for country B have the same coefficient.

Regarding the impact of bond inflow measures on bond flow correlation, we find in model specifications (1) and (2) that both the instantaneous and cumulative impact of policy actions of loosening bond inflows by any of the two economies in the correlation pairs significantly increase bond flow correlations. By contrast, tightening actions are not significant.[12] This result implies that when an economy introduces a policy action to increase bond inflows into its own market, other

[11] Greater increases in risk aversion (proxied by the percentage change in the VIX) significantly decrease the correlations, but the size of its negative coefficient is less than 10 per cent of the size of the positive coefficient on the level of the VIX.

[12] We view that the insignificance of tightening actions is partly due to the small number of tightening actions (six cases of policy changes) taken by four economies during the sample period.

Panel regression on the correlation of the percent share of bond flows and the correlation of bond returns for economies A and B

Table 5

| Dependent Variables / Independent Variables | | 1. Correlation of the percent share of bond flows | | 2. Correlation of bond returns (GBI HD) | | 3. Correlation of bond returns (GBI UD) | |
|---|---|---|---|---|---|---|---|
| | | Model 1 | Model 2 | Model 1 | Model 2 | Model 1 | Model 2 |
| **Global factor** | Libor OIS spread (–1) | 0.732*** (0.273) | 0.780*** (0.273) | –0.097*** (0.031) | 0.012 (0.031) | –2.783*** (0.076) | –3.224*** (0.075) |
| | VIX (–1) | 0.345*** (0.012) | 0.343*** (0.012) | –0.021*** (0.001) | –0.016*** (0.001) | –0.075*** (0.003) | –0.012*** (0.003) |
| | VIX (% change) (–1) | –0.025*** (0.006) | –0.025*** (0.006) | 0.006*** (0.001) | 0.005*** (0.001) | 0.008*** (0.003) | 0.001 (0.003) |
| **Regional factor** | Asia Economic Surprise (–1) | 0.022*** (0.002) | 0.023*** (0.002) | –0.001*** (0.000) | 0.003*** (0.000) | –0.005*** (0.001) | –0.002*** (0.001) |
| **Local factor** | A's expected appreciation(–1) | 0.397*** (0.079) | 0.407*** (0.079) | –0.033*** (0.008) | –0.029*** (0.008) | –0.001 (0.019) | 0.076*** (0.019) |
| | A's interest differential(–1) | 0.270*** (0.046) | 0.279*** (0.046) | 0.107*** (0.005) | –0.002 (0.006) | 0.012 (0.012) | –0.203*** (0.015) |
| | B's expected appreciation(–1) | 0.397*** (0.079) | 0.407*** (0.079) | –0.033*** (0.008) | –0.029*** (0.008) | –0.001 (0.019) | 0.076*** (0.019) |
| | B's interest differential(–1) | 0.270*** (0.046) | 0.279*** (0.046) | 0.107*** (0.005) | –0.002 (0.006) | 0.012 (0.012) | –0.203*** (0.015) |
| **Instantaneous impact of CFMs** | A's tightening measure(–1) | 0.802 (2.032) | | –1.837*** (0.402) | | 1.033 (1.029) | |
| | A's loosening measure(–1) | 2.810*** (1.025) | | –0.267 (0.208) | | 0.456 (0.500) | |
| | B's tightening measure(–1) | 0.802 (2.032) | | –1.837*** (0.402) | | 1.033 (1.029) | |
| | B's loosening measure(–1) | 2.810*** (1.025) | | –0.267 (0.208) | | 0.456 (0.500) | |
| | Others' tightening measure(–1) | –1.362** (0.649) | | 0.430*** (0.132) | | –0.351 (0.320) | |
| | Others' loosening measure(–1) | 2.234*** (0.319) | | –0.266*** (0.064) | | –0.684*** (0.158) | |
| **Long term impact of CFMs** | A's cumulative tightening measure(–1) | | 1.112 (1.440) | | –0.046*** (0.017) | | 0.766*** (0.043) |
| | A's cumulative loosening measure(–1) | | 2.715*** (0.717) | | –0.034*** (0.006) | | 0.642*** (0.015) |
| | B's cumulative tightening measure(–1) | | 1.112 (1.440) | | –0.046*** (0.017) | | 0.766*** (0.043) |
| | B's cumulative loosening measure(–1) | | 2.715*** (0.717) | | –0.034*** (0.006) | | 0.642*** (0.015) |
| | Others' cumulative tightening measure(–1) | | –1.264*** (0.462) | | 0.169*** (0.008) | | 0.499*** (0.019) |
| | Others' cumulative loosening measure(–1) | | 1.952*** (0.220) | | 0.044*** (0.002) | | –0.315*** (0.005) |
| | Constant | 61.117*** (0.212) | 61.030*** (0.213) | 18.144*** (0.023) | 17.627*** (0.024) | 28.991*** (0.055) | 29.116*** (0.057) |
| | Observations | 55572 | 55572 | 205110 | 205110 | 255,690 | 255,690 |
| | Adjusted $R^2$ | 0.047 | 0.047 | 0.011 | 0.032 | 0.033 | 0.065 |

Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

economies in the region also experience increasing bond inflows, which supports the signalling hypothesis. Also, we find that when one country not included in the correlation pairs tightens (or loosens) bond inflows, the bond flow correlations of other countries decrease (or increase). It should be noted that the adjusted $R^2$ of the estimation provided in the third and fourth columns of Table 5 is low at the level of around 0.05.

We can also conduct the panel regressions on correlation involving each economy, that is, only consider 11 correlation pairs involving the same country in every pair and the other 11 countries in the region. Appendix tables 1 and 2 in Appendix 3 show the results under three different model specifications of panel regression conducted for bond flow correlation of each economy with the others in the region. These tables overall show that the coefficients on global and regional factors generally have the same sign and statistical significance across different economies. One exemption is the US Libor−OIS spread, which has negative effects on the correlations involving China, Indonesia, India, the Philippines and Thailand, but has positive effects on the correlations involving Hong Kong SAR, Japan and New Zealand.

Considering the strong heterogeneity of economies in the sample (for example, advanced markets such as Australia, Japan and New Zealand versus emerging markets such as Indonesia, the Philippines and Thailand), the coefficients for local variables and policy variables can vary widely across countries. Still, it is interesting to find that the coefficient on the variables for other economies' loosening measures (both instantaneous and cumulative) have the same positive sign for all economies and the majority of them are statistically significant and of a comparable size between 2 and 4.

In addition to the panel regressions on bond flow correlations, we also conduct panel regression analysis on bond flows to a country, so that we can see the impact of a country's measure on its own bond flows and also the impact of other countries' bond flow measures. The panel regression results for all countries are summarised in Table 6. Tighter global liquidity and a greater increase in VIX significantly reduce the percent share of bond flows to each country[13], while the regional factor (Citi Economic Surprise Index for Asia-Pacific) and two local factors (expected currency appreciation and interest rate differential) have significantly positive effects on bond flows.

Regarding the impact of bond inflow measures on bond flows to a country, we find in model specifications (1) to (5) of Table 6 that a country's policy action of tightening (or loosening) bond flows has an immediate impact of reducing (or increasing) bond inflows to the country (specification (1)), and that this is driven by the stronger impact of loosening actions (specification (4)). The stronger impact of loosening measures is consistent with what we find from the panel regression on the correlations of bond flows.

[13] Higher levels of risk aversion (proxied by the level of the VIX) significantly increase the correlations, but the size of its positive coefficient is less than a half of the size of the negative coefficient on the percentage change in the VIX.

Panel regressions on the percent share of bond flows to an economy (full sample) Table 6

| Variables | | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.773*** | (0.012) | -0.772*** | (0.011) | -0.767*** | (0.011) | -0.771*** | (0.011) | -0.769*** | (0.011) |
| | VIX(-1) | 0.003*** | (0.000) | 0.003*** | (0.000) | 0.003*** | (0.000) | 0.004*** | (0.000) | 0.003*** | (0.000) |
| | VIX (% change) (-1) | -0.008*** | (0.000) | -0.008*** | (0.000) | -0.008*** | (0.000) | -0.008*** | (0.000) | -0.008*** | (0.000) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.001*** | (0.000) | 0.001*** | (0.000) | 0.001*** | (0.000) | 0.001*** | (0.000) | 0.001*** | (0.000) |
| **Local factor** | Expected appreciation(-1) | 0.041*** | (0.003) | 0.039*** | (0.003) | 0.040*** | (0.003) | 0.041*** | (0.003) | 0.040*** | (0.003) |
| | Interest differential(-1) | 0.035*** | (0.002) | 0.032*** | (0.002) | 0.034*** | (0.002) | 0.035*** | (0.002) | 0.034*** | (0.002) |
| **Instan-taneous and lagged impact of CFMs** | Own bond measure(-1) | -0.060** | (0.030) | -0.072** | (0.030) | | | | | | |
| | Own bond measure(-2) | | | 0.077*** | (0.029) | | | | | | |
| | Own bond measure(-3) | | | 0.028 | (0.029) | | | | | | |
| | Own bond measure(-4) | | | 0.211*** | (0.029) | | | | | | |
| | Own tightening measure(-1) | | | | | | | 0.184** | (0.081) | | |
| | Own loosening measure(-1) | | | | | | | 0.117*** | (0.039) | | |
| | Other countries' measure(-1) | -0.046*** | (0.009) | -0.052*** | (0.009) | | | | | | |
| | Other countries' measure(-2) | | | 0.124*** | (0.009) | | | | | | |
| | Other countries measure(-3) | | | 0.016* | (0.009) | | | | | | |
| | Other countries measure(-4) | | | 0.105*** | (0.009) | | | | | | |
| | Others' tightening measure(-1) | | | | | | | 0.090*** | (0.025) | | |
| | Others' loosening measure(-1) | | | | | | | 0.056*** | (0.012) | | |
| **Long term impact of CFMs** | Own cumulative measure(-1) | | | | | 0.009 | (0.021) | | | | |
| | Own cumulative tightening measure(-1) | | | | | | | | | 0.191*** | (0.057) |
| | Own cumulative loosening measure(-1) | | | | | | | | | 0.057** | (0.027) |
| | Others' cumulative measure(-1) | | | | | 0.039*** | (0.006) | | | | |
| | Others' cumulative tightening measure(-1) | | | | | | | | | 0.103*** | (0.017) |
| | Others' cumulative loosening measure(-1) | | | | | | | | | -0.031*** | (0.008) |
| | Constant | 0.357*** | (0.008) | 0.361*** | (0.008) | 0.362*** | (0.008) | 0.355*** | (0.008) | 0.359*** | (0.008) |
| | Observations | 63987 | | 63723 | | 64075 | | 63987 | | 64075 | |
| | Adjusted $R^2$ | 0.208 | | 0.215 | | 0.208 | | 0.209 | | 0.209 | |

Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

However, the longer-run impact tends to be the opposite: the coefficient on the second to fourth lags of own bond measures as well as the coefficient on the cumulative policy action variable are positive (specifications (2) and (3)). In addition, other countries' bond inflow tightening (loosening) measures have an immediate impact of decreasing (increasing) bond flows to the country, and this is mainly driven by stronger impact of loosening measures. However, this effect is again short-lived: the coefficient on the second to fourth lags of other countries' bond measures are positive as well as the coefficient on the cumulative policy action variable (specification (2)). It should be noted that now the adjusted $R^2$ of the estimation in Table 6 is now greater than 0.2.

The results from specification (4) shows that both a tightening and loosening measures taken by a country immediately increase bond flows into the country and also into the other countries at the same time, which supports the signalling hypothesis of increasing correlations due to CFMs. By contrast, the signalling hypothesis is not supported that strongly over the long run. In particular, the results from specification (5) suggest that a country's action of tightening bond inflows over the long run increases bond flows into the country and the other countries at the same time, but that a country's action of loosening bond inflows increases bond flows to the country but that action decreases bond flows to other countries.

We also run regressions for each country to see the cross-country differences underlying the results in Table 6. The results from country-by-country regressions on bond flows under the five different specifications are presented in Appendix tables 3–7 in Appendix 3. Overall, they show that the coefficients on global, regional and local factors generally have the same sign and statistical significance across different economies under all five specifications. Regarding policy variables, we find that the coefficients on other countries' measures are consistently of the same sign and statistically significant across the regional economies under all five specifications, but less so are the coefficients on own bond inflow measures.

## 5.3 Event study on bond flows

In order to conduct event study, we first need to identify discrete bond flow measures. After excluding multiple actions taken in a day or controlling for adjacent policy actions, we have 6 tightening measures and 20 loosening measures as separate events. Tables 7 and 8 provide event study results for each event with tightening and loosening measures considered separately.[14]

The results from event study on the impact of 6 tightening measures on the correlation of bond flows are reported in the upper half of Table 7. For each tightening measure, we calculate the impact of a country's measure on the correlation between bond flows into the country and bond flows into another country. We find that tightening measures taken by Indonesia in July 2010 and May 2011 and those taken by Thailand in December 2006 and October 2010 increased the bond flow correlations with many economies in the region. By contrast,

[14] Tables 7 and 8 provide heat maps of the empirical results from Case 1 of event study described in Section 4. The numerical results from event study analysis for Cases 1 and 2 are very similar. They are available from the authors upon request.

tightening measures taken by Korea in January 2011 and by the Philippines in July 2012 reduced bond flow correlations with many countries.

The lower half of Table 7 provides event study results on the impact of 6 tightening measures on the percent share of bond flows. We find that the tightening measures taken by Indonesia in July 2010, by the Philippines in July 2012 and by Thailand in October 2010 increased its own bond inflow (reported in the starred cells) and also all the other countries' bond inflows significantly. By contrast, the tightening measure taken by Korea in January 2011 significantly reduced its own bond flows (reported in the starred cell) as well as bond flows into many other economies in the region. These mixed results on the effects of tightening actions reported in Table 7 are in line with what we find in the panel regressions on bond flow correlations and bond flows in Tables 5 and 6 and Appendix tables 1–7 in Appendix 3.

The results from event study on the impact of 18 loosening measure events[15] on the correlation of bond flows are provided in the upper half of Table 8. For each loosening measure, we calculate the impact of a country's measure on the correlation between bond flows into the country and bond flows into another country. We find that seven loosening measures taken by China more often increased the correlations involving China than decreased them, and that nine loosening measures taken by India increased almost all the correlations involving these countries. By contrast, two loosening measures taken by Korea and Thailand reduced almost all the correlations involving these countries. Overall, these results are again consistent with what we show in the third and fourth columns of Table 5 and Appendix tables 1 and 2 from the panel regressions on bond flow correlations.

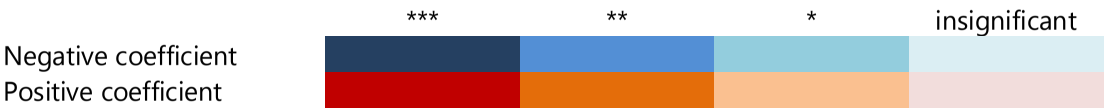
Finally, the lower half of Table 8 provides event study results on the impact of 20 loosening measure events on the percent share of bond flows. We find that the loosening measures taken by China in August 2010 and December 2012, by India in March 2010, July 2012 and January 2013, by Korea in May 2009 and by Thailand in January 2005 increased its own bond inflows (reported in the starred cells) and also all the other countries' bond inflows significantly. This finding supports the increases in correlation due to CFMs shown in the upper half of Table 8. In addition, the loosening measures taken by China in December 2011, by India in November 2011 and by Thailand in May 2006 decreased its own bond inflows (reported in the starred cells) and also many other countries' bond inflows significantly, again supporting the increase in correlations shown in the upper half of Table 8. Overall, the results in the lower half of Table 8 are consistent with what we show in Table 6 and Appendix tables 3–7 that a country's loosening measures and other countries' loosening measures tend to increase bond inflows into the country.

[15] All the correlation data used in the paper start in 28 September 2005 since the flow in percent share of Australia, Japan and New Zealand only start from this date. Therefore, two loosening measures taken in September 2004 by Malaysia and in January 2005 by Thailand are not considered as events in the upper half of Table 8.

Event study on the impact of tightening measures on the correlation of the percent share of bond flows and on the percent share of bond flows

Table 7

| Date | Country | Tightening measure | Correlation of the percent share of bond flows | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
| 07.07.2010 | ID | 1-month minimum holding period on bond | | | | ✪ | | | | | | | | |
| 13.05.2011 | ID | 6-month minimum holding period on bond | | | | ✪ | | | | | | | | |
| 01.01.2011 | KR | Withholding tax on bond | | | | | | | ✪ | | | | | |
| 17.07.2012 | PH | Banned foreign investment in central bank bill | | | | | | | | | | ✪ | | |
| 04.12.2006 | TH | Restricting foreign investment in short-term bonds | | | | | | | | | | | | ✪ |
| 13.10.2010 | TH | Withholding tax on bond | | | | | | | | | | | | ✪ |
| Date | Country | Tightening measure | Percent share of bond flows to an economy | | | | | | | | | | | |
| | | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
| 07.07.2010 | ID | 1-month minimum holding period on bond | | | | ✪ | | | | | | | | |
| 13.05.2011 | ID | 6-month minimum holding period on bond | | | | ✪ | | | | | | | | |
| 01.01.2011 | KR | Withholding tax on bond | | | | | | | ✪ | | | | | |
| 17.07.2012 | PH | Banned foreign investment in central bank bill | | | | | | | | | | ✪ | | |
| 04.12.2006 | TH | Restricting foreign investment in short-term bonds | | | | | | | | | | | | ✪ |
| 13.10.2010 | TH | Withholding tax on bond | | | | | | | | | | | | ✪ |




$^{*}p < 0.10$, $^{**}p < 0.05$, and $^{***}p < 0.01$.

Event study on the impact of loosening measures on the correlation of the percent share of bond flows and on the percent share of bond flows

Table 8

| Date | Country | Loosening measure | Correlation of the percent share of bond flows | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
| 01.09.2006 | CN | SAFE lowered threshold for QFII qualification | | ✪ | | | | | | | | | | |
| 09.12.2007/ 17.12.2007 | CN/ KR | CN-Foreigner could purchase more stocks locally; KR-Relax report requirement for local currency loan to NR | | ✪ | | | | | | | | | | |
| 29.09.2009 | CN | Relax control on credit operation | | ✪ | | | | | | | | | | |
| 17.08.2010 | CN | Allow eligible NR to invest in interbank bond market in RMB | | ✪ | | | | | | | | | | |
| 16.12.2011 | CN | Permit RQFIIs to invest in domestic securities market | | ✪ | | | | | | | | | | |
| 14.12.2012 | CN | Relax restriction on QFIIs | | ✪ | | | | | | | | | | |
| 11.03.2013 | CN | Expanded RQFIIs and permit to invest in wider variety of instruments | | ✪ | | | | | | | | | | |
| 08.02.2007 | IN | Minimize influence of NDF markets abroad | | | | | ✪ | | | | | | | |
| 31.03.2007/ 01.04.2007 | IN/ MY | IN-increase cumulative government debt investment limit for FIIs; MY-liberalise outflow, allow residents to issue foreign currency bonds in Malaysia | | | | | ✪ | | | | | | | |
| 15.10.2008 | IN | Relax regulation for FIIs investment in equity and debt instrument | | | | | ✪ | | | | | | | |
| 06.02.2009 | IN | Raise limit for FIIs investment in corporate bonds | | | | | ✪ | | | | | | | |
| 02.03.2010 | IN | Extend facility of credit enhancement by eligible NR entities | | | | | ✪ | | | | | | | |
| 03.11.2011- 22.11.2011 | IN | FII were permitted to invest in nonconvertible debentures/bonds with conditions, raise FII debt limit in government and corporate debt | | | | | ✪ | | | | | | | |
| 25.06.2012 | IN | Raise limit for FIIs investment in government securities | | | | | ✪ | | | | | | | |
| 16.07.2012/ 27.07.2012 | IN/ CN | CN-lower minimum AUM to be qualified as QFIIs; IN-qualified FIIs were allowed to invest through Securities exchange board of India | | | | | ✪ | | | | | | | |
| 24.01.2013 | IN | Raise limit for FIIs investment in government, corporate debt securities | | | | | ✪ | | | | | | | |
| 21.05.2009 | KR | Removal of withholding tax on bond | | | | | | | ✪ | | | | | |
| 03.05.2006/ 22.05.2006 | TH/ KR | TH-allowed foreigner to issue local currency bond with condition; KR-Relax report requirement for local currency loan to NR | | | | | | | | | | | | ✪ |


$^{*}p < 0.10$, $^{**}p < 0.05$, and $^{***}p < 0.01$.

| Date | Country | Loosening measure | Percent share of bond flows to an economy | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
| 01.09.2006 | CN | SAFE lowered threshold for QFII qualification | | ✪ | | | | | | | | | | |
| 09.12.2007/ 17.12.2007 | CN/ KR | CN-Foreigner could purchase more stocks locally; KR-Relax report requirement for local currency loan to NR | | ✪ | | | | | | | | | | |
| 29.09.2009 | CN | Relax control on credit operation | | ✪ | | | | | | | | | | |
| 17.08.2010 | CN | Allow eligible NR to invest in interbank bond market in RMB | | ✪ | | | | | | | | | | |
| 16.12.2011 | CN | Permit RQFIIs to invest in domestic securities market | | ✪ | | | | | | | | | | |
| 14.12.2012 | CN | Relax restriction on QFIIs | | ✪ | | | | | | | | | | |
| 11.03.2013 | CN | Expanded RQFIIs and permit to invest in wider variety of instruments | | ✪ | | | | | | | | | | |
| 08.02.2007 | IN | Minimize influence of NDF markets abroad | | | | | ✪ | | | | | | | |
| 31.03.2007/ 01.04.2007 | IN/ MY | IN-increase cumulative government debt investment limit for FIIs; MY-liberalise outflow, allow residents to issue foreign currency bonds | | | | | ✪ | | | | | | | |
| 15.10.2008 | IN | Relax regulation for FIIs investment in equity and debt instrument | | | | | ✪ | | | | | | | |
| 06.02.2009 | IN | Raise limit for FIIs investment in corporate bonds | | | | | ✪ | | | | | | | |
| 02.03.2010 | IN | Extend facility of credit enhancement by eligible NR entities | | | | | ✪ | | | | | | | |
| 03.11.2011- 22.11.2011 | IN | FII were permitted to invest in nonconvertible debentures/bonds with conditions, raise FII debt limit in government and corporate debt | | | | | ✪ | | | | | | | |
| 25.06.2012 | IN | Raise limit for FIIs investment in government securities | | | | | ✪ | | | | | | | |
| 16.07.2012/ 27.07.2012 | IN/ CN | CN-lower minimum AUM to be qualified as QFIIs; IN-qualified FIIs were allowed to invest through Securities exchange board of India | | | | | ✪ | | | | | | | |
| 24.01.2013 | IN | Raise limit for FIIs investment in government, corporate debt securities | | | | | ✪ | | | | | | | |
| 21.05.2009 | KR | Removal of withholding tax on bond | | | | | | | ✪ | | | | | |
| 11.09.2004 | MY | Tax exemption on interest income from local currency securities and debentures | | | | | | | | ✪ | | | | |
| 09.01.2005 | TH | Eliminate withholding tax on government bond | | | | | | | | | | | | ✪ |
| 03.05.2006/ 22.05.2006 | TH/ KR | TH-allowed foreigner to issue local currency bond with condition; KR-Relax report requirement for local currency loan to NR | | | | | | | | | | | | ✪ |


$^{*}p < 0.10$, $^{**}p < 0.05$, and $^{***}p < 0.01$.

# 6 Empirical results on bond returns

This section provides stylised facts on cross-country differences in bond return correlations and the empirical results for bond returns from panel regressions and event study analyses.

Among the three types of bond returns provided by JPMorgan GBIs, we focus on bond returns in unhedged US dollar (UD) terms as well as in hedged US dollar (HD) terms. This is because we are interested in the total return of foreign investors purchasing local currency bonds issued in Asia and the Pacific via mutual funds and ETFs. These investors typically bring US dollars to the funds. Then, fund managers convert them into local currency and invest in local currency bonds. Sometime later they sell the bonds and convert local currency proceeds back into US dollars and pay them back to the foreign investors. Anecdotal evidence suggests that foreign investors in emerging Asian local currency bonds generally do not hedge their FX risk, but some of them hedge by using FX forwards or FX (or currency) swaps, albeit imperfectly (eg use short-term FX forwards to hedge their FX exposure on long-term bond).

## 6.1 Bond return correlations: cross-sectional dimension

As we did for bond flows, we use the DCC GARCH model to calculate time-varying correlations of bond returns in both hedged and unhedged US dollars for each pair of countries, and then calculate the average correlation over the whole sample period for each pair. Table 9 shows the cross-sectional patterns of the correlation of bond returns in HD terms for all pairs of economies in Asia and the Pacific, and Table 10 presents those in UD terms. Overall, the bond return correlations are lower than the corresponding correlations of bond flows. For example, the HD bond return correlations have the minimum value of −0.11, maximum value of 0.60 and the median of 0.14.

We find a very clear pattern or clustering of HD bond return correlations in Table 9. In particular, the correlations of HD returns among advanced markets (Australia, Hong Kong SAR, Japan, New Zealand and Singapore) are high, all above 0.3. Correlations of Korean bond HD returns with those of the five advanced markets are also relatively high, with the range of (0.24, 0.31). Next, correlations of Thai bond HD returns with those of the five advanced markets and Korea are also relatively high, with the range of (0.17, 0.28). Finally, any correlations involving China, India and Indonesia are low with the range of (−0.11, 0.15).

UD bond return correlations exhibit quite different cross-sectional patterns from HD bond return correlations. Table 10 shows that UD bond return correlations are generally greater than HD bond return correlations, and that the correlations of UD returns among a group of economies (Australia, Korea, Malaysia, New Zealand, Singapore and Thailand), which is different from the group of economies with relatively high levels of correlations of HD bond returns, are higher than the others.

Average correlations of bond returns in hedged US dollars, May 2004 – October 2013

Table 9

| | AU | NZ | JP | HK | SG | KR | TH | CN | IN | ID |
|---|---|---|---|---|---|---|---|---|---|---|
| **AU** | 1 | | | | | | | | | |
| **NZ** | 0.60 | 1 | | | | | | | | |
| **JP** | 0.40 | 0.31 | 1 | | | | | | | |
| **HK** | 0.56 | 0.43 | 0.41 | 1 | | | | | | |
| **SG** | 0.43 | 0.31 | 0.34 | 0.52 | 1 | | | | | |
| **KR** | 0.30 | 0.24 | 0.24 | 0.31 | 0.28 | 1 | | | | |
| **TH** | 0.19 | 0.17 | 0.20 | 0.28 | 0.25 | 0.17 | 1 | | | |
| **CN** | 0.09 | 0.10 | 0.03 | 0.08 | 0.07 | 0.07 | 0.07 | 1 | | |
| **IN** | 0.12 | 0.08 | 0.07 | 0.14 | 0.15 | 0.10 | 0.13 | 0.05 | 1 | |
| **ID** | -0.11 | -0.08 | -0.07 | 0.00 | -0.01 | 0.02 | 0.09 | -0.03 | 0.01 | 1 |

The daily conditional time-varying correlation of bond returns in hedged US dollars for a pair of economies is calculated by a DCC GARCH model, and then the average value over the sample period is reported in this table.

Sources: JP Morgan Chase; authors' calculation.

Average correlations of bond returns in unhedged US dollars, January 2004 – October 2013

Table 10

| | AU | SG | TH | NZ | KR | MY | JP | HK | IN | ID | CN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AU** | 1 | | | | | | | | | | |
| **SG** | 0.61 | 1 | | | | | | | | | |
| **TH** | 0.34 | 0.44 | 1 | | | | | | | | |
| **NZ** | 0.81 | 0.55 | 0.29 | 1 | | | | | | | |
| **KR** | 0.33 | 0.43 | 0.27 | 0.30 | 1 | | | | | | |
| **MY** | 0.30 | 0.41 | 0.38 | 0.27 | 0.14 | 1 | | | | | |
| **JP** | 0.27 | 0.40 | 0.26 | 0.19 | 0.11 | 0.06 | 1 | | | | |
| **HK** | 0.25 | 0.38 | 0.27 | 0.18 | 0.19 | 0.14 | 0.34 | 1 | | | |
| **IN** | 0.28 | 0.33 | 0.28 | 0.25 | 0.13 | 0.34 | 0.04 | 0.13 | 1 | | |
| **ID** | 0.26 | 0.31 | 0.31 | 0.24 | 0.09 | 0.40 | -0.02 | 0.09 | 0.30 | 1 | |
| **CN** | 0.08 | 0.15 | 0.13 | 0.07 | 0.13 | 0.13 | 0.09 | 0.13 | 0.10 | 0.10 | 1 |

The daily conditional time-varying correlation of bond returns in unhedged US dollars for a pair of economies is calculated by a DCC GARCH model, and then the average value over the sample period is reported in this table.

Sources: JP Morgan Chase; authors' calculation.

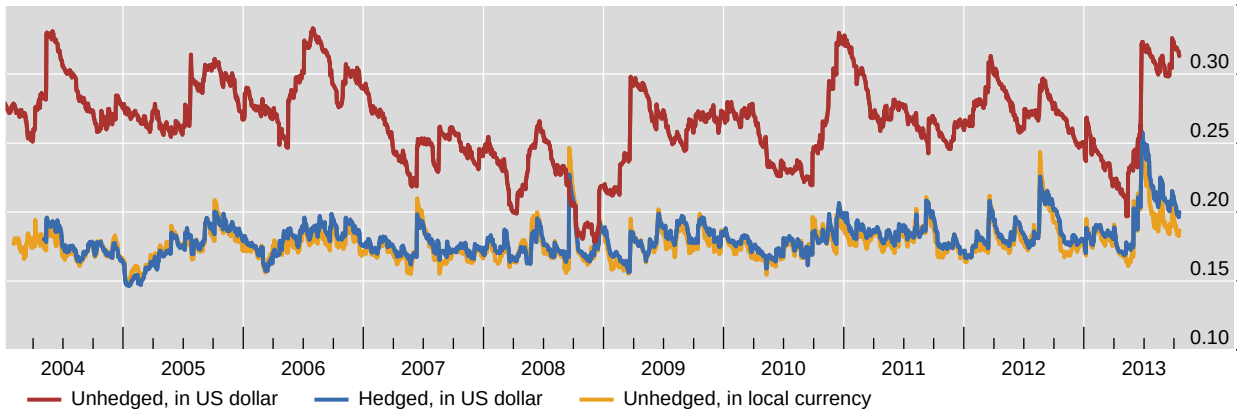
## 6.2 Panel regression analyses on bond returns

Before we run panel regressions, we calculate the time-varying correlations of daily bond returns of Asia-Pacific economies in three different types of currency terms (hedged US dollar (HD), unhedged US dollar (UD) and unhedged local currency

(UL)) using the same DCC GARCH model. Graph 2 provides the time series of average bond return correlations smoothed by using one-month moving averages. It shows that correlations calculated by using HD and UL bond returns have similar movements during the sample period, and that correlations calculated with UD bond returns are higher and more volatile than those with HD bond returns. This is likely to reflect the stronger impact of unexpected exchange rate movements on UD bond returns than on HD bond returns.

Conditional correlation of bond returns in Asia and the Pacific

Graph 2




For each pair among 11 Asia-Pacific economies (Australia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Singapore and Thailand), the conditional time-varying correlation of daily bond returns from JPMorgan GBI in local currency and unhedged US dollar terms is calculated by a DCC GARCH model, and then the average value over all 55 pairs of correlations is calculated for each day. For each pair among 10 Asia-Pacific economies (Australia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, New Zealand, Singapore and Thailand), the conditional time-varying correlation of daily bond returns from JPMorgan GBI in hedged US dollar terms is calculated by a DCC GARCH model, and then the average value over all 45 pairs of correlations is calculated for each day.

Sources: JP Morgan Chase; authors' calculations.

Following the same approach as we adopted for the bond flow correlations, we first run panel regressions of all pairs of HD (or UD) bond return correlations for 10 (or 11) Asia-Pacific economies on the same global, regional and local factors as well as the seven tightening bond flow measures and 29 loosening measures taken by nine Asian economies over the past decade. Before we assess the effectiveness of bond inflow measures, it should be noted that bond inflow measures affect bond returns *indirectly* by changing the foreign demand for local currency bonds which in turn affects bond prices and exchange rates and thus US dollar-denominated returns. Therefore, it is possible that an increase in bond flow correlation between two economies translates into an increase in bond return correlation between them, but there are also other factors, such as bond supply, affecting bond returns and thus their correlations. We first look at the results from regressions on the correlation and level of HD bond returns, and then those of UD bond returns.

### 6.2.1 Bond returns in hedged US dollar terms

The results from the panel regressions on HD return correlations in the fifth and sixth columns of Table 5 are rather mixed and much weaker than those from bond flow correlations. The adjusted $R^2$ is 0.01 and 0.03, smaller than that 0.05 from panel regressions on the bond flow correlation. In particular, among the two global factors, a greater change in risk aversion (proxied by the percentage change in the

VIX) significantly increase the bond return correlation in the region, while the tighter global liquidity (proxied by higher US Libor−OIS spread) decreases the correlation.[16] Among the two local factors, expected currency appreciation has a negative impact on HD bond return correlation, but interest rate differential has a positive impact on the correlation. It should be noted that to the extent that the exchange rate risk is hedged, the correlation is not affected by expected currency appreciation. Regarding the impact of bond inflow measures on HD bond return correlation, we find that both the instantaneous and cumulative impacts of unilateral policy actions of tightening or loosening bond inflows by any of the two economies in the correlation pairs tend to decrease the correlation.

We also conduct the panel regressions on HD bond return correlations involving each economy, that is, only consider nine correlation pairs involving the same country in every pair and the other nine countries in the region. Appendix tables 8 and 9 in Appendix 3 show the results under two different model specifications of panel regression conducted for the HD bond return correlation of each economy with the others in the region. These tables overall show that the coefficients on the percentage change in the VIX (in Appendix tables 8 and 9), and the instantaneous effect of unilateral tightening actions (in Appendix table 8) have the same sign and statistical significance across different economies, while the coefficients on other variables have mixed signs.

As we did for bond flow correlations, we also conduct panel regression analysis on HD bond returns for each country, so that we can see the impact of a country's policy action on its own bond returns and also the impact of other countries' bond flow measures. The panel regression results for all countries are summarised in Table 11. Tighter global liquidity (proxied by a higher level of US Libor−OIS spread) and greater risk aversion of global investors (proxied by the VIX) significantly increase the HD bond return for each country[17], while the regional factor (Citi Economic Surprise Index for Asia-Pacific) and two local factors (expected currency appreciation and interest rate differential) also have significantly positive effects on the bond return.

Regarding the impact of bond inflow measures on the HD bond return for a country, we find that a country's policy action of tightening or loosening bond flows has no immediate impact (one-day lag) on the HD bond return for the country (specifications (1), (2) and (4)), while other countries' loosening actions tend to decrease the return for the country the next day (specification (4)). We also find that the coefficient on the three-day lag of own bond inflow measures is negative, which indicates that own bond inflow measures have the intended effect of reducing bond inflows and thus bond returns with a few days' lag. However, the longer-run impact

[16] A higher level of risk aversion (proxied by the level of the VIX) significantly decreases the correlations, and the size of its negative coefficient is about three times that of the positive coefficient on the percentage change in the VIX.

[17] In Section 5.2, we show that tighter global liquidity and a greater increase in VIX significantly reduce the bond flows to each country. Other things being equal, a reduction in bond inflows is likely to decrease the bond price, and thus bond return. Therefore, the positive coefficients on the global factors in Table 11 are not consistent with the results in Section 5.2.

Panel regressions on bond returns (GBI HD) for an economy (full sample) Table 11

| Variables | | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | 0.027*** | (0.003) | 0.027*** | (0.003) | 0.025*** | (0.003) | 0.027*** | (0.003) | 0.025*** | (0.003) |
| | VIX(-1) | 0.001*** | (0.000) | 0.001*** | (0.000) | 0.001*** | (0.000) | 0.001*** | (0.000) | 0.001*** | (0.000) |
| | VIX (% change) (-1) | 0.001*** | (0.000) | 0.001*** | (0.000) | 0.001*** | (0.000) | 0.001*** | (0.000) | 0.001*** | (0.000) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.000*** | (0.000) | 0.000*** | (0.000) | 0.000*** | (0.000) | 0.000*** | (0.000) | 0.000*** | (0.000) |
| **Local factor** | Expected appreciation(-1) | 0.008*** | (0.001) | 0.008*** | (0.001) | 0.007*** | (0.001) | 0.008*** | (0.001) | 0.008*** | (0.001) |
| | Interest differential(-1) | 0.003*** | (0.000) | 0.003*** | (0.000) | 0.006*** | (0.000) | 0.003*** | (0.000) | 0.006*** | (0.001) |
| **Instan-taneous and lagged impact of CFMs** | Own bond measure(-1) | 0.002 | (0.016) | 0.003 | (0.016) | | | | | | |
| | Own bond measure(-2) | | | 0.012 | (0.016) | | | | | | |
| | Own bond measure(-3) | | | -0.047*** | (0.016) | | | | | | |
| | Own bond measure(-4) | | | 0.003 | (0.016) | | | | | | |
| | Own tightening measure(-1) | | | | | | | 0.053 | (0.033) | | |
| | Own loosening measure(-1) | | | | | | | 0.013 | (0.018) | | |
| | Other countries' measure(-1) | 0.016*** | (0.005) | 0.016*** | (0.005) | | | | | | |
| | Other countries measure(-2) | | | -0.010** | (0.005) | | | | | | |
| | Other countries measure(-3) | | | -0.007 | (0.005) | | | | | | |
| | Other countries' measure(-4) | | | 0.010** | (0.005) | | | | | | |
| | Others' tightening measure(-1) | | | | | | | 0.011 | (0.010) | | |
| | Others' loosening measure(-1) | | | | | | | -0.018*** | (0.005) | | |
| **Long term impact of CFMs** | Own cumulative measure(-1) | | | | | 0.003*** | (0.000) | | | | |
| | Own cumulative tightening measure(-1) | | | | | | | | | -0.003* | (0.001) |
| | Own cumulative loosening measure(-1) | | | | | | | | | -0.004*** | (0.001) |
| | Others' cumulative measure(-1) | | | | | 0.001*** | (0.000) | | | | |
| | Others' cumulative tightening measure(-1) | | | | | | | | | 0.001** | (0.001) |
| | Others' cumulative loosening measure(-1) | | | | | | | | | -0.001*** | (0.000) |
| | Constant | -0.001*** | (0.002) | -0.008*** | (0.002) | 0.001 | (0.002) | -0.007*** | (0.002) | 0.001 | (0.002) |
| | Observations | 279818 | | 279488 | | 279818 | | 279818 | | 279818 | |
| | Adjusted $R^2$ | 0.002 | | 0.002 | | 0.003 | | 0.002 | | 0.003 | |

Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

of own bond inflow measures captured by the cumulative policy variables have positive sign, which indicates that the desired effect is short-lived.[18]

We also run regressions for each country to see the cross-country differences underlying the results in Table 11. The results from country-by-country regressions on HD bond returns under the five different specifications are presented in Appendix tables 10–14. Overall, they show that the coefficients on global factors generally have the same sign and statistical significance across different economies under all five specifications. Regarding policy variables, we find that the coefficient on the three-day lag of own bond inflow measures is negative and strongly significant for India and the Philippines, but positive and weakly significant for Thailand (Appendix table 11). We also find that other countries' loosening actions tend to decrease the next-day return for most countries significantly except for the Philippines (Appendix table 13).

### 6.2.2 Bond returns in unhedged US dollar terms

The results from panel regressions on UD return correlations in the seventh and eighth columns of Table 5 are stronger than those from HD bond return correlations. The adjusted $R^2$ is 0.03 and 0.07. In particular, among the two global factors, a greater change in risk aversion (proxied by the percentage change in the VIX) significantly increases the bond flow correlation in the region, while the tighter global liquidity (proxied by higher US Libor–OIS spread) decreases the correlation.[19] The two local factors are not significant in specification (1), where we consider the instantaneous impact of policy actions on the correlation. Regarding the impact of bond inflow measures on UD bond return correlation, we find that own bond inflow measures have no instantaneous impact, and that own bond flow measures (both tightening and loosening actions) have a significantly positive impact in the long run (cumulative policy variables).

We can also conduct the panel regressions on the UD bond return correlation involving each economy, that is, only consider 10 correlation pairs involving the same country in every pair and the other 10 countries in the region. Appendix tables 15 and 16 in Appendix 3 show that the coefficients on all variables have mixed signs across the countries. This explains the overall insignificance of coefficients on policy variables in the seventh and eighth columns of Table 5.

We also conduct panel regression analysis on UD bond returns for each country, so that we can see the impact of a country's policy action on its own bond returns and also the impact of other countries' bond flow measures. The panel regression results for all countries are summarised in Table 12. Tighter global liquidity (proxied by a higher level of Libor–OIS spread) and greater risk aversion of global investors (proxied by the percentage change in the VIX) significantly

[18] It should be noted that the adjusted $R^2$ of the estimation in Table 11 is very small at 0.002 and 0.003.

[19] A higher level of risk aversion (proxied by the level of the VIX) significantly decreases the correlation, and the size of its negative coefficient is much larger than that of the positive coefficient on the percentage change in the VIX.

Panel regressions on bond returns (GBI UD) for an economy (full sample) Table 12

| Variables | | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.016*** | (0.005) | -0.017*** | (0.005) | -0.020*** | (0.005) | -0.016*** | (0.005) | -0.020*** | (0.005) |
| | VIX(-1) | 0.002*** | (0.000) | 0.002*** | (0.000) | 0.003*** | (0.000) | 0.002*** | (0.000) | 0.002*** | (0.000) |
| | VIX (% change) (-1) | -0.010*** | (0.000) | -0.010*** | (0.000) | -0.010*** | (0.000) | -0.010*** | (0.000) | -0.010*** | (0.000) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.000*** | (0.000) | 0.000*** | (0.000) | 0.000*** | (0.000) | 0.000*** | (0.000) | 0.000 | (0.000) |
| **Local factor** | Expected appreciation(-1) | 0.098*** | (0.001) | 0.099*** | (0.001) | 0.010*** | (0.001) | 0.098*** | (0.001) | 0.100*** | (0.001) |
| | Interest differential(-1) | 0.014*** | (0.001) | 0.015*** | (0.001) | 0.013*** | (0.001) | 0.014*** | (0.001) | 0.014*** | (0.001) |
| **Instan-taneous and lagged impact of CFMs** | Own bond measure(-1) | 0.028 | (0.032) | 0.029 | (0.032) | | | | | | |
| | Own bond measure(-2) | | | 0.032 | (0.031) | | | | | | |
| | Own bond measure(-3) | | | -0.101*** | (0.031) | | | | | | |
| | Own bond measure(-4) | | | -0.077** | (0.031) | | | | | | |
| | Own tightening measure(-1) | | | | | | | 0.147** | (0.069) | | |
| | Own loosening measure(-1) | | | | | | | 0.003 | (0.036) | | |
| | Others' country measure(-1) | 0.007 | (0.010) | 0.007 | (0.010) | | | | | | |
| | Others' country measure(-2) | | | -0.038*** | (0.010) | | | | | | |
| | Others' country measure(-3) | | | -0.053*** | (0.010) | | | | | | |
| | Others' country measure(-4) | | | 0.009 | (0.010) | | | | | | |
| | Others' tightening measure(-1) | | | | | | | 0.060*** | (0.022) | | |
| | Others' loosening measure(-1) | | | | | | | 0.005 | (0.011) | | |
| **Long term impact of CFMs** | Own cumulative measure(-1) | | | | | -0.006*** | (0.001) | | | | |
| | Own cumulative tightening measure(-1) | | | | | | | | | -0.037*** | (0.003) |
| | Own cumulative loosening measure(-1) | | | | | | | | | 0.003*** | (0.001) |
| | Others' cumulative measure(-1) | | | | | 0.001*** | (0.000) | | | | |
| | Others' cumulative tightening measure(-1) | | | | | | | | | -0.003** | (0.001) |
| | Others' cumulative loosening measure(-1) | | | | | | | | | 0.000 | (0.000) |
| | Constant | -0.022*** | (0.004) | -0.022*** | (0.004) | -0.015*** | (0.004) | -0.022*** | (0.004) | -0.011*** | (0.004) |
| | Observations | 291159 | | 290829 | | 291159 | | 291159 | | 291159 | |
| | Adjusted $R^2$ | 0.029 | | 0.030 | | 0.030 | | 0.029 | | 0.030 | |

Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

decrease the HD bond return for each country[20], while the regional factor (Citi Economic Surprise Index for Asia-Pacific) has significantly positive effects on the bond return. Two local factors (expected currency appreciation and interest rate differential) are positive and significant only in specification (1), in which we consider the instantaneous impact of own and other country's bond inflow measures.

Regarding the impact of bond inflow measures on the UD bond return for a country, we find that a country's policy action of tightening bond inflows has a significant immediate impact (one-day lag) on the UD bond return for the country (specification (4)), but its policy action of loosening bond inflows does not. Thus, overall a country's own bond inflow measure is not effective (specification (1)). We also find that the coefficient on the three- and four-day lags of own bond inflow measures is negative (specification (2)), which indicates that own bond inflow measures have the intended effect of reducing bond inflows and thus bond returns with some lags.

We find similar results for other countries' actions. In particular, other countries' policy action of tightening bond inflows has a significant immediate impact (one-day lag) on the UD bond return for the country (specification (4)), but their policy action of loosening bond inflows does not. Overall, other countries' bond inflow measures do not have a significant impact on the country's UD bond returns (specification (1)). We also find that the coefficient on the two- and three-day lags of other countries' bond inflow measures is negative (specification (2)), which indicates that when other countries introduce tightening bond inflow measures, the country's bond inflows decreases, and so do its bond returns with some lags. It should be noted that the adjusted $R^2$ of the estimation in Table 12 is around 0.03.

We also run regressions for each country to see the cross-country differences underlying the results in Table 12. The results from country-by-country regressions on UD bond returns under the five different specifications are presented in Appendix tables 17–21. We find that the coefficients on the percentage change in the VIX generally have the same negative sign and statistical significance across different economies under all five specifications. Regarding policy variables, we find that the coefficients on the lagged policy variables in specification (2) (Appendix table 18) are mostly negative and statistically significant.

## 6.3 Event study on bond returns

In order to conduct event study on bond returns, we first need to identify discrete events of bond flow measures. As explained earlier, we only consider 10 economies for HD bond returns, and 11 economies for UD bond returns. After excluding multiple actions taken in a day or controlling for adjacent policy actions, we have 5 tightening measures and 19 loosening measures as separate events.[21]

[20] A higher level of risk aversion (proxied by the level of the VIX) significantly increase the UD bond return, but the size of its positive coefficient is much smaller than that of the negative coefficient on the percentage change in the VIX.

[21] Tables 13–16 provide heat maps of the empirical results from Case 1 of event study described in Section 4. The numerical results from event study analysis for Cases 1 and 2 are very similar. They are available from the authors upon request.

### 6.3.1 Bond returns in hedged US dollar terms

The results from event study on the impact of 5 tightening measures on the correlation of HD bond returns are reported in the upper half of Table 13. For each tightening measure, we calculate the impact of a country's measure on the correlation between HD bond returns for the country in the region and those for another country. We find that tightening measures taken by Indonesia in July 2010 and those taken by Thailand in October 2010 reduced the HD bond return correlations with most other economies in the region. The other three tightening measures taken by Indonesia in May 2011, by Korea in January 2011 and by Thailand in December 2006 increased the correlation with some countries but reduced with other countries. Overall, the five tightening actions reduce the correlation more often than increase. This is consistent with the significantly negative coefficient on country A (or B)'s tightening measures from the panel regression results reported in the fifth column of Table 5 (specification (1)).

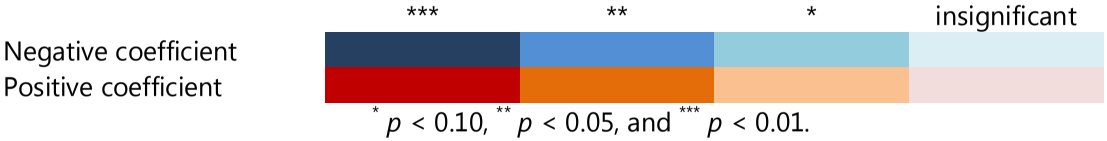
The lower half of Table 13 provides event study results on the impact of 5 tightening measures on the HD bond return. We find that no tightening measure was effective in reducing a country's own bond return (reported in the starred cells). This is consistent with the insignificant coefficient on own tightening measures from the panel regression reported in Table 11 (specification (4)). In addition, we find that the tightening measure taken by Indonesia in May 2011 increased many other countries' bond returns significantly, but that the other tightening measures did not have a significant impact. Overall the five tightening actions did not have significant effects on HD bond returns. This is consistent with the insignificant coefficient on others' tightening measures reported in Table 11 (specification (4)).

The results from event study on the impact of 19 loosening measures on the correlation of HD bond returns are provided in the upper half of Table 14. For each loosening measure, we calculate the impact of a country's measure on the correlation between bond returns for the country and bond returns for another country. We find that seven loosening measures taken by China more often reduced the correlations involving China than increased them, and that nine loosening measures taken by India and Malaysia more often increase the correlation than decreased. Two loosening measures taken by Korea and Thailand in 2005 and 2006 reduced the correlations more often than increased. In aggregate, loosening actions reduced correlations more often than increased, but the overall results are quite mixed. This is consistent with the negative but insignificant coefficient on country A (or B)'s loosening measures reported in the fifth column of Table 5 (specification (1)).

Finally, the lower half of Table 14 provides event study results on the impact of 19 loosening measures on the HD bond return. We find that only two out of 19 loosening measures have significant effects (reported in the starred cells). This is consistent with the insignificant coefficient on own loosening measures from the panel regression reported in Table 11 (specification (4)). In addition, we find that the loosening measure taken by India in February 2009 reduced the HD bond return for the other countries and that the loosening measure taken by India in July 2012 increased the bond return for the other countries. However, the other loosening measures do not have significant impacts on other countries' bond returns. Overall the loosening actions did not have significant effects on HD bond returns. This is not consistent with the significant negative coefficient on others' loosening measures reported in Table 11 (specification (4)).

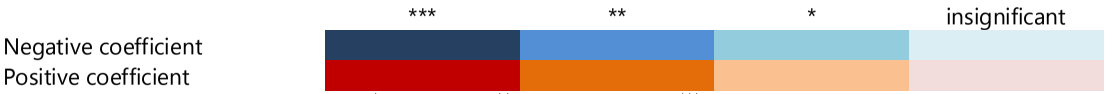
Event study on the impact of tightening measures on the correlation of bond returns and on bond returns (GBI HD) Table 13

| Date | Country | Tightening measure | Correlation of bond returns (GBI HD) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AU | CN | HK | ID | IN | JP | KR | NZ | SG | TH |
| 07.07.2010 | ID | 1-month minimum holding period on bond | | | | ✪ | | | | | | |
| 13.05.2011 | ID | 6-month minimum holding period on bond | | | | ✪ | | | | | | |
| 01.01.2011 | KR | Withholding tax on bond | | | | | | | ✪ | | | |
| 04.12.2006 | TH | Restricting foreign investment in short-term bonds | | | | | | | | | | ✪ |
| 13.10.2010 | TH | Withholding tax on bond | | | | | | | | | | ✪ |
| Date | Country | Tightening measure | Bond returns (GBI HD) | | | | | | | | | |
| | | | AU | CN | HK | ID | IN | JP | KR | NZ | SG | TH |
| 07.07.2010 | ID | 1-month minimum holding period on bond | | | | ✪ | | | | | | |
| 13.05.2011 | ID | 6-month minimum holding period on bond | | | | ✪ | | | | | | |
| 01.01.2011 | KR | Withholding tax on bond | | | | | | | ✪ | | | |
| 04.12.2006 | TH | Restricting foreign investment in short-term bonds | | | | | | | | | | ✪ |
| 13.10.2010 | TH | Withholding tax on bond | | | | | | | | | | ✪ |



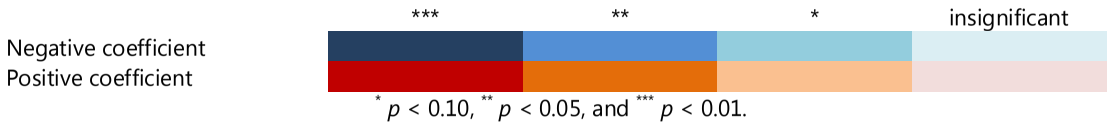
Event study on the impact of loosening measures on the correlation of bond returns and on bond returns (GBI HD) Table 14

| Date | Country | Loosening measure | Correlation of bond returns (GBI HD) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AU | CN | HK | ID | IN | JP | KR | NZ | SG | TH |
| 01.09.2006 | CN | SAFE lowered threshold for QFII qualification | | ✪ | | | | | | | | |
| 09.12.2007 / 17.12.2007 | CN/KR | CN-Foreigner could purchase more stocks locally; KR-Relax report requirement for local currency loan to NR | | ✪ | | | | | | | | |
| 29.09.2009 | CN | Relax control on credit operation | | ✪ | | | | | | | | |
| 17.08.2010 | CN | Allow eligible NR to invest in interbank bond market in RMB | | ✪ | | | | | | | | |
| 16.12.2011 | CN | Permit RQFIIs to invest in domestic securities market | | ✪ | | | | | | | | |
| 14.12.2012 | CN | Relax restriction on QFIIs | | ✪ | | | | | | | | |
| 11.03.2013 | CN | Expanded RQFIIs and permit to invest in wider variety of instruments | | ✪ | | | | | | | | |
| 08.02.2007 | IN | Minimize influence of NDF markets abroad | | | | | ✪ | | | | | |
| 31.03.2007 / 01.04.2007 | IN/MY | IN-increase cumulative government debt investment limit for FIIs; MY-liberalise outflow, allow resident to issue foreign currency bonds | | | | | ✪ | | | | | |
| 15.10.2008 | IN | Relax regulation for FIIs investment in equity and debt instrument | | | | | ✪ | | | | | |
| 06.02.2009 | IN | Raise limit for FIIs investment in corporate bonds | | | | | ✪ | | | | | |
| 02.03.2010 | IN | Extend facility of credit enhancement by eligible NR entities | | | | | ✪ | | | | | |
| 03.11.2011-22.11.2011 | IN | FII were permitted to invest in nonconvertible debentures/bonds with conditions, raise FII debt limit in government and corporate debt | | | | | ✪ | | | | | |
| 25.06.2012 | IN | Raise limit for FIIs investment in government securities | | | | | ✪ | | | | | |
| 16.07.2012 / 27.07.2012 | IN/CN | CN-lower minimum AUM to be qualified as QFIIs; IN-qualified FIIs were allowed to invest through Securities exchange board of India | | | | | ✪ | | | | | |
| 24.01.2013 | IN | Raise limit for FIIs investment in government, corporate debt securities | | | | | ✪ | | | | | |
| 21.05.2009 | KR | Removal of withholding tax on bond | | | | | | | ✪ | | | |
| 09.01.2005 | TH | Eliminate withholding tax on government bond | | | | | | | | | | ✪ |
| 03.05.2006 / 22.05.2006 | TH/KR | TH-allowed foreigner to issue local currency bond with condition; KR-Relax report requirement for local currency loan to NR | | | | | | | | | | ✪ |




$^{*}p < 0.10$, $^{**}p < 0.05$, and $^{***}p < 0.01$.

| Date | Country | Loosening measure | Bond returns (GBI HD) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AU | CN | HK | ID | IN | JP | KR | NZ | SG | TH |
| 01.09.2006 | CN | SAFE lowered threshold for QFII qualification | | ✪ | | | | | | | | |
| 09.12.2007/ 17.12.2007 | CN/KR | CN-Foreigner could purchase more stocks locally; KR-Relax report requirement for local currency loan to NR | | ✪ | | | | | | | | |
| 29.09.2009 | CN | Relax control on credit operation | | ✪ | | | | | | | | |
| 17.08.2010 | CN | Allow eligible NR to invest in interbank bond market in RMB | | ✪ | | | | | | | | |
| 16.12.2011 | CN | Permit RQFIIs to invest in domestic securities market | | ✪ | | | | | | | | |
| 14.12.2012 | CN | Relax restriction on QFIIs | | ✪ | | | | | | | | |
| 11.03.2013 | CN | Expanded RQFIIs and permit to invest in wider variety of instruments | | ✪ | | | | | | | | |
| 08.02.2007 | IN | Minimize influence of NDF markets abroad | | | | | ✪ | | | | | |
| 31.03.2007/ 01.04.2007 | IN/MY | IN-increase cumulative government debt investment limit for FIIs; MY-liberalise outflow, allow residents to issue foreign currency bonds | | | | | ✪ | | | | | |
| 15.10.2008 | IN | Relax regulation for FIIs investment in equity and debt instrument | | | | | ✪ | | | | | |
| 06.02.2009 | IN | Raise limit for FIIs investment in corporate bonds | | | | | ✪ | | | | | |
| 02.03.2010 | IN | Extend facility of credit enhancement by eligible NR entities | | | | | ✪ | | | | | |
| 03.11.2011- 22.11.2011 | IN | FII were permitted to invest in nonconvertible debentures/bonds with conditions, raise FII debt limit in government and corporate debt | | | | | ✪ | | | | | |
| 25.06.2012 | IN | Raise limit for FIIs investment in government securities | | | | | ✪ | | | | | |
| 16.07.2012/ 27.07.2012 | IN/CN | CN-lower minimum AUM to be qualified as QFIIs; IN-qualified FIIs were allowed to invest through Securities Exchange Board of India | | | | | ✪ | | | | | |
| 24.01.2013 | IN | Raise limit for FIIs investment in government, corporate debt securities | | | | | ✪ | | | | | |
| 21.05.2009 | KR | Removal of withholding tax on bond | | | | | | | ✪ | | | |
| 09.01.2005 | TH | Eliminate withholding tax on government bond | | | | | | | | | | ✪ |
| 03.05.2006/ 22.05.2006 | TH/KR | TH-allowed foreigner to issue local currency bond with condition; KR-Relax report requirement for local currency loan to NR | | | | | | | | | | ✪ |



### 6.3.2 Bond returns in unhedged US dollar terms

We conduct the same event study for UD bond returns to see if the event study results are consistent with what we got from panel regressions. The upper half of Table 15 reports the results from event study on the impact of 5 tightening measures on the correlation of UD bond returns. We find that tightening measures taken by Indonesia in July 2010 and in May 2011 and the measure taken by Korea in January 2011 increased the UD bond return correlations with all or most other economies in the region. The other two tightening measures taken by Thailand in December 2006 and in October 2010 reduced the correlation with most other countries. Overall the five tightening actions increased the correlation slightly more often than decreased. This is consistent with the insignificant positive coefficient on country A (or B)'s tightening measures from the panel regression reported in the seventh column of Table 5 (specification (1)).

We provide in the lower half of Table 15 the event study results on the impact of 5 tightening measures on UD bond returns. We find that no tightening measure was effective in reducing a country's own bond return (reported in the starred cells). This is not consistent with the significant positive coefficient on own tightening measures from the panel regression reported in Table 12 (specification (4)).[22] In addition, we find that the five tightening measure have no significant effects on almost all the other countries' bond returns. This is again not consistent with the significant positive coefficient on others' tightening measures reported in Table 12 (specification (4)).

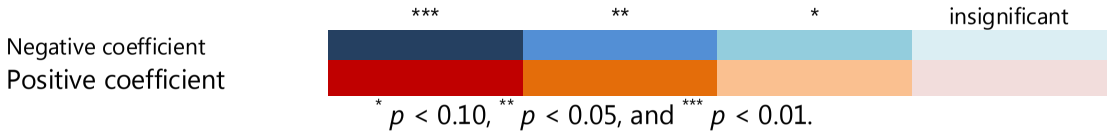
The upper half of Table 16 shows the event study results on the impact of 19 loosening measures on the correlation of UD bond returns. We find that seven loosening measures taken by China, nine loosening measures taken by India and three loosening measures taken by Korea and Thailand more often increased the correlations than decreased. In aggregate, the overall results are quite mixed. This is consistent with the positive but insignificant coefficient on country A (or B)'s loosening measures reported in the seventh column of Table 5 (specification (1)).

Finally, the event study results on the impact of 19 loosening measures on the UD bond return are presented in the lower half of Table 16. We find that only one out of 19 loosening measures have significant effects (reported in the starred cells). This is consistent with the insignificant coefficient on own loosening measures from the panel regression reported in Table 12 (specification (4)). In addition, we find that the loosening measures taken by India in February 2007 and in February 2009 reduced the UD bond return for some of the other countries, and that the other loosening measures do not have significant impacts on other countries' bond returns at all. Overall, the loosening actions did not have significant effects on UD bond returns. This is consistent with the insignificant coefficient on others' loosening measures reported in Table 12 (specification (4)).

[22] However, it should be noted that the event window in the event study spans from t-3 to t+2, so that the coefficient on the one-day lag of the tightening measures is not necessarily the same as the cumulative impact of the measures over the event window.

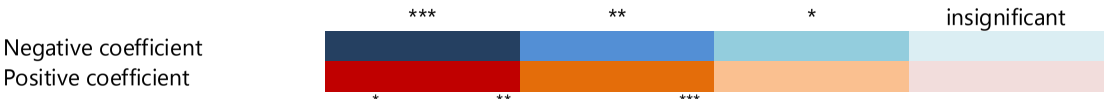
Event study on the impact of tightening measures on the correlation of bond returns and on bond returns (GBI UD) Table 15

| Date | Country | Tightening measure | Correlation of bond returns (GBI UD) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | SG | TH |
| 07.07.2010 | ID | 1-month minimum holding period on bond | | | | ✪ | | | | | | | |
| 13.05.2011 | ID | 6-month minimum holding period on bond | | | | ✪ | | | | | | | |
| 01.01.2011 | KR | Withholding tax on bond | | | | | | | ✪ | | | | |
| 04.12.2006 | TH | Restricting foreign investment in short-term bonds | | | | | | | | | | | ✪ |
| 13.10.2010 | TH | Withholding tax on bond | | | | | | | | | | | ✪ |
| Date | Country | Tightening measure | Bond returns (GBI UD) | | | | | | | | | | |
| | | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | SG | TH |
| 07.07.2010 | ID | 1-month minimum holding period on bond | | | | ✪ | | | | | | | |
| 13.05.2011 | ID | 6-month minimum holding period on bond | | | | ✪ | | | | | | | |
| 01.01.2011 | KR | Withholding tax on bond | | | | | | | ✪ | | | | |
| 04.12.2006 | TH | Restricting foreign investment in short-term bonds | | | | | | | | | | | ✪ |
| 13.10.2010 | TH | Withholding tax on bond | | | | | | | | | | | ✪ |



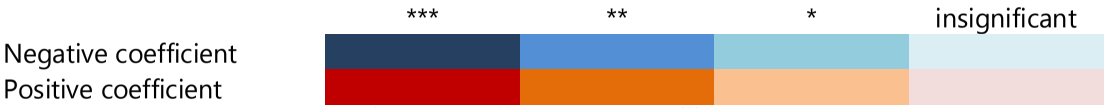
Event study on the impact of loosening measures on the correlation of bond returns and on bond returns (GBI UD) Table 16

| Date | Country | Loosening measure | Correlation of bond returns (GBI UD) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | SG | TH |
| 01.09.2006 | CN | SAFE lowered threshold for QFII qualification | | ✪ | | | | | | | | | |
| 09.12.2007 / 17.12.2007 | CN/KR | CN-Foreigner could purchase more stocks locally; KR-Relax report requirement for local currency loan to NR | | ✪ | | | | | | | | | |
| 29.09.2009 | CN | Relax control on credit operation | | ✪ | | | | | | | | | |
| 17.08.2010 | CN | Allow eligible NR to invest in interbank bond market in RMB | | ✪ | | | | | | | | | |
| 16.12.2011 | CN | Permit RQFIIs to invest in domestic securities market | | ✪ | | | | | | | | | |
| 14.12.2012 | CN | Relax restriction on QFIIs | | ✪ | | | | | | | | | |
| 11.03.2013 | CN | Expanded RQFIIs and permit to invest in wider variety of instruments | | ✪ | | | | | | | | | |
| 08.02.2007 | IN | Minimize influence of NDF markets abroad | | | | | ✪ | | | | | | |
| 31.03.2007 / 01.04.2007 | IN/MY | IN-increase cumulative government debt investment limit for FIIs; MY-liberalise outflow, allow resident to issue foreign currency bonds | | | | | ✪ | | | | | | |
| 15.10.2008 | IN | Relax regulation for FIIs investment in equity and debt instrument | | | | | ✪ | | | | | | |
| 06.02.2009 | IN | Raise limit for FIIs investment in corporate bonds | | | | | ✪ | | | | | | |
| 02.03.2010 | IN | Extend facility of credit enhancement by eligible NR entities | | | | | ✪ | | | | | | |
| 03.11.2011-22.11.2011 | IN | FII were permitted to invest in nonconvertible debentures/bonds with conditions, raise FII debt limit in government and corporate debt | | | | | ✪ | | | | | | |
| 25.06.2012 | IN | Raise limit for FIIs investment in government securities | | | | | ✪ | | | | | | |
| 16.07.2012 / 27.07.2012 | IN/CN | CN-lower minimum AUM to be qualified as QFIIs; IN-qualified FIIs were allowed to invest through Securities exchange board of India | | | | | ✪ | | | | | | |
| 24.01.2013 | IN | Raise limit for FIIs investment in government, corporate debt securities | | | | | ✪ | | | | | | |
| 21.05.2009 | KR | Removal of withholding tax on bond | | | | | | | ✪ | | | | |
| 09.01.2005 | TH | Eliminate withholding tax on government bond | | | | | | | | | | | ✪ |
| 03.05.2006 / 22.05.2006 | TH/KR | TH-allowed foreigner to issue local currency bond with condition; KR-Relax report requirement for local currency loan to NR | | | | | | | | | | | ✪ |




$^{*}p < 0.10$, $^{**}p < 0.05$, and $^{***}p < 0.01$.

| Date | Country | Loosening measure | Bond returns (GBI UD) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | SG | TH |
| 01.09.2006 | CN | SAFE lowered threshold for QFII qualification | | ✪ | | | | | | | | | |
| 09.12.2007 / 17.12.2007 | CN/KR | CN-Foreigner could purchase more stocks locally; KR-Relax report requirement for local currency loan to NR | | ✪ | | | | | | | | | |
| 29.09.2009 | CN | Relax control on credit operation | | ✪ | | | | | | | | | |
| 17.08.2010 | CN | Allow eligible NR to invest in interbank bond market in RMB | | ✪ | | | | | | | | | |
| 16.12.2011 | CN | Permit RQFIIs to invest in domestic securities market | | ✪ | | | | | | | | | |
| 14.12.2012 | CN | Relax restriction on QFIIs | | ✪ | | | | | | | | | |
| 11.03.2013 | CN | Expanded RQFIIs and permit to invest in wider variety of instruments | | ✪ | | | | | | | | | |
| 08.02.2007 | IN | Minimize influence of NDF markets abroad | | | | | ✪ | | | | | | |
| 31.03.2007 / 01.04.2007 | IN/MY | IN-increase cumulative government debt investment limit for FIIs; MY-liberalise outflow, allow resident to issue foreign currency bonds | | | | | ✪ | | | | | | |
| 15.10.2008 | IN | Relax regulation for FIIs investment in equity and debt instrument | | | | | ✪ | | | | | | |
| 06.02.2009 | IN | Raise limit for FIIs investment in corporate bonds | | | | | ✪ | | | | | | |
| 02.03.2010 | IN | Extend facility of credit enhancement by eligible NR entities | | | | | ✪ | | | | | | |
| 03.11.2011-22.11.2011 | IN | FII were permitted to invest in nonconvertible debentures/bonds with conditions, raise FII debt limit in government and corporate debt | | | | | ✪ | | | | | | |
| 25.06.2012 | IN | Raise limit for FIIs investment in government securities | | | | | ✪ | | | | | | |
| 16.07.2012 / 27.07.2012 | IN/CN | CN-lower minimum AUM to be qualified as QFIIs; IN-qualified FIIs were allowed to invest through Securities exchange board of India | | | | | ✪ | | | | | | |
| 24.01.2013 | IN | Raise limit for FIIs investment in government, corporate debt securities | | | | | ✪ | | | | | | |
| 21.05.2009 | KR | Removal of withholding tax on bond | | | | | | | ✪ | | | | |
| 11.09.2004 | MY | Tax exemption on interest income from local currency securities and debentures | | | | | | | | ✪ | | | |
| 09.01.2005 | TH | Eliminate withholding tax on government bond | | | | | | | | | | | ✪ |
| 03.05.2006 / 22.05.2006 | TH/KR | TH-allowed foreigner to issue local currency bond with condition; KR-Relax report requirement for local currency loan to NR | | | | | | | | | | | ✪ |




$^{*}p < 0.10$, $^{**}p < 0.05$, and $^{***}p < 0.01$.

# 7 Conclusions

This paper tries to explain the impact of unilateral bond inflow measures by an economy on the correlation of bond flows and returns between the economy and other economies in the Asia-Pacific region. Understanding this correlation is a precondition for discussing the need for cross-border policy coordination in CFMs.

Bond inflow measures can have both positive and negative effects on bond flow correlations. When an economy's bond inflow tightening measure discourages foreign investors from investing in bonds in the region as a whole, the pairwise correlation will increase. By contrast, when an economy's bond inflow measure induces foreign investors to switch from the economy to others, the pairwise correlation will decrease.

Using panel regressions and event study on the correlation of bond flows as well as on bond flows to each economy, we find that after controlling for global, regional and local factors, bond inflow measures by a country tends to increase bond flow correlations between the country and other countries. This finding supports the signalling hypothesis positing that foreign investors tend to react to a unilateral bond inflow tightening (or loosening) measure taken by a country by decreasing (or increasing) bond inflows into the country as well as the other countries.

When we conduct the same panel regression and event study analyses on the correlation of bond returns, we obtain mixed results. In particular, we find that bond inflow measures have a significant positive effect on the correlation of bond returns in unhedged US dollar terms only in the long run. By contrast, we find that bond inflow measures tend to decrease the correlation of bond returns in unhedged US dollar terms both instantaneously and in the long run. We view that these contrasting findings are mainly driven by movements in exchange rates included in bond returns in unhedged US dollar terms, but not fully reflected in hedged US dollar terms.

Our results reinforce the second phase of global liquidity proposed by Shin (2013) highlighting that since 2009 monetary expansion in advanced economies has been transmitted to EMEs mainly through the bond markets. This was not at all the case in the 1990s. During the first phase of global liquidity over 2003–2008, global banks made a large amount of international loans to many EMEs at the same time. However, they withdrew funds from EMEs abruptly and simultaneously after the Lehman bankruptcy.

There are a few questions we can address in the future by extending the analysis in this paper. First, given the extensive database on various types of capital flow measures, we can gauge cross-policy impact on capital flow correlations. For example, an interesting question to answer in the future is what the impact of equity inflow measures is on bond inflow correlations. Second, considering that foreign investors of mutual funds have increased their interest in emerging market local currency bonds after the bankruptcy of Lehman Brothers in search for yield amidst low returns from equity and bond markets in the advanced economies, we can divide the sample into pre-Lehman bankruptcy and post-Lehman bankruptcy periods and see if the impact of bond inflow measures show different patterns over the two periods.

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# Appendix 1: Database on capital flow measures in Asia from 2004 to 2013

**China**

From Jan 2004 to November 2013

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
|---|---|---|---|---|
| 1 | 01-May-04 | Authorised domestic institutions were allowed to retain the equivalent of 30% or 50% of the previous year's current account foreign exchange income (previously, 20%) outside China. | 国家外汇管理局进一步调整经常项目外汇账户管理政策 | |
| 2 | 26-Jun-04 | In order to strengthen full-scale foreign debt management, to effectively control the total external debt and to regulate foreign-funded banks' external debt management, the State Council introduced "Guideline of foreign-funded banks' foreign debt management". Under the guideline, the SAFE issued detailed rules on implementing the guideline. In particular, each (existing) foreign-funded bank should calculate the arithmetic mean of the balance of short-term external debt for the five months before 2004 (rounded to the nearest million dollars), and use it as quotas (indicators) of short-term external debt for the bank in 2004. Foreign-funded banks should gradually adjust their actual balance of short-term external debt to within the short-term external debt quotas (indicators) approved by 31 December 2004. For the foreign-funded banks newly established after 1 May 2004, the SAFE approves their short-term external debt quotas considering borrowers' annual credit limits, liquidity needs and demand for short-term foreign loans, but the short-term external debt quotas for the year may not exceed five times its paid-in capital in foreign currency or working capital. | 境内外资银行外债管理办法 | 国家外汇管理局关于实施《境内外资银行外债管理办法》有关问题的通知 |
| 3 | 1-July04 (45 days after 17 May 2004) | In order to strengthen foreign debt management to the fullest extent and effectively control the total external debt, the SAFE allowed capital remitted as inward foreign direct investment to be converted into renminbi only on the basis of a written payment order (资金的用途明细清单) by the foreign-invested enterprise. | 国家外汇管理局关于改进外商投资企业资本项目结汇审核与外债登记管理工作的通知 | |
| 4 | 1-Jul-04 (45 days after 17 May 2004) | Foreign-funded domestic banks were not permitted to convert proceeds from debt contracted abroad into renminbi and were not allowed to purchase foreign exchange to service these debts. This measure effectively discouraged foreign banks in China from borrowing in foreign currency abroad and bringing them into China. | 中华人民共和国国家发展和改革委员会 中国人民银行 中国银行业监督管理委员会令 第9号（境内外资银行外债管理办法） | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
|---|---|---|---|---|
| 5 | 15-Jan-05 | The reserve requirement ratios on accounts denominated in domestic and foreign currency were unified at 3%. Previously, a reserve requirement ratio of 6% applied to renminbi deposits of Chinese-funded banks and foreign-funded banks (that is, the reserve requirement ratio on renminbi deposits were lowered from 6% to 3%). Previously, a reserve requirement ratio of 2% applied to foreign exchange deposits of Chinese-funded banks (that is, the reserve requirement ratio on foreign currency deposits of Chinese-funded banks increased from 2% to 3%). Previously, a reserve requirement ratio of 5% applied to foreign currency deposits of foreign-funded banks with maturities of less than three months and a reserve requirement ratio of 3% applied to foreign currency deposits of foreign-funded banks with maturities of three months or more (that is, the reserve requirement ratio on foreign currency deposits of foreign-funded banks with maturities less than three months decreased from 5% to 3%). Overall the average reserve requirement ratio on foreign currency deposits of all banks increased after this date. | | |
| 6 | 01-Mar-05 | The SAFE expanded the range of domestic institutions that are authorised to retain, outside China, foreign exchange equivalent to 100% of their foreign exchange earnings from current transactions in the previous year to include export-import and production-oriented (manufacturing) enterprises with real demand for current account transactions. | 积极推进结售汇体制改革提高境内机构经常项目外汇账户限额 // List of previous measures in page 3 | |
| 7 | 01-Apr-05 | In order to further implement the "go-global" strategy and to promote economic and trade exchanges with neighbouring countries, the SAFE announced a notice for foreign exchange management issues related to border areas' overseas investment. In particular, registered enterprises, companies or other economic organisations (including individual industrial and commercial households) in border areas can set up all kinds of businesses or purchase shares in the neighbouring countries, and engage in the production/operating activities. The local branches of the State Administration of Foreign Exchange (SAFE) can grant expanded permissions to foreign exchange centres in border areas under the jurisdiction of branches. Investors in the border areas can use their own foreign exchange, domestic foreign exchange loans or purchase foreign exchange for overseas investment projects within the scope of authority of the local branches of the SAFE. | 国家外汇管理局关于边境地区境外投资外汇管理有关问题的通知 | |
| 8 | 19-May-05 | In order to promote offshore investment of Chinese companies and to deepen the reform of foreign exchange management of offshore investment, the SAFE expanded the pilot programme on offshore foreign exchange investment reform that had been introduced in 2002 and applied to 22 provinces, autonomous regions and self-governing cities to all areas in China. The total offshore investment quota increased from USD 3.3 billion to USD 5 billion. For each region's local SAFE branch, the quota for source screening of foreign currency funds for offshore investment increased from USD 3 million to USD 10 million. | 国家外汇管理局关于扩大境外投资外汇管理改革试点有关问题的通知 | |
| 9 | 02-Aug-05 | Domestic institutions authorised to conduct current account transactions could retain foreign exchange equivalent to 50% (previously, 30%), or 80% (previously, 50%) of their foreign exchange earnings from current transactions in the previous year; domestic institutions or enterprises that had no current foreign exchange income in the previous year could retain up to the equivalent of USD 200,000 (previously, USD 100,000). | 积极推进结售汇体制改革提高境内机构经常项目外汇账户限额 | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
|---|---|---|---|---|
| 10 | 01-Dec-05 | In order to regulate debt management of special types of foreign investment enterprises, the SAFE introduced the following rules: (1) the size of foreign debt of foreign investment holding companies should be managed under the following rules: (i) for those with registered capital not lower than USD 30 million, the sum of their short-term foreign debt and the accumulated amount of long-term debt should not exceed four times the amount of paid-in registered capital; (ii) for those with registered capital not lower than USD 100 million, the sum of their short-term foreign debt and the accumulated amount of long-term debt should not exceed six times the amount of paid-in registered capital; (2) The total amount of risky assets of foreign investment leasing companies (total risky assets = Total assets - cash - bank deposits - government bonds - commissioned leased assets) should not exceed 10 times its total net assets. | 国家外汇管理局关于完善外债管理有关问题的通知 | |
| 11 | 31-Jan-06 | Foreign investors with strategic investment in China-listed companies (A-share companies) were required to (1) acquire the A-shares of at least 10% of the total issued shares of the listed company, except special provisions for special industry or the approval by related competent authorities, (2) hold the A-shares for a minimum period of three years, and (3) the foreign investor (or its parent company) has to hold overseas assets of not less than USD 100 million in total; or manage overseas assets of not less than USD 500 million in total. | 中华人民共和国商务部 中国证券监督管理委员会 国家税务总局 国家工商行政管理总局 国家外汇管理局令 | |
| 12 | 13-Apr-06 | In April 2006, the Chinese authorities put in place the Qualified Domestic Institutional Investors (QDII) programme. Under this programme, households and firms were allowed to invest in (foreign) stocks and fixed-income products through licensed banks, insurance companies, securities companies and fund management companies to the extent permitted by pre-set quotas. In particular, (1) domestic banks' overseas foreign exchange fund management services for customers were expanded: qualified banks were allowed to combine renminbi funds of domestic institutions and individuals, and purchase foreign exchange within limits to invest in fixed-income products abroad; (2) insurance companies' securities investment business abroad was expanded: qualified insurance companies were allowed to purchase foreign currency to invest in fixed-income products and currency market instruments abroad, with the foreign exchange purchase amount subject to a certain proportion of the insurance institution's total assets. | 中国人民银行公告[2006]第5号—调整部分外汇管理政策 | operational guidelines issued on 17 April 2006 as "中国人民银行 中国银行业监督管理委员会 国家外汇管理局关于发布《商业银行开办代客境外理财业务管理暂行办法》的通知" |
| 13 | 13-Apr-06 | In April 2006, the Chinese authorities put in place the Qualified Domestic Institutional Investors (QDII) programme. Under this programme, households and firms were allowed to invest in (foreign) stocks and fixed-income products through licensed banks, insurance companies, securities companies and fund management companies to the extent permitted by pre-set quotas. In particular, on approval, qualified fund management firms and other securities management companies may, within a certain limit, combine foreign exchange funds owned by domestic institutions and individuals and use the funds overseas for portfolio investments, including for stocks. | 中国人民银行公告[2006]第5号—调整部分外汇管理政策 | |
| 14 | 01-Jul-06 | The limit on the amount of foreign exchange used in Chinese enterprises' direct investments abroad was abolished, allowing domestic investors to purchase foreign currency to participate in direct investment abroad. | 国家外汇管理局关于调整部分境外投资外汇管理政策的通知 | |
| 15 | 01-Jul-06 | Foreign-invested holding companies (a holding company established by a foreign investor to invest in China-listed companies) were allowed to hold at least USD 30 million, instead of USD 100 million or USD 500 million specified in Order (2005) No 28 issued on 31 December 2005. | | Supplementary Regulation for Foreign-invested Holding Companies |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
|---|---|---|---|---|
| 16 | 01-Sep-06 (based on the SAFE announcement no 47) | In order to regulate foreign investment in China's real estate, Ministry of Construction, Ministry of Commerce, NDRC, PBC, etc introduced the following rules: (1) foreign institutions and individuals investing in China and purchase non-owner-occupied real estate should follow the principle of commercial presence (ie business reasons), and in accordance with the relevant provisions of foreign investment in real estate, apply for the establishment of foreign-invested enterprises. After getting approval of the relevant departments and completing the registration, they can conduct related businesses in accordance with pre-approved business scope; (2) When foreign investors establish real estate enterprises, if the total investment amount is equal to or greater than USD 10 million, registered capital should not be less than 50% of the total investment. If the amount of total investment is less than USD 10 million, registered capital should be based upon the current provisions; (3) If foreign-invested real estate enterprises do not fully pay registered capital, if they do not acquire "Land Use Permit", or if development projects' capital does not reach 35% of the total investment in the project, they should not apply for domestic and foreign loans, and foreign exchange management departments should not approve the settlement of their foreign currency borrowing; and (4) Branches and representative offices of foreign institutions established in China (except approved to engage in real estate business) and foreign individuals working or studying in China more than one year can purchase owner-occupied housing in line with the actual needs, but should not purchase non-owner-occupied housing. If foreign institutions do not have branches or representative offices established in China or if foreign individuals work or study less than a year in China, they cannot buy houses (商品房). Hong Kong, Macao, Taiwan and overseas Chinese residents with living needs can purchase in China a certain size of owner-occupied housing. | 中华人民共和国建设部、商务部、国家发展和改革委员会、中国人民银行、国家工商行政管理总局、国家外汇管理局关于规范房地产市场外资准入和管理的意见 | Related to the following measure: 国家外汇管理局 建设部关于规范房地产市场外汇管理有关问题的通知 |
| 17 | 08-Sep-06 | To tighten controls over foreign investment and to promote domestic industries, the Chinese authorities (mainly, Ministry of Commerce) replaced the tentative provisions of 2003 specifically regulating M&A transactions with new regulations ("2006 M&A rules"). In particular, the Ministry of Commerce was given broad discretion to block foreign acquisition of domestic companies involved in a key industry (Article 12 stipulates that when a foreign investor acquires a domestic enterprise and gain effective control over a key industry involved, if there are factors that affect or may affect national economic security, or if it can have effective control over well-known trademarks or old Chinese domestic enterprises, the parties should report to the Commerce Department. Even though the parties have not reported, if its takeover may cause significant impact on national economic security, the Ministry of Commerce in conjunction with relevant departments can request the parties to terminate the transaction or transfer the relevant equity, assets or other effective measures to eliminate the merger on the ground of national economy security). It also added extra regulations on the administrative system such as approval and registration details, and foreign exchange registration and set the criteria for the determination of qualified foreign-invested enterprises (FIEs) as "when foreign investors set up a foreign-invested enterprise after the takeover, the foreign investors' capital is higher than 25% of the total registered capital". Also, when foreign investors acquire shares after acquisition, foreign invested enterprises are subject to the following ceiling of total investment: when registered capital is lower than USD 2.1 million, the total investment amount cannot exceed 10/7 of registered capital; when registered capital is greater than USD 2.1 million and less than USD 5 million, the total investment amount cannot exceed 2 times of registered capital; when registered capital is greater than USD 5 million and less than USD 12 million, the total investment amount cannot exceed 2.5 times of registered capital; and when registered capital is greater than USD 12 million, the total investment amount cannot exceed 3 times of registered capital. | 中华人民共和国商务部、国务院国有资产监督管理委员会、国家税务总局、国家工商行政管理总局、中国证券监督管理委员会、国家外汇管理局令 | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
|---|---|---|---|---|
| 18 | 01-Sep-06 | On 24 August 2006, the CSRC, PBC and SAFE jointly issued "Measures on Administration of Domestic Securities Investment of Qualified Foreign Institutional Investors", which replaced the "Temporary Regulation on Domestic Securities Investment by Qualified Foreign Institutional Investors" issued on 5 November 2002. The 2006 QFII Measures on Administration regulated the operation of QFIIs in various aspects such as qualification, approval, procedure, custodians, registration and accounting, investment, capital management and supervision. In particular, the SAFE lowered the threshold for QFII qualification and for the fund lock-up period, and improved foreign exchange and account management. On the same day (24 August 2006), the CSRC issued the "Notice on the Implementation of Measures on Administration of Domestic Securities investment of QFIIs", which further clarified detailed provisions on the QFII programme. | 中国证券监督管理委员会、中国人民银行、国家外汇管理局令 | |
| 19 | 01-Nov-06 | In order to enhance the management of trade-related foreign exchange authenticity, the SAFE included the following firms in the "watch" enterprise list for FX settlement: (1) the difference between the actual amount of trade-related foreign exchange collection for one year and the anticipated amount of trade-related foreign exchange collection for the same period equals or exceeds 10%; (2) violate FX management rules and received sanctions from the SAFE; and (3) other firms the SAFE deems necessary to include in the list based on credit record, operation period, etc. These enterprises should submit underlying documents to banks, which should verify the documents. | 国家外汇管理局关于进一步改进贸易外汇收汇与结汇管理有关问题的通知 | |
| 20 | 11-Dec-06 | China provided full national treatment for foreign banks. Under its TWO agreements, foreign banks, after being incorporate locally, were permitted to engage in the same range of financial services as Chinese banks, including taking retail renminbi deposits, and they were regulated and supervised in the same way as domestic banks. (As a consequence, foreign banks became subject to the restrictions on borrowing dollars abroad to fund dollar assets in China. Previously, foreign bank branches were subject to fewer restrictions than domestic banks in terms of borrowing dollar abroad) | 中华人民共和国国务院令 第 478 号 | 中国银行业监督管理委员会关于《中华人民共和国外资银行管理条例实施细则》公布后有关问题的公告 |
| 21 | 1-Apr-07 | In order to keep the scale of short-term external debts under strict control and to promote an equilibrium in the balance of payments, the SAFE announced that it would gradually reduce the 2007 short-term external debt quotas of (existing) Chinese-funded banks to 30% and those of nonbank financial institutions and foreign-funded banks to 60% of their 2006 equivalents until 31 March 2008 (thus the actual implementation occurred on 30 June 2007, 30 September 2007, 31 December 2007 and 31 March 2008). The SAFE required newly established Chinese- and foreign-funded banks or Chinese banks that have newly launched a foreign exchange business to be subject to short-term external debt quotas not more than two times their foreign exchange operating fund or their capital. | 国家外汇管理局关于2007年度金融机构短期外债管理有关问题的通知 | |
| 22 | 30-Jun-07 | The SAFE required Chinese-funded banks to reduce their outstanding short-term external debts to 45% or less and required nonbank financial institutions and foreign-funded banks to reduce their outstanding short-term external debts to 85% or less of their 2006 quotas by 30 June 2007. | 国家外汇管理局关于2007年度金融机构短期外债管理有关问题的通知 | |
| 23 | 12-Mar-07 | Chinese trust companies satisfying certain qualifications were allowed to conduct (be entrusted or commissioned) overseas wealth management business for Chinese residents by investing in financial products. | 中国银行业监督管理委员会、国家外汇管理局关于印发《信托公司受托境外理财业务管理暂行办法》的通知 | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
|---|---|---|---|---|
| 24 | 11-Jun-07 | The Ministry of Commerce and SAFE strengthened the rules related to foreigners' direct investment in real estate business, with special focus on strict control of foreign investment in high-end real estate. | 商务部、国家外汇管理局关于进一步加强、规范外商直接投资房地产业审批和监管的通知 | 中华人民共和国建设部、商务部、国家发展和改革委员会、中国人民银行、国家工商行政管理总局、国家外汇管理局关于规范房地产市场外资准入和管理的意见 |
| 25 | 31-Jul-07 | Chinese domestic insurance companies as QDIIs were allowed to make overseas investment in the following forms of investment or investment products: (A) commercial paper, negotiable certificates of deposit, repurchase and reverse repurchase agreements, money market funds and other money market products; (B) bank deposits, structured deposits, bonds, convertible bonds, bond funds, securitised products, trust products and other fixed income products; (C) stocks, equity funds, equity, equity-type products; (D) other forms of investment or investment products specified by "People's Republic of China Insurance Act" and the State Council rules. Chinese insurance companies should meet the following requirements: (A) their total foreign investment should not exceed 15% of the year-end total assets; (B) their actual amount of total investment should not exceed the investment quota approved by the State Administration of Foreign Exchange; (C) the single-party investment ratio should comply with the China Insurance Regulatory Commission rules. | 保险资金境外投资管理暂行办法 | The SAFE Annual Report 2007 says that this measure, together with similar measures for banks in May 2007 and investment funds in June 2007, is to expand and improve QDII gradually. |
| 26 | 13-Aug-07 | Domestic institutions were allowed to retain foreign exchange receipts from current account transactions (invisible transactions, current transfers and export proceeds) in their foreign exchange current accounts according to their operational needs. The previous limits on the retention of foreign exchange receipts were eliminated. | 国家外汇管理局关于境内机构自行保留经常项目外汇收入的通知 | |
| 27 | 20-Aug-07 | The SAFE approved launching a pilot programme of direct investment in overseas securities markets in the Tianjin Binhai New Area (天津滨海新区) by domestic individuals. The scale of foreign exchange purchases to invest in overseas securities markets was not subject to the total annual quota for individual foreign exchange purchases. | 国家外汇管理局关于开展境内个人直接投资境外证券市场试点的批复 | |
| 28 | 30-Sep-07 | The SAFE required Chinese-funded banks to reduce their outstanding short-term external debts to 40% or less and required nonbank financial institutions and foreign-funded banks to reduce their outstanding short-term external debts to 75% or less of their 2006 quotas by 30 September 2007. | 国家外汇管理局关于2007年度金融机构短期外债管理有关问题的通知 | |
| 29 | 9-Dec-07 | The overall QFII quota was raised from USD 10 billion to USD 30 billion, so that non-residents could purchase more stocks locally. | 积极稳妥扩大QFII和QDII投资 | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
|---|---|---|---|---|
| 30 | 9-Dec-07 | Currently, all qualified commercial banks, insurance companies, fund companies, and securities companies can conduct QDII business, gradually diversifying the members of the QDII system. In particular, with the release of QDII products by fund companies in September 2007, the QDII business has entered a phase of rapid development. The SAFE will expand overseas securities investment by domestic residents, increase foreign securities investment by QDIIs, encourage qualified domestic financial institutions to raise their competitiveness, provide more diversified products that satisfy the needs of domestic investors, and enhance the level of risk management, thus gaining new dominance from participation in global competition under the conditions of economic globalisation. | 积极稳妥扩大QFII和QDII投资 | |
| 31 | 31-Dec-07 | The SAFE required Chinese-funded banks to reduce their outstanding short-term external debts to 35% or less and required nonbank financial institutions and foreign-funded banks to reduce their outstanding short-term external debts to 65% or less of their 2006 quotas by 31 December 2007. | 国家外汇管理局关于2007年度金融机构短期外债管理有关问题的通知 | |
| 32 | 31-Mar-08 | The SAFE required Chinese-funded banks to reduce their outstanding short-term external debts to 30% or less and required nonbank financial institutions and foreign-funded banks to reduce their outstanding short-term external debts to 60% or less of their 2006 quotas by 31 March 2008. | 国家外汇管理局关于2007年度金融机构短期外债管理有关问题的通知 | |
| 33 | 29-Aug-08 | In order to improve the foreign exchange administration of foreign-funded enterprises, to facilitate the verification, payment and settlement of foreign exchange capital and to standardise the relevant business operations of the designated foreign exchange banks and accounting firms, the SAFE required that when a foreign-funded enterprise applies to a bank for settlement of foreign exchange, it should go through the capital verification procedures at an accounting firm. The RMB obtained from the settlement of capital of a foreign-funded enterprise should be used within the business scope granted by the government approval department. The amount of capital remitted as inward foreign direct investment that may be converted to renminbi only with a written payment order by the company making the foreign investment was reduced from USD 200,000 (set by 汇发[2004]42号) to USD 50,000. | 国家外汇管理局综合司关于完善外商投资企业外汇资本金支付结汇管理有关业务操作问题的通知 | |
| 34 | 1-Apr-09 | In order to respond to the macroeconomic policy adjustment, to give full scope to the intermediary credit function of financial institutions, and to promote the growth of the entire economy and trade financing, the SAFE examined and ratified short-term external debt quotas for 2009 (from 1 April 2009 to 31 March 2010) of national-level Chinese-funded banks totalling USD 9.855 billion, of foreign-funded banks with centralised management totalling USD 14.573 billion, and of Chinese- and foreign-funded banks without centralised management totalling USD 8.448 billion. The Chinese- and foreign-funded financial institutions entitled to the 2009 incremental quota should use the quota increment totally to support import and export financing of domestic enterprises. | 国家外汇管理局关于2009年度金融机构短期外债指标核定情况的通知 | |
| 35 | 1-Aug-09 | In order to facilitate and support the use and operation of foreign exchange funds by domestic enterprises, to improve the efficiency of fund use, to broaden the follow-up of financing channels of overseas enterprises, to regulate the management and statistics of external claims and to promote the "go-global" move of domestic enterprises, the SAFE allowed domestic enterprises (excluding financial institutions) to directly lend to their wholly-owned subsidiaries or share-holding enterprises legally established abroad within the approved quota. The balance of the overseas lending of the lenders should not exceed 30% of the owners' equity of the lenders, and should not exceed the total amount of the agreed investment of the Chinese side for which the borrowers have gone through the relevant registration formalities. | 国家外汇管理局关于境内企业境外放款外汇管理有关问题的通知 | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
|---|---|---|---|---|
| 36 | 1-Aug-09 | In order to carry out the "go-global" strategy of development, to promote the healthy development of overseas direct investment of domestic institutions, to implement the balanced management of cross-border capital flows, and to safeguard the basic equilibrium in the balance of payments of China, the SAFE issued "the Regulations on Foreign Exchange Administration of the Overseas Direct Investment of Domestic Institutions". In particular, the protocol for review of the source of foreign exchange funds for outward direct investment changed from ex ante examination to ex post registration, and the review and approval requirement for outward remittances of funds for outward direct investments was cancelled (note that these are changes in reporting or approval process, so we don't count them in). The cumulative amount of money remitted outward by the designated foreign exchange banks for handling remittances for overseas direct investment funds for domestic institutions should not exceed the total amount of foreign exchange funds for overseas direct investment registered in advance by these domestic institutions. Profits generated from the overseas direct investment of domestic institutions may also be retained overseas for the purpose of overseas direct investment. During the preparatory stage before the formal startup of the foreign project, with SAFE approval, domestic institutions may remit 15% of the total amount of overseas direct as the preceding expenses. | 国家外汇管理局关于发布《境内机构境外直接投资外汇管理规定》的通知 | |
| 37 | 29-Sep-09 | Domestic fund management companies and securities companies ("Securities Trading Institutions") qualifying for foreign exchange business when operating overseas securities investment business (so called "QDIIs") should apply to the SAFE for an investment quota. The net (not the gross) amount of funds remitted abroad by domestic fund management companies and securities companies should never exceed the approved investment quotas. Domestic fund management companies and securities companies were allowed to collect from domestic investors (1) foreign exchange funds for overseas securities investments, and (2) RMB funds to purchase foreign exchange for overseas securities investments. | 国家外汇管理局关于基金管理公司和证券公司境外证券投资外汇管理有关问题的通知 | |
| 38 | 29-Sep-09 | The upper limit on individual QFII investments ("single QFII investment quota") was raised from USD 800 million to USD 1 billion. | 国家外汇管理局公告 | |
| 39 | 29-Sep-09 | The principal lock-up period for medium- and long-term investments by pension funds, insurance funds, and open-end funds was decreased from 6-12 months to three months. The principal lock-up period for other institutions was been decreased from three years to one year. In particular, for QFIIs such as pension funds, insurance funds, mutual funds, charity funds, endowment funds, government and monetary authorities and open-ended Chinese funds initiated and established by QFIIs, the lock-up period of the principal is 3 months; for other QFIIs, the period is 1 year (the lock-up period refers to the period in which the QFIIs are forbidden from remitting the principal abroad). In the event that a QFII needs to remit the principal, with purchased foreign exchange upon the termination of the lock-up period of the investment principal, other than open-ended Chinese funds, it should obtain approval of the SAFE which correspondingly decrease the QFII's investment quota. | 国家外汇管理局公告 | |
| 40 | 17.Apr.10 | On 17 April 2010, the authorities (the State Council) announced that banks could temporarily halt release of mortgage loans for third homes in regions with overheated prices and restricted purchases by non-residents (loan prohibition). | 国务院关于坚决遏制部分城市房价过快上涨的通知 国发〔2010]10号 | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
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| 41 | 01.Apr.10 | In order to guard against risks caused by abnormal inflows of cross-border funds, the SAFE cut short-term debt quota by 1.5% from the 2009 level to USD 32.4 billion for 2010 (1 April 2010 to 31 March 2011). In particular, the SAFE ratified short-term external debt quotas for 2010 (from 1 April 2010 to 31 March 2011) of some Chinese-funded banks totalling USD 9.938 billion (increase from USD9.855 billion in 2009), of foreign-funded banks with centralised management totalling USD 14.54935 billion (decrease from USD 14.573 billion in 2009), and of Chinese- and foreign-funded banks that have not implemented centralised administration of quotas and Chinese-funded enterprises and other relevant institutions totalling USD 7.904 billion (decrease from USD 8.448 billion in 2009). Here, the SAFE adjusted downward the quotas for the Chinese- and foreign-funded financial institutions that have track records of large quotas but poor efficiency in utilisation, and at the same time appropriate preferential policies were provided to join-equity banks and local commercial banks with rapid growth in their trade financing business during recent years. For domestic institutions with quotas that have been adjusted downward, they should within three months bring down the short-term external debt balance subject to the actual quota control within the scope of the newly-ratified quota. In the 2010 distribution of quotas, the SAFE should give priority to banks with larger amounts of trade settlement in a bid to ensure that the quotas are used preferentially to support the trade financing of the import and export businesses of domestic enterprises. | 国家外汇管理局关于下发2010年度短期外债余额指标有关问题的通知 | |
| 42 | 30-Jul-10 | In order to further adjust the mode of administration for external guarantees provided by domestic institutions and to support domestic institutions' participation in international economic and financial cooperation, the SAFE allowed a domestic bank qualified to operate the guarantee business to apply to the SAFE for a balance quota for providing financing external guarantees (guarantees provided for borrowing, bond issuances and financing leases). Within the quota approved, the bank were allowed to provide financial external guarantees at its sole discretion and needed not apply to the foreign exchange authority on a case-by-case basis. The SAFE required no quota limit on non-financing external guarantees (quality guarantees, liability guarantees for completion of a project, tender guarantees, advance payment guarantees, deferred payment guarantees, and performance guarantees under a goods purchase and sales contract) provided by a domestic bank qualified to operate the guarantee business. Generally, the quota for a single bank should not exceed 50% of its paid-in capital or working capital in both RMB and foreign currency, or should not exceed its net asset value of foreign exchange. If the guarantor is an enterprise (non-financial corporate), as a general requirement the proportion of its net assets to its total assets should not be lower than 15%, and the approved balance assigned by the foreign exchange authority to the enterprise or the balance of its external guarantees approved on a case-by-case basis should not exceed 50% of its net assets. | 国家外汇管理局关于境内机构对外担保管理问题的通知 | |
| 43 | 17-Aug-10 | Eligible institutions outside of mainland China (foreign central banks, monetary authorities, Hong Kong SAR and Macao SAR RMB clearing banks and foreign banks engaged in RMB trade clearing) were allowed to invest in the China interbank bond market in RMB. These investments are subject to limits, but there is no minimum holding period. | 中国人民银行关于境外人民币清算行等三类机构运用人民币投资银行间债券市场试点有关事宜的通知——银发(2010)]217号 | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
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| 44 | 1-Oct-10 | In order to increase the efficiency of funds utilisation by domestic enterprises and to further promote trade facilitation, the SAFE implemented a pilot policy for overseas deposits of export proceeds in Beijing, Guangdong, Shandong, and Jiangsu for one year starting from 1 October 2010. The total amount of the overseas deposits of the export proceeds of a pilot enterprise each year should not exceed a certain proportion of the total amount of export proceeds in the previous calendar year. | 国家外汇管理局关于在部分地区开展出口收入存放境外政策试点的通知 | |
| 45 | 9-Nov-10 | In order to prevent financial risks caused by cross-border flows of capital, the SAFE introduced seven measures strengthening the administration of foreign exchange operations. In particular, (1) in order to strengthen administration of the banks' comprehensive positions in the settlement and sales of foreign exchange, the SAFE implemented a minimum level of managing banks' balance of positions calculated on a cash basis based on the current management of the comprehensive position limits for foreign exchange settlement and sales. The lower limit of the position should be the position of the day on a cash basis issued by each bank on 8 November 2010 (a floor on banks' long FX spot position); (2) in order to tighten administration of online inspection of foreign exchange collections and settlement for exports, the SAFE required banks to settle or transfer the funds in the accounts to be verified only up to the balance of foreign exchange receivables, and reduced uniformly the proportion of foreign exchange collection from the processing of imported materials from 30% to 20%; (3) in order to strengthen administration of the quotas on short-term external debts and the balance of external guarantees of financial institutions, when banks conduct agency payments abroad, the amount under the agency payment abroad should be incorporated into the quota control of the short-term external debt; (4) the SAFE strengthened administration of capital contributions by overseas investors of foreign-funded enterprises; (5) the SAFE strengthened examination of the authenticity of the settlement of funds that is, repatriated capital raised from overseas listings; (6) the SAFE strengthened administration of overseas incorporations of companies with special purposes by domestic institutions and individuals; and (7) the SAFE imposed penalties on banks operating in violation of the regulations by complying strictly with the law, and required banks to strengthen verification and examination of the authenticity of transactions by their customers and the consistency of foreign exchange receipts and payments (clamping down on exporters' over-invoicing). | 国家外汇管理局关于加强外汇业务管理有关问题的通知 | |
| 46 | 4-Nov-10 | In order to strengthen the control of foreign investment in real estate in China, the Ministry of Construction implemented the following: (1) Foreign individuals can only purchase one housing unit in China for self-occupation. The branches and representative offices in China of foreign institutions can only buy one non-residential building in the city of registration; (2) when the real estate authority in each region approves foreign individuals' pre-sale contracts and property rights registration filing, they should also examine (i) the proof issued by the relevant authorities that foreign individuals (excluding Hong Kong, Macao and Taiwan residents and overseas Chinese) work in China more than one year; the proof that Hong Kong, Macao, Taiwan and overseas Chinese residents work, study or reside in China, (ii) a written document stating that foreign individuals have no other housing under their name in China. | 关于进一步规范境外机构和个人购房管理的通知 | |
| 47 | 1-Jan-11 | In order to increase the efficiency of the use of funds by domestic enterprises and to further promote the facilitation of trade and investment, the SAFE implemented the Interim Measures for the Management of the Deposit Abroad of the Proceeds from Trade in Goods and its operating regulations on a nationwide scale. An account registration system was implemented for deposits of export proceeds of domestic enterprises abroad. Domestic enterprises that (1) meet the conditions of the origin of the export proceeds; (2) have actual foreign payment requirements; and (3) were not in violation of SAFE regulations in the past two years may submit an application to the local SAFE office. | 国家外汇管理局关于实施货物贸易出口收入存放境外管理有关问题的通知 | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
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| 48 | 1-Apr-11 | In order to prevent financial risks caused by cross-border flows of capital, the SAFE introduced the following measures strengthening the administration of foreign exchange operations. In particular, (1) in order to further strengthen administration of the banks' comprehensive positions of banks in the settlement and sales of foreign exchange, the SAFE made further adjustments to the lower limits of banks with outstanding negative positions on a cash basis as of 8 November 2010. Specifically, the lower limit of banks with outstanding positions lower than USD -2 billion as of 8 November 2010 should be adjusted to 40% of the outstanding positions; in cases where the outstanding positions ranged from USD -2 billion to zero as of 8 November 2010, the lower limit should be adjusted to 50% of the outstanding position. In cases where the current positions of banks were lower than the adjusted lower limits, the relevant positions should be increased progressively to be adjusted to an amount within the limit before 30 September 2011 at the latest. These are FX position limits. (2) The SAFE reduced the basic proportion of enterprises' advances on sales under trade in goods or deferred payments for a term of more than 90 days to 20% of the total proceeds from exports or the total payments for imports during the previous 12 months respectively. (These are about timing of payments, so not counted as a separate measure.) | 国家外汇管理局关于进一步加强外汇业务管理有关问题的通知 | |
| 49 | 1-Apr-11 | In order to maintain an equilibrium in the balance of payments and strengthen the management of liquidity, the SAFE reduced the aggregate quota for outstanding short-term external debts of domestic institutions in 2011 (from 1 April 2011 to 31 March 2012) by reducing the quotas granted to financial institutions with a relatively higher proportion of borrowing, deposits and lending and a relatively larger historical quota and at the same time appropriately increasing the quota granted to banks that have shown rapid growth in trade financing in recent years and have a relatively small historical quota. In particular, a quota of a total of USD 10.168 billion was ratified to some Chinese-funded banks for 2011, a quota of a total of USD 14.62509 billion to some foreign-funded banks and branches with centralised administration of their quotas, and local quotas of a total of USD 7.6078 billion to Chinese- and foreign-funded banks without centralised administration, Chinese-funded enterprises and other relevant institutions. | 国家外汇管理局关于核定2011年度境内机构短期外债余额指标有关问题的通知 | |
| 50 | 27-Jul-11 | In order to promote a basic equilibrium in the balance of payments of China, the SAFE reduced the aggregate quota for external financing guarantees in 2011 to USD 76.37622 billion for some Chinese-funded banks, legal-person foreign-funded banks and branches of foreign banks. For Chinese-funded banks and legal-person foreign-funded banks, the quota should be determined on the basis of Tier 1 capital in both domestic and foreign currency at the end of the previous year. For branches of foreign banks, the quota should be determined on the basis of working capital in both domestic currency and foreign currency or the net foreign exchange assets at the end of the previous year. This new quota came into effect as of the date of issuance (27 July 2011) and were to be in force until the date of effectiveness of the quota for the next year (which is 1 April 2012). | 国家外汇管理局关于核定境内银行2011年度融资性对外担保余额指标有关问题的通知 | |
| 51 | 13-Oct-11 | Foreign investors were permitted to engage in direct investment activities in China using RMB legally obtained abroad. | 中国人民银行公告〔2011]第23号 | |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
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| 52 | 16-Dec-11 (or 22-Dec-11) | Fund management companies and securities companies as RMB qualified foreign institutional investors (RQFIIs) were permitted to invest in domestic securities markets. Those currently permitted to undertake these operations on approval are Hong Kong subsidiaries of domestic fund management companies and securities companies, with certain percentage restrictions on asset allocation. The quota of domestic securities investments by the RQFII should be subject to balance control by the SAFE, and the cumulative net inward remittances of RMB funds by the RQFII should not exceed the approved investment quota. Where the RQFII with an investment quota fails to effectively use the investment quota within one year as of the date of its approval, the foreign exchange authorities should reduce, or even cancel, the investment quota. | 国家外汇管理局关于基金公司、证券公司人民币合格境外机构投资者境内证券投资试点有关问题的通知 | |
| 53 | 16-Apr-12 | The SAFE withdrew controls on FX positions and lowered the lower limit of net open FX positions from zero to negative levels, allowing banks to maintain net short FX positions against RMB (eg USD overnight short position). The SAFE sets the size of these limits for participant banks based on an individual bank's FX flow, ranging from USD 3-10 million. For market maker banks, the limits are not disclosed. The SAFE also abolished the regulation that had limited banks' ability to be short foreign currency against RMB flows in FX derivatives from clients. | 国家外汇管理局关于完善银行结售汇综合头寸管理有关问题的通知 | |
| 54 | 1-Jul-12 | In order to promote private capital to invest abroad, the SAFE simplified foreign direct investment by domestic firms and foreign lending in foreign currency by domestic entities and relaxed domestic entities providing collateral to foreigners. | 国家外汇管理局关于鼓励和引导民间投资健康发展有关外汇管理问题的通知 | |
| 55 | 27-Jul-12 | The CSRC lowered the minimum AUM (assets under management) requirements for assets managers and institutional investors (pension funds, charity funds, endowment funds, trust companies, and government investment management companies) to qualify as QFIIs, and expanded QFII investment range, and relaxed investment restriction ratios. | http://www.csrc.gov.cn/pub/csrc_en/OpeningUp/RelatedPolicies/QFII/201211/t20121105_216513.htm | |
| 56 | 14-Dec-12 | On 14 December 2012, the State Administration of Foreign Exchange ("SAFE") issued the revised Rules on Foreign Exchange Administration of Securities Investments in China by Qualified Foreign Institutional Investors (QFIIs), which made several important amendments to the version issued in 2009. In particular, (1) The QFII quota of a QFII which is a sovereign wealth fund, central bank or currency administration authority is no longer subject to the USD1 billion cap. (2) The revised rules relaxed certain restrictions on repatriation/ remittance of funds by QFIIs: (i) repatriation by open-ended China fund's may now be processed by the custodian bank without SAFE approval where the monthly net repatriation does not exceed 20% of its total investment in China at the end of the last year; (ii) for other QFIIs, SAFE approval for repatriation of profits is no longer required. Such QFII may repatriate its realised profits directly through its custodian bank where the total monthly repatriation (including principal and profits) does not exceed 20% of its total investment in China at the end of the last year. | 国家外汇管理局公告[2012]2号 | |
| 57 | 11-Mar-13 | Under the expanded RMB qualified foreign institutional investors (RQFII) programme, Hong Kong subsidiaries of Chinese banks and insurers and financial institutions registered and operating in Hong Kong SAR were allowed to invest in Chinese domestic securities markets using RMB proceeds raised in Hong Kong. The restrictions on asset allocation under the programme were also loosened, permitting RQFIIs to invest in a wider variety of financial instruments, including stock-exchange-related securities and bonds in the interbank market. | 国家外汇管理局关于人民币合格境外机构投资者境内证券投资试点有关问题的通知 | 中国证券监督管理委员会、中国人民银行、国家外汇管理局 令 |

| No | Effective date | Details of the Measure | Web-link of measures | Additional web-link |
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| 58 | 1-Apr-13 | In order to support the healthy development of small and medium-sized enterprises, the SAFE appropriately increased the 2013 domestic institutions' short-term external debt quota to USD 37.3 billion. In particular, the SAFE ratified short-term external debt quotas for 2013 (from 1 April 2013 to 31 March 2014) of some Chinese-funded banks totalling USD 11.6217 billion, a quota of a total of USD 15.305 billion to some foreign-funded banks and branches with centralised administration of their quotas, and local quotas of a total of USD 10.380 billion to Chinese- and foreign-funded banks without centralised administration, Chinese-funded enterprises and other relevant institutions. | 国家外汇管理局关于核定2013年境内机构短期外债余额指标有关问题的通知 | |
| 59 | 01-Jun-13 | To reduce the scope for banks' customers to speculate on CNY appreciation and to force banks to take the opposite side of this trade, the SAFE (China's foreign exchange regulator) limited the amount of USD loans extended by banks. In particular, domestic banks (Chinese-funded banks) were required to maintain a 75% foreign currency loan-to-deposit ratio, and if this ratio is exceeded, the banks were required to maintain a minimum amount of net long USD positions equal to 0.25*(loans - 0.75*deposits). Banks need to comply with this regulation by 1 June 2013 either by increasing deposits, reducing loans, and entering USD longs. For foreign-funded banks, the foreign-currency loan-to-deposit ratio limit was set at 100%. At the same time, the SAFE also increased scrutiny over trade settlement operations that could be misused to channel capital inflows into China. | 国家外汇管理局关于加强外汇资金流入管理有关问题的通知 | |
| 60 | 27-Aug-13 | The SAFE simplified the relevant foreign exchange administration procedures and merged and integrated the foreign exchange administration policies for qualified domestic institutional investors (QDIIs) as following: (1) cancel the restriction on the currency types of inward and outward funds to expand the sources of overseas securities investment funds of domestic institutions; (2) cancel examination and approval of settlement and purchase of foreign exchange to simplify quota application documents; (3) seek unity of quota management requirements to implement unified balance management of the overseas securities investment of various qualified institutions, namely, the net outward amount of foreign exchange of overseas securities investment does not exceed the investment quota approved; and (4) strengthen statistics supervision, and fully use electronic information means to strengthen the statistics and ex-post monitoring over the cross-border capital flow under securities investment and prevent the risk of cross-border capital flow. | 国家外汇管理局公告 | |

Note 1: Allowing changes in export and import payments or the currency used for outward direct investment from USD to RMB does not count as a CFM.
Note 2: China launched its pilot projects for the Qualified Foreign Institutional Investors (QFII) and Qualified Domestic Institutional Investors (QDII) systems in 2002.

**Hong Kong SAR**

From Jan 2004 to Dec 2012

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 1 | 25-Feb-04 | Banks were allowed to accept renminbi deposits with some limits, offer renminbi-denominated accounts, provide foreign exchange and remittance services, and issue credit cards for resident individuals. (B1/15C) | http://www.hkma.gov.hk/eng/key-information/guidelines-and-circulars/circulars/2004/20040206-1.shtml |
| 2 | 10-Jun-11 | On 10 June 2011, the HKMA lowered the applicable LTV ratio by at least 10%p for mortgage loan applicants whose principal income is not derived from Hong Kong. | |
| 3 | 27-Oct-12 | On 26 October 2012, the Financial Secretary announced that the Government would amend the Stamp Duty Ordinance to introduce with effect from 27 October 2012 a Buyer's Stamp Duty ("BSD") on residential properties. Upon the enactment of the relevant legislation, any residential property acquired by any person (including a company incorporated) except a Hong Kong Permanent Resident will be subject to the BSD. BSD is to be charged at a flat rate of 15% on all residential properties, on top of the existing stamp duty and the special stamp duty, if applicable. This was the first property tax targeted at overseas buyers, stepping up efforts to cool home prices. | |
| 4 | 06-Sep-12 | The government restricted buyers of apartments on two sites it planned to sell to local residents only as the government attempted to cool house prices. (Source: Bloomberg) | |

**India**

From Jan 2004 to May 2013

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 1 | 3-Jan-04 | Registered partnerships were allowed to invest abroad up to 100% of their net worth through the automatic route. | |
| 2 | 16-Jan-04 | Foreign companies were allowed to establish branch offices or units in Special Economic Zones to undertake manufacturing and service activities. (RBI/2004/17) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=1449 |
| 3 | 4-Feb-04 | Residents were allowed to acquire property abroad using a personal remittance up to the equivalent of US$25,000. (RBI/2004/39) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=1466 |
| 4 | 9-Feb-04 | Resident employees of a foreign company's office, branch, or subsidiary in India, in which the foreign company held a share of not less than 51%, could invest under an employee stock option plan without limit, subject to certain conditions. | |
| 5 | 23-Feb-04 | Indian corporations were allowed to fund direct investments in joint ventures or wholly owned subsidiaries abroad with external commercial borrowing. (RBI/2004/72) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=1517 |
| 6 | 24-Mar-04 | Authorised dealers (ADs) (i.e. banks dealing in foreign exchange) were permitted to avail of foreign currency borrowing not exceeding 25% of their Tier I capital or the equivalent of US$10 million, whichever was higher. (RBI/2004/113) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=1550 |
| 7 | 17-Apr-04 | Trade credits of up to one year for noncapital goods and up to three years for capital goods for amounts up to USD 20 million were permitted. ADs were permitted to guarantee such trade credits. | |
| 8 | 25-May-04 | Authorised Dealers (ADs) and housing finance companies in India were permitted to extend loans to non-resident Indians (NRIs) and Persons of Indian Origin (PIOs) for acquiring residences in India. (RBI/2004/219) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=1638 |
| 9 | 7-Jun-04 | Balances in Exchange Earners' Foreign Currency (EEFC) accounts were permitted to be used for trade-related loans to overseas importers. (RBI/2004/233). EEFC is an account maintained in foreign currency with an Authorised Dealer. It is a facility provided to the foreign exchange earners, including exporters, to credit 100 per cent of their foreign exchange earnings to the account, so that the account holders do not have to convert foreign exchange into Rupees and vice versa, thereby minimising the transaction costs. | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=1656 |
| 10 | 20-Jul-04 | Proceeds of life insurance claims in foreign currency from an insurer in India were allowed to be credited to Resident Foreign Currency (Domestic) (RFCD) accounts or Resident Foreign Currency (RFC) accounts. According to RBI Exchange Control Manual (dated 1 June 2005), persons of Indian nationality or origin, who, having been resident outside India for a continuous period of not less than one year, have become persons resident in India on or after 18 April 1992 are eligible to open and maintain the RFC accounts with authorised dealers in India in any freely convertible foreign currency. RFC (D) is single currency account. This account can be opened in Pound Sterling (GBP), US Dollar (USD), Japanese Yen (JPY) or EURO (EUR). Resident individual can open Resident Foreign Currency (Domestic) Account. | |
| 11 | 1-Oct-04 | Outstanding external commercial borrowing and lump-sum fees and royalties (to be paid to foreigners) were permitted to be converted into equity without prior RBI approval. | |
| 12 | 4-Oct-04 | Residents no longer needed prior approval of the government and RBI in respect of transfer of shares or convertible debentures (by way of sale) to non-residents. (RBI/2004-2005/207) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=1933 |

| No | Effective date | Details of the Measure | Web-link of measures |
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| 13 | 10-Feb-06 | Effective 10 February 2006, FDI was allowed up to 100% in (1) distillation and brewing of potable alcohol; (2) manufacture of industrial explosives; (3) manufacture of hazardous chemicals; (4) manufacturing activities located within 25 kilometres of the standard urban area limits that require an industrial license under the Industries Development and Regulation Act, 1951; (5) setting up greenfield airport projects; (6) laying natural gas/LNG pipelines, market study and formulation, and investment financing in the petroleum and natural gas sector; (7) cash and carry wholesale trading and export trading; (8) coal and lignite mining for captive consumption; (9) setting up infrastructure relating to marketing in the petroleum and natural gas sector; (10) exploration and mining of diamonds and precious stones; and (11) the petroleum and national gas retail industry. Also effective 10 February 2006, the requirement that 26% of foreign equity be diverted to business-to-business e-commerce was eliminated. | |
| 14 | 19-Apr-06 | The interest rates on non-residential external (NRE) rupee term deposits of one to three years' maturity should not exceed the LIBOR/SWAP rates plus 100 basis points. (RBI/2005-2006/366) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=2843 |
| 15 | 1-Jul-06 | Persons of Indian nationality or origin were allowed to open FCNR (B) accounts in Australian and Canadian dollars. The maximum maturity of the deposit was increased to five years. (RBI/2006-2007/16) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=2944 |
| 16 | 30-Nov-06 | All types of foreign exchange earners were allowed to open EEFC accounts and credit these accounts with up to 100% (previously 50%) of their foreign exchange earnings. (RBI/2006-2007/192) Here, foreign exchange earnings are i) inward remittance through normal banking channel, other than the remittance received pursuant to any undertaking given to the Reserve Bank or which represents foreign currency loan raised or investment received from outside India or those received for meeting specific obligations by the account holder; ii) payments received in foreign exchange by a 100 per cent Export Oriented Unit or a unit in (a) Export Processing Zone or (b) Software Technology Park or (c) Electronic Hardware Technology Park for supply of goods to similar such unit or to a unit in Domestic Tariff Area and also payments received in foreign exchange by a unit in Domestic Tariff Area for supply of goods to a unit in Special Economic Zone (SEZ); iii) payment received by an exporter from an account maintained with an authorised dealer for the purpose of counter trade, in accordance with the approval granted in terms of Regulation 14 of the Foreign Exchange Management (Export of Goods and Services) Regulations, 2000; iv) advance remittance received by an exporter towards export of goods or services; v) payment received for export of goods and services from India, out of funds representing repayment of State Credit in U.S. dollar held in the account of Bank for Foreign Economic Affairs, Moscow, with an authorised dealer in India, vi) Professional earnings including director's fees, consultancy fees, lecture fees, honorarium and similar other earnings received by a professional by rendering services in his individual capacity. Following credits may be made to an EEFC Account: i) A portion of inward remittance/Payment received by the recipient in foreign exchange subject to the provisions of paragraph (1); ii) Interest earned on the funds held in the account; iii) Recredit of unutilised foreign currency earlier withdrawn from the account; iv) Amount representing repayment by the account holder's importer customer, of loan/advances granted in terms of clause (iv) of Paragraph 3. v) Representing the disinvestment proceeds received by the resident accountholder on conversion of shares held by him to ADRs/GDRs under the Sponsored ADR/GDR Scheme approved by the Foreign Investment Promotion Board of Government of India. | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3180 |
| 17 | 16-Nov-06 | Proceeds from the sale of immovable property may be remitted without a limitation on how long the property was owned (previously, the property had to be owned at least 10 years). | |
| 18 | 13-Dec-06 | Forward contracts of importers and exporters could not exceed 100% of the limit, out of which 50% (previously, 25%) is required to be deliverable. (RBI/2006-2007/208) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3210 |

| No | Effective date | Details of the Measure | Web-link of measures |
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| 19 | 13-Dec-06 | ADs were allowed to provide forward cover to hedge the economic exposure of importers in the customs duty payable on imports. (RBI/2006-2007/207) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3209 |
| 20 | 20-Dec-06 | Resident individuals may remit up to the equivalent of US$50,000 (previously, US$25,000) a financial year for any permissible current or capital transactions, or a combination of the two. (RBI/2006-2007/216) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3220 |
| 21 | 20-Dec-06 | Residents may acquire property abroad using a personal remittance up to the equivalent of US$50,000 (previously, US$25,000) a financial year. (RBI/2006-2007/216) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3220 |
| 22 | 22-Dec-06 | Foreign investment up to 49% is allowed in stock exchanges, depositories, and clearing corporations, with the prior approval of the FIFB. (RBI/2006-2007/218) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3221 |
| 23 | 8-Jan-07 | Exporters were permitted to open foreign exchange accounts in any currency or country with interproject transferability of funds. They may also use their cash surpluses generated outside India for (1) investment in short-term instruments abroad, including treasury bills and other monetary instruments with a maturity or remaining maturity of one year or less and with a rating of at least A-1/AAA by Standard & Poor's or P-1/Aaa by Moody's Investors Service or F1/AAA by Fitch IBCA, or an acceptable rating from another major rating agency; and (2) deposits with branches/subsidiaries outside India of an AD Category-I bank in India. (RBI/2006-2007/227) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3238 |
| 24 | 31-Jan-07 | The ceiling on interest rates on NRE deposits of one to three years maturity was reduced to the LIBOR/swap rates as of the last business day of the previous month, for dollar deposits of corresponding maturities plus 50 basis points (previously, plus 100 basis points). | |
| 25 | 31-Jan-07 | Banks were prohibited from granting new loans or renewing existing loans in excess of Rs 2 million against NR(E)RA and FCNR (B) deposits either to depositors or third parties. (RBI/2006-2007/244) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3258 |
| 26 | 8-Feb-07 | ADs may allow foreign institutional investors (FIIs) to cancel and rebook forward contracts for up to 2% of the market value of their entire investment in equity and/or debt in India. Until early 2007, efforts had been made towards improving the hedging facilities that are available to offshore non-residents who have exposures to the rupee, particularly the foreign direct investors. As far as the foreign institutional investors (FIIs) are concerned, they were not allowed to rebook contracts once cancelled till early 2007. The Committee on Fuller Capital Account Convertibility (FCAC) recommended that to minimise the influence of NDF markets abroad, the FIIs may be provided with the facility of cancelling and rebooking forward contracts and other derivatives booked to hedge rupee exposures. The Mid-Term Review of Annual Policy Statement 2006-07, announced by the Reserve Bank of India in October 2006 proposed to implement this recommendation. Accordingly, AD category – I banks have been permitted to allow FIIs to cancel and rebook forward contracts up to a limit of 2 per cent of the market value of their entire investment in India as at the beginning of the financial year. The outstanding contracts must also be duly supported by underlying exposure at all times. | http://www.rbi.org.in/scripts/PublicationsView.aspx?id=9770 |
| 27 | 31-Mar-07 | The cumulative (government) debt investment limit for FIIs/subaccounts is $3.2 billion (previously, $2 billion). (Cir.No.IMD/FII/C/25/2007) | http://www.sebi.gov.in/cms/sebi_data/attachdocs/1291707326478.pdf |
| 28 | 30-Apr-07 | Indian venture capital funds (VCFs) registered with the Securities and Exchange Board of India (SEBI) were allowed to invest in equity and equity-linked instruments of offshore venture capital undertakings, subject to an overall limit of $500 million and SEBI regulations. No separate permission from the RBI is necessary for such VCFs. (RBI/2006-2007/370) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3477 |

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| 29 | 24-Apr-07 | Effective 24 April 2007, the ceiling on interest rates on FCNR (bank) deposits was reduced to LIBOR or the swap rate for the corresponding maturity/currency minus 75 basis points (previously, minus 25 basis points). On floating rate deposits, interest must be paid within the ceiling of swap rates minus 75 basis points for the respective currency or corresponding maturity. Effective 24 April 2007, interest rates no NRE deposits for one to three years maturity should not exceed the LIBOR or swap rate (previously, LIBOR/swap rate plus 50 basis points), as of the last business day of the previous month, for dollar deposits of corresponding maturity. | |
| 30 | 8-May-07 | The limit of $50,000 a financial year under the liberalised remittance scheme (LRS) for residents was raised to $100,000 for any permitted current or capital account transactions or a combination of both. (RBI/2006-2007/379) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3500 |
| 31 | 21-May-07 | Before 21 May 2007, utilisation of ECB proceeds was not permitted in real estate. The term 'real estate' excludes development of integrated township as defined by Press Note 3 (2002 Series) dated January 4, 2002. On 21 May 2007, it was decided to withdraw the exemption accorded to the 'development of integrated township' as a permissible end-use of ECB. Accordingly, utilisation of ECB proceeds is not permissible in real estate, without any exemption. External Commercial Borrowings (ECB) refer to commercial loans [in the form of bank loans, buyers' credit, suppliers' credit, securitised instruments (e.g. floating rate notes and fixed rate bonds)] obtained from non-resident lenders with minimum average maturity of 3 years. | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3544 |
| 32 | 21-May-07 | With the sovereign credit ratings of India enhanced to investment grade, the all-in-cost ceilings for ECB were modified as follows: borrowing with an average maturity of three to five years is subject to a maximum spread of 150 basis points (previously, 200 basis points) over the six-month LIBOR of the currency in which the loans are raised or the applicable benchmark(s), and borrowing with more than five years' average maturity is subject to a maximum spread of 250 basis points (previously, 350 basis points). Corporations can obtain external commercial borrowing (ECB) loans under the automatic route of an additional $250 million over and above the existing limit of $500 million with average maturity of more than 10 years under the approval route during a financial year. (RBI/2006-2007/409) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3544 |
| 33 | 14-Jun-07 | The limit for portfolio investment by listed Indian companies in the equity of listed foreign companies that have at least a 10% stake in a listed Indian company was raised from 25% to 35% of the net worth of the investing company. (RBI/2006-2007/437) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3597 |
| 34 | 14-Jun-07 | The limit for overseas investment by an Indian company was raised to 300% from 200% of its net worth. (RBI/2006-2007/437) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3597 |
| 35 | 7-Aug-07 | External commercial borrowing (ECB) more than USD 20 million per borrower company per financial year would be permitted only for foreign currency expenditure for permissible end-uses of ECB. Accordingly, borrowers raising ECB more than USD 20 million shall park the ECB proceeds overseas for use as foreign currency expenditures for permissible end-uses and shall not remit the funds to India. The above modifications would be applicable to ECB exceeding USD 20 million per financial year both under the Automatic Route and under the Approval Route. ECB up to USD 20 million per borrowing company per financial year would be permitted for foreign currency expenditures for permissible end-uses under the Automatic Route and these funds shall be parked overseas and not be remitted to India. Borrowers proposing to avail ECB up to USD 20 million for Rupee expenditure for permissible end-uses would require prior approval of the Reserve Bank under the Approval Route. However, such funds shall be continued to be parked overseas until actual requirement in India. All other aspects of ECB policy such as eligible borrower, USD 500 million limit per borrower company per financial year under the Automatic route, recognised lender, average maturity period, all-in-cost-ceiling, prepayment, refinancing of existing ECB and reporting arrangements remain unchanged. (RBI/2007-2008/112) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3758 |
| 36 | 26-Sep-07 | Effective 26 September 2007, the aggregate ceiling for overseas investment by Mutual Funds, registered with SEBI, increased from USD 4 billion to USD 5 billion. The existing facility to allow a limited number of qualified Indian Mutual Funds to invest cumulatively up to USD 1 billion in overseas Exchange Traded Funds, as may be permitted by the SEBI, continued. (RBI/2007-2008/149) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3834 |

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| 37 | 26-Sep-07 | Mutual Funds, registered with SEBI had been permitted to invest in ADRs / GDRs of Indian and foreign companies, rated debt instruments not below investment grade by accredited/registered credit rating agencies, in the equity of overseas companies listed on a recognized stock exchange overseas, in overseas mutual funds that make nominal investments (say to the extent of 10 per cent of net asset value) in unlisted overseas securities, and overseas exchange traded funds that invest in securities. In order to enable the Mutual Funds to tap a larger investible stock overseas, effective 26 September 2007, Mutual Funds were also allowed to invest in the following additional instruments, subject to the guidelines issued by SEBI: i) ADRs / GDRs issued by Indian or foreign companies; ii) equity of overseas companies listed on recognized stock exchanges overseas; iii) initial and follow on public offerings for listing at recognized stock exchanges overseas; iv) foreign debt securities in the countries with fully convertible currencies, short term as well as long term debt instruments with rating not below investment grade by accredited / registered credit rating agencies; v) money market instruments rated not below investment grade; vi) repos in the form of investment, where the counterparty is rated not below investment grade. The repos should not, however, involve any borrowing of funds by mutual funds; vii) government securities where the countries are rated not below investment grade; viii) derivatives traded on recognized stock exchanges overseas only for hedging and portfolio balancing with underlying as securities; ix) short term deposits with banks overseas where the issuer is rated not below investment grade; x) units / securities issued by overseas Mutual Funds or Unit Trusts registered with overseas regulators and investing in (a) aforesaid securities, (b) real Estate Investment Trusts (REITs) listed in recognized stock exchanges overseas, or (c) unlisted overseas securities (not exceeding 10 per cent of their net assets). (RBI/2007-2008/149) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3834 |
| 38 | 26-Sep-07 | The limit of $100,000 a financial year under the liberalised remittance scheme (LRS) for resident individuals was raised to $200,000 for permitted current and capital account transactions. (RBI/2007-2008/146) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3831 |
| 39 | 26-Sep-07 | The requirement that a foreign company have a 10% stake in an Indian company to be eligible for portfolio investment of up to 50% of the net worth of the investing company under the automatic route was eliminated. (RBI/2007-2008/148) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3833 |
| 40 | 26-Sep-07 | The limit for portfolio investment by listed Indian companies in the equity of listed foreign companies was raised from 35% to 50% of the net worth of the investing company. (RBI/2007-2008/148) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3833 |
| 41 | 26-Sep-07 | Indian companies and registered partnership firms were permitted to invest in overseas joint ventures/wholly owned subsidiaries up to 400% of their net worth under the automatic route. (RBI/2007-2008/148) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3833 |
| 42 | 26-Sep-07 | The yearly limit for residents' real estate acquisitions abroad was increased to $200,000 from $100,000. | |
| 43 | 6-Oct-07 | As a temporary measure, all exporters were allowed to earn interest on exchange earner foreign currency (EEFC) accounts on balances up to $1 million per exporter until October 31, 2008. (RBI/2007-2008/154) With a view to give an opportunity to small and medium enterprises to manage the challenges in the global markets, all exporters were permitted to earn interest on EEFC accounts to the extent of outstanding balances of $ 1 million per exporter. This was a purely temporary measure and valid up to October 31, 2008 and would be subject to further review. Before this measure, EEFC accounts had been allowed to be maintained in the form of non-interest bearing current accounts. | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3854 |
| 44 | 25-Oct-07 | Only regulated entities may issue or renew offshore derivative instruments or participatory notes with underlying derivatives. Foreign institutional investors (FIIs) may not issue or renew such instruments. | |
| 45 | 29-Oct-07 | SMEs having direct or indirect foreign exchange risk were permitted to book forward contracts without production of underlying documents. (RBI/2007-08/171) Resident individuals with foreign exchange exposures out of actual or anticipated remittances were permitted to book forward contracts without production of underlying documents based on self-declaration. (RBI/2007-08/171) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3900 |

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| 46 | 31-Dec-07 | SEBI-registered FIIs and subaccounts of FIIs were permitted to sell short, lend, and borrow equity shares of Indian companies, subject to regulatory conditions such as position limits at the level of market. (MRD/DoP/SE/Dep/Cir-14/2007) | http://www.sebi.gov.in/cms/sebi_data/pdffiles/9841_t.pdf |
| 47 | 6-Jun-08 | The limit on FII investments in government securities was raised from $3.2 billion to $5 billion. (Cir.No.IMD/FII/C/29/2007) | http://www.sebi.gov.in/cms/sebi_data/attachdocs/1291118338073.pdf |
| 48 | 16-Sep-08 | In September 2008, the RBI relaxed the Statutory Liquidity Ratio (SLR) on a temporary basis by 1%p from 25% to 24% of the net deposit and time liabilities (NDTL) in both local and foreign currencies of scheduled commercial banks. As from 8 November 2008, this change became permanent. | |
| 49 | 6-Oct-08 | Restrictions on offshore derivative instruments or participatory notes with underlying derivatives, which were previously required to be issued or renewed only by regulated entities, were removed. | |
| 50 | 15-Oct-08 | The requirement that FIIs limit their investment in equity and debt instruments to a ratio of 70% to 30% was removed. (RBI/2008-09/240) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=4568 |
| 51 | 16-Oct-08 | The limit on investments by FIIs in corporate debt was raised from $3 billion to $6 billion. (Cir.No.IMD/FII/C/33/2007) | http://www.sebi.gov.in/cms/sebi_data/pdffiles/7212_t.pdf |
| 52 | 15-Oct-08 | Banks were allowed to borrow funds up to a limit of 50% of their unimpaired tier 1 capital (up from 25%), or $10 million, whichever is higher, from their overseas branches, excluding borrowings for financing of export credit in foreign currency and capital instruments. (RBI/2008-09/227) The previous change was in March 2004. | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=4543 |
| 53 | 22-Oct-08 | The maximum amount of ECB credit that a corporation can obtain under the automatic route was raised to $500 million in a financial year (previously, $100 million). The minimum average maturity period of seven years was removed for loans of over $100 million for rupee expenditure by infrastructure firms. Borrowers were allowed to remit funds to India for credit to rupee accounts with banks, pending utilisation. (RBI/2008-09/245) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=4573 |
| 54 | 22-Oct-08 | The all-in-cost ceiling for ECB loans was raised by 100 bps to LIBOR plus 300 bps for loans between three and five years, by 150 bps to LIBOR plus 500 bps for loans between five and seven years, and by 50 bps to LIBOR plus 500 bps for loans more than seven years. (RBI/2008-09/245) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=4573 |
| 55 | 23-Oct-08 | The overall cap on overseas borrowing was raised to $35 billion from $22 billion. | |
| 56 | 27-Oct-08 | The all-in-cost ceiling for trade credits was raised to LIBOR plus 200 bps for all maturities, by 125 bps to LIBOR plus 200 bps for credit up to one year, and by 75 bps to LIBOR plus 200 bps for credit from one year to three years. (RBI/2008-09/251) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=4586 |
| 57 | 31-Oct-08 | The temporary measure of allowing all exporters to earn interest on exchange earner foreign currency (EEFC) accounts on balances up to $1 million per exporter expired on 31 October 2008. (RBI/2007-2008/154) | |
| 58 | 15-Nov-08 | The maximum interest rate paid on FCNR deposits was increased to LIBOR/swap rates plus 100 bps and on NRER deposits to LIBOr/swap rates plus 175 bps. | |
| 59 | 2-Jan-09 | The all-in-cost ceilings relaxed during the financial crisis period for both Automatic and Approval routes were withdrawn. Therefore, eligible borrowers, proposing to avail of ECB beyond the permissible all-in-cost ceilings specified before may approach the Reserve Bank under the Approval Route. This relaxation in all-in-cost ceiling was to be reviewed in June 2009. (A.P. (DIR Series) Circular No. 46) | http://rbidocs.rbi.org.in/rdocs/notification/PDFs/89675.pdf |

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| 60 | 02.Jan.09 | In May 2007, the Reserve Bank of India had withdrawn the exemption accorded to the 'development of integrated township' as a permissible end-use of ECB. Effective 2 January 2009, corporates engaged in the development of integrated township were permitted to avail of ECB under the Approval Route. Integrated township, as defined above, includes housing, commercial premises, hotels, resorts, city and regional level urban infrastructure facilities such as roads and bridges, mass rapid transit systems and manufacture of building materials. Development of land and providing allied infrastructure forms an integrated part of township's development. The minimum area to be developed should be 100 acres for which norms and standards are to be followed as per local bye-laws / rules. In the absence of such bye-laws/rules, a minimum of two thousand dwelling units for about ten thousand population will need to be developed. The policy was to be reviewed in June 2009. | |
| 61 | 6-Feb-09 | The limit on investment by FIIs in corporate bonds was raised from $6 billion to $15 billion. (Cir.No.IMD/FII/C/37/2009) | http://www.sebi.gov.in/cms/sebi_data/attachdocs/1290147086497.pdf |
| 62 | 28-Apr-09 | Banks may grant new loans or renew existing loans against NR(E)RA and FCNR(B) deposits either to the depositors or third parties up to a maximum limit of Rs.10million (previously, Rs 2 million). Banks have also been advised not to undertake artificial slicing of the loan amount to circumvent the ceiling. (RBI/2008-09/462) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=4960 |
| 63 | 27-Oct-09 | The statutory liquidity ratio, which is required for both domestic and foreign currency, was raised from 24% to 25% of net demand and time liabilities. (RBI/2009-10/201) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=5337 |
| 64 | 9-Dec-09 | To limit access to foreign credit to best corporate credits and prevent high-cost borrowing, the authorities re-instated interest rate cap on eligible external commercial borrowing (ECB) that had been eliminated during the crisis. | |
| 65 | 2-Mar-10 | The facility of credit enhancement by eligible non-resident entities has been extended to domestic debt raised through issues of capital market instruments, such as debentures and bonds, by Indian companies engaged exclusively in the development of infrastructure and by the IFCs, subject to certain conditions | |
| 66 | 12-Apr-10 | FIIs were allowed to offer domestic government securities and foreign sovereign securities with an AAA rating as collateral on the recognised stock exchanges in India, in addition to cash (previously, domestic government securities were not accepted as collateral), for their transactions in the cash segment of the market. However, cross-margining of government securities (placed as margins by FIIs for their transactions in the cash segment of the market) is not allowed between the cash and the derivative segments of the market. The operational guidelines in this regard will be issued separately by the SEBI. (RBI/2009-10/393) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=5583 |
| 67 | 29-Jun-10 | Effective 29 June 2010, the period of realisation and repatriation to India of the amount representing the full export value of goods or software exported was extended from six months to twelve months from the date of export. This relaxation was supposed to expire on 31 March 2011 but was extended to 30 September 2011, and then again to 30 September 2012. A.P. (DIR Series) Circular No. 57, (RBI/2010-2011/457), (RBI/2011-2012/241) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6317 |
| 68 | 18-Dec-10 | Effective from 18 December 2010, the RBI reduced the Statutory Liquidity Ratio, which is required for both domestic and foreign currency, from 25% to 24%. | |
| 69 | 28-Dec-10 | Foreign currency swap transactions were allowed to be undertaken by AD Category I banks as intermediaries by matching the requirements of corporate counterparties. While no limits are placed on the AD Category I banks for undertaking swaps to facilitate customers to hedge their foreign exchange exposures, a limit of USD 100 million is placed for net supply of foreign exchange in the market. A.P. (DIR Series) Circular No. 32 dated December 28, 2010. | |

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| 70 | 4-Jul-11 | Keeping in view the need to provide a window to facilitate refinancing of FCCBs by the Indian companies who may be facing difficulty in meeting the redemption obligations, it was decided to consider applications for refinancing of FCCBs by Indian companies under the automatic route under the following conditions: (1) New ECB/FCCB must have the stipulated average maturity period and applicable all-in-cost per the ECB guidelines; (2) New ECB/FCCB may not exceed the outstanding redemption value at maturity of the outstanding FCCBs; (3) New ECB/FCCB may not be raised six months before the maturity date of outstanding FCCB; (4) The purpose of the ECB/FCCB must be clearly stated as "redemption of outstanding FCCB" in Form 83 when a loan registration number is obtained from the RBI; and (5) The designated AD Category I bank must monitor the end use of the funds. (RBI/2011-2012/105) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6596 |
| 71 | 25-Sep-11 | The ECB policy was liberalised and rationalised: (1) The limit for eligible borrowers for ECB under the automatic route each financial year was enhanced as follows: (a) firms in the real, industrial, and infrastructure sectors—US$750 million or equivalent (previously, US$500 million or equivalent); (b) firms in specified service sectors, namely, hotel, hospital, and software—US$200 million or equivalent (previously, US$100 million or equivalent); (2) All eligible borrowers may use ECB designated in INR from foreign equity holders, under the automatic/approval route, subject to compliance with ECB guidelines; (3) Firms in the infrastructure sector may use ECB for IDC as a permissible end use, under the automatic/approval route, subject to IDC being a part of project cost and capitalization; (4) Considering the specific needs of the infrastructure sector, Indian companies in the infrastructure sector may use 25% of new ECB raised toward refinancing rupee loans from the domestic banking system, under the approval route, subject to the condition that at least 75% of the new ECB is used for capital expenditures for "new infrastructure" project(s), as defined in the ECB guidelines; (5) Importers of capital goods may use short-term credit (including buyer credit/supplier credit) in the nature of "bridge finance," under the approval route, subject to certain conditions; (6) Borrowers in the infrastructure sector may use ECB in renminbi, up to an annual ceiling of US$1 billion a financial year under the approval route; and (7) Other service sector companies may use ECB from foreign equity holders under the approval route. (RBI/2011-2012/199), (RBI/2011-2012/200) , (RBI/2011-2012/201) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6733<br>http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6731<br>http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6732 |
| 72 | 19-Oct-11 | AD banks in India were permitted to accept FCNR (B) deposits in any permitted currency—i.e., freely convertible foreign currency. (RBI/2011-2012/225) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6766 |
| 73 | 3-Nov-11 | FIIs were permitted to invest in nonconvertible debentures/bonds issued by NBFCs categorized as infrastructure finance companies (IFCs) by the RBI within an overall limit of US$25 billion, subject to these conditions: (1) the lock-in period of three years for FII investment was reduced to one year up to an amount of US$5 billion within the overall limit of US$25 billion (calculated from the time of first purchase by FIIs); and (2) the residual maturity of five years and above refers to the original maturity of the instrument at the time of first purchase by an FII. (RBI/2011-2012/244) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6794 |
| 74 | 4-Nov-11 | The transfer of shares is permitted without approval of the RBI under certain conditions. Transfers of shares from non-residents to residents under the FDI Scheme where the pricing guidelines under FEMA, 1999 are not met are permitted provided (a) The original and resultant investments are in line with FDI policy and FEMA regulations in terms of sectoral caps, conditions (such as minimum capitalization, etc.), reporting requirements, documentation, etc. (b) The pricing for the transaction is compliant with the specific/explicit relevant SEBI regulations/guidelines (such as IPO, book building, block deals, delisting, exit, open offer/substantial acquisition/SEBI SAST, buyback); and (c) A chartered accountant's certificate to the effect that compliance with the relevant SEBI regulations/guidelines as indicated above is attached to the form FC-TRS filed with the AD bank. (RBI/2011-2012/247) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6797 |

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| 75 | 4-Nov-11 | The transfer of shares was permitted without approval of the RBI under certain conditions. (2) Transfers of shares from residents to non-resident are permitted provided (a) where the transfer of shares requires approval of the FIPB as per the FDI policy, (i) the requisite approval of the FIPB has been obtained; and (ii) the transfer of share adheres to the pricing guidelines and documentation requirements as specified by the RBI from time to time; (b) the SEBI (SAST) guidelines are followed subject to adherence to the pricing guidelines and documentation requirements as specified by the RBI from time to time; (c) where the pricing guidelines under the 1999 FEMA were not met (i) the resultant FDI is in compliance with the extant FDI policy and FEMA regulations in terms of sectoral caps, conditions (such as minimum capitalization, etc.), reporting requirements, documentation, etc.; (ii) The pricing for the transaction is compliant with the specific/explicit, extant, and relevant SEBI regulations/guidelines (such as IPO, book building, block deals, delisting, exit, open offer/substantial acquisition/SEBI SAST); and (iii) a chartered accountant's certificate to the effect that compliance with the relevant SEBI regulations/guidelines as indicated above is attached to the form FC-TRS to be filed with the AD bank; (iv) where the investee company is in the financial sector, provided (1) no-objection certificates (NOCs) are obtained from the respective financial sector regulators/regulators of the investee company as well as transferor and transferee entities and such NOCs are filed along with the form FC-TRS with the AD bank; and (2) the FDI policy and FEMA regulations in terms of sectoral caps, conditionalities (such as minimum capitalization, etc.), reporting requirements, documentation, etc., are complied with. (RBI/2011-2012/247) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6797 |
| 76 | 15-Nov-11 | The all-in-cost ceiling for trade credits was raised from 200 bps to 350 bps for maturities of up to three years. (RBI/2011-2012/257) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6812 |
| 77 | 18-Nov-11 | The FII debt limit in government and corporate debt was raised as follows: (1) an increase in the limit of FII investment in government securities of US$5 billion, raising the cap to US$15 billion. The incremental maximum of US$5 billion may be invested in securities without any residual maturity criterion; (2) an increase in the limit of FII investment in corporate bonds of US$5 billion, raising the cap to US$20 billion. The incremental limit of US$5 billion may be invested in listed corporate bonds. (3) The limit for infrastructure bonds (separate from corporate bonds) was retained at US$25 billion. (Cir.No.IMD/FII/C/20/2011) | http://www.sebi.gov.in/cms/sebi_data/attachdocs/1321615402997.pdf |
| 78 | 15-Sep-11 | Sale proceeds of FDI were allowed to be credited to Non-Resident (External) Rupee (NRE) Account Scheme/Foreign Currency (Non- Resident) Account FCNR (Banks) Scheme accounts, provided the original acquisition was by way of inward remittance or funds held in their NRE/FCNR (B) accounts. (RBI/2011-2012/177) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6709 |
| 79 | 22-Nov-11 | Non-resident investors were allowed to invest (on a repatriation basis) in (1) rupee and foreign currency denominated bonds issued by the infrastructure debt funds (IDFs) set up as an Indian company and registered as NBFCs with the RBI, and (2) rupee denominated units issued by IDFs set up as SEBI-registered domestic mutual funds, subject to the following conditions: (a) The original/initial maturity of all securities at the time of first investment is five years; (b) There is a lock-in period of three years. However, all non-resident investors may trade among themselves within this lock-in period; and (c) All non-resident investments in IDFs (other than NRIs) (in both rupee and foreign currency denominated securities) must be within an overall cap/limit of US$10 billion. This cap/limit is within the overall cap of US$25 billion for FII investment in bonds/nonconvertible debentures issued by Indian companies in the infrastructure sector or by IFCs. (RBI/2011-2012/271) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6833 |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 80 | 23-Nov-11 | Interest rates on fresh Non-Resident (External) Rupee (NRE) Term Deposits for one to three years maturity should not exceed the LIBOR/SWAP rates plus 275 basis points, as on the last working day of the previous month, for US dollar of corresponding maturities (as against LIBOR/SWAP rates plus 175 basis points effective from close of business on November 15, 2008). In respect of FCNR (B) deposits of all maturities contracted effective from the close of business in India as on 23 November 2011, interest shall be paid within the ceiling rate of LIBOR/SWAP rates plus 125 basis points for the respective currency/ corresponding maturities (as against LIBOR/SWAP rates plus 100 basis points effective from close of business on November 15, 2008). On floating rate deposits, interest shall be paid within the ceiling of SWAP rates for the respective currency/maturity plus 125 basis points. For floating rate deposits, the interest reset period shall be six months. (RBI/2011-2012/275) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6838 |
| 81 | 23-Nov-11 | The limit of $100 million for foreign currency swap transactions by an AD was eliminated. (RBI/2011-2012/272) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6834 |
| 82 | 23-Nov-13 | Proceeds of the ECB raised abroad for rupee expenditures in India, such as local sourcing of capital goods, onlending to self-help groups or for microcredit, payment for spectrum allocation, etc., must be brought immediately for credit to rupee accounts with AD Category I banks in India. (RBI/2011-2012/274) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6837 |
| 83 | 23-Nov-13 | The all-in-cost ceiling for ECB was raised to 350 bps from 300 bps for maturities from three years to five years. (RBI/2011-2012/273) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6836 |
| 84 | 15-Dec-11 | The RBI imposed restrictions on derivative transactions of foreign exchange dealers: (1) contracts booked by residents, regardless of the type and tenor of the underlying exposure, once cancelled may not be rebooked. Previously, under contracted exposures, forward contracts involving rupees booked by residents to hedge current account transactions, regardless of the tenor, and to hedge capital account transactions falling due within one year could be cancelled and rebooked; (2) Under probable exposures based on past performance, residents may hedge currency risk on the basis of a declaration of an exposure and based on past performance up to the average of the previous three financial years' (April to March) actual import/export turnover or the previous year's actual import/export turnover, whichever is higher. Contracts booked in excess of 75% of the eligible limit must be on a deliverable basis and may not be cancelled; (3) For importers using the past performance facility, the facility was reduced to 25% of the limit as computed above—i.e., 25% of the average of the previous three financial years' (April to March) actual import/export turnover or the previous year's actual import/export turnover, whichever is higher. In case of importers who have already exceeded the revised/reduced limit, no further bookings are allowed under this facility; (4) All forward contracts booked under this facility by both exporters and importers must now be fully deliverable. In case of cancellations, foreign exchange gain, if any, must not be passed on to the customer; (5) All cash/tom/spot transactions by ADs on behalf of clients must be undertaken for actual remittances/delivery only and may not be cancelled/cash settled; (6) FIIs may hedge currency risk on the market value of an entire investment in equity and/or debt in India as of a particular date. Contracts, once cancelled, may not be rebooked except to the extent of 10% of the market value of the portfolio as of the beginning of the financial year. Forward contracts may, however, be rolled over on or before maturity. It has now been decided that henceforth forward contracts booked by FIIs, once cancelled, may not be rebooked. Forward contracts may, however, be rolled over on or before maturity; and (7) The Board of Directors of Authorised Dealers was allowed to fix suitable limits for various Treasury functions with net overnight open exchange position and aggregate gap limits required to be approved by the RBI. The net overnight open position limits (NOOPLs) of ADs were reduced across the board. The intraday open position/daylight limit of ADs may not exceed the existing NOOPL approved by the RBI. (RBI/2011-2012/300) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6872 |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 85 | 16-Dec-11 | With a view to providing greater flexibility to banks in mobilising non-resident deposits, the interest rates on both saving deposits and term deposits of maturity of one year and above under non-resident external (NRE) rupee deposits accounts and under savings deposits ordinary non-resident (NRO) rupee accounts were deregulated. However, interest rates offered by banks on NRE and NRO deposits may not be higher than those offered on comparable domestic rupee deposits. (RBI/2011-2012/303) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6875 |
| 86 | 19-Dec-11 | MFIs were allowed to use ECB up to US$10 million a financial year under the automatic route for microfinance activities, and the ceiling relating to ECB by NGOs engaged in microfinance was increased to US$10 million from US$5 million a financial year. (RBI/2011-2012/304) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=6876 |
| 87 | 21-Mar-12 | AD Category I banks were allowed to repay loans not exceeding USD250,000 to a resident individual by close relatives outside India to the non-resident external/foreign currency (Scheme B) account of the lender concerned, subject to conditions. | |
| 88 | 28-Mar-12 | To grant general permission to the resident individuals for acquiring equity shares of a foreign entity, ADs may allow remittances by resident employees of foreign companies and their joint ventures or wholly-owned subsidiaries in which the foreign company holds equity, either directly or indirectly, for the acquisition of shares of the foreign company under an employee stock option plan, subject to certain conditions. ADs may also allow remittances from residents for the acquisition of qualification shares for the position of director in an overseas company to the extent prescribed by the laws of the host country. The limit on these remittances is the overall ceiling prescribed for residents under the LRS in effect at the time of the acquisition. Residents may acquire shares of a foreign entity in part/full consideration of professional services rendered to the foreign company or in lieu of director's remuneration within the overall ceiling prescribed under the LRS in effect at the time of acquisition. (RBI/2011-2012/474) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7093 |
| 89 | 1-Apr-12 | An Indian party (as defined for ODI) was allowed to open, hold, and maintain a foreign exchange account abroad for the purpose of ODI, subject to certain terms and conditions, such as host country laws. (RBI/2011-12/481) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7105 |
| 90 | 20-Apr-12 | Refinancing existing external commercial borrowing was allowed by raising new external commercial borrowing at a higher all-in-cost/reschedule of existing external commercial borrowing at a higher all-in-cost under the approval route. The enhanced all-in-cost should not exceed the all-in-cost ceiling prescribed in the guidelines. (RBI/2011-12/520) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7154 |
| 91 | 21-May-12 | To stop speculators and contain volatility in the foreign exchange market, effective 21 May 2012, the RBI required that (1) the current net overnight open position limit (NOOPL) of the banks as applicable to the position involving the rupee as one of the currencies should not include the positions undertaken in the currency futures/options segment in the exchanges, that (2) the positions in the exchanges could not netted/offset by undertaking positions in the OTC market and vice versa, that (3) the positions initiated in the exchanges should be liquidated/closed in the exchanges only, that (4) the position limit for the trading member AD Category I banks in the exchanges for trading currency futures and options to be USD 100 million or 15 per cent of the outstanding open interest, whichever is lower. | |
| 92 | 25-Jun-12 | The limit for investment by SEBI-registered FIIs in government securities was raised by $5 billion. This took the overall limit for FII investment in government securities from US$15 billion to US$20 billion. In order to broaden the non-resident investor base for government securities, long-term investors such as sovereign wealth funds, multilateral agencies, endowment funds, insurance funds, pension funds, and foreign CBs were allowed to register with the SEBI and invest in government securities for the entire limit of $20 billion. (RBI/2011-2012/618) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7292 |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 93 | 25-Jun-12 | Indian companies were allowed to use external commercial borrowing for repayment of rupee loans from the domestic banking system and/or for new rupee capital expenditure, up to 50% of the average annual export earnings realised during the past three financial years under the approval route, subject to conditions. The overall ceiling for such external commercial borrowing is USD 10 billion (that is, the programme size was USD 10 billion). The ceiling for such external commercial borrowing by an individual company or group under this programme was USD 3 billion. (RBI/2011-2012/617) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7291 |
| 94 | 5-Jul-12 | Non-resident Indians living in India were allowed to transfer funds from non-resident ordinary accounts to non-resident external accounts within an overall ceiling of USD 1 million a financial year subject to payment of applicable taxes (ie if the funds were remitted abroad). (RBI/2012-2013/2) | http://rbi.org.in/Scripts/NotificationUser.aspx?Mode=0&Id=7309 |
| 95 | 16-Jul-12 | Qualified foreign investors were allowed to invest through SEBI-registered qualified depository participants in eligible corporate debt instruments. SEBI stands for Securities and Exchange Board of India. (RBI/2012-2013/134) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7456 |
| 96 | 31-Jul-12 | To provide some operational flexibility to exporters, exporters were allowed to cancel and rebook 25% of the total contracts booked for hedging their export exposure. | |
| 97 | 31-Jul-12 | Exporters were permitted to credit 100% of their foreign exchange earnings to exchange earners' foreign currency accounts. Total accruals in the account during a calendar month must be converted to rupees on or before the last day of the subsequent calendar month after adjusting for approved purposes and forward commitments. (RBI/2012-2013/151) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7483 |
| 98 | 11-Sep-12 | The maximum amount of external commercial borrowing by an individual company under the USD 10 billion plan (introduced on 25 June 2012) was raised from "50% of the average annual export earnings realised during the past three financial years" to "75% of the average foreign exchange earnings during the preceding three financial years or 50% of the highest foreign exchange earnings in any of the preceding three financial years, whichever is higher". Also, special purpose vehicles incorporated for at least one year that do not have a sufficient track record for three financial years were allowed to use external commercial borrowing up to 50% of their export earnings during the preceding financial year. (RBI/2012-2013/200) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7557 |
| 99 | 12-Oct-12 | Banks were allowed to grant loans against non-resident (external) rupee accounts and foreign currency non-resident (bank) accounts either to the non-resident depositors holding these accounts or third parties, subject to conditions. (RBI/2012-2013/247) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7622 |
| 100 | 7-Jan-13 | The limit on external commercial borrowing by nonbank financial companies and infrastructure finance companies under the automatic route was raised from 50% of their own funds to 75%. (RBI/2012-2013/367) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7794 |
| 101 | 24-Jan-13 | The limits on investments by foreign institutional investors were raised from USD 20 billion to USD 25 billion in government securities, and from USD 45 billion to USD 50 billion in corporate debt instruments. Also, the requirement that the government securities have a residual maturity of three years at the time of purchase was eliminated. Various sublimits for government securities were merged into two categories, and various sublimits for corporate debt were also merged into three categories. (RBI/2012-2013/391) | http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=7823 |
| 102 | 01-Mar-13 | Effective 1 March 2013, the central bank removed restrictions on overnight and intra-day open positions on foreign-exchange contracts involving the rupee, it said in a statement on March 1. The curbs were placed in 2012. | |

Note 1: the Cash Reserve ratio has frequently changed during the sample period, so don't include them.
Note 2: sector-specific policies such as infrastructure financing, pharmaceutical or communication sector financing etc are not included in the list since these are confined to specific sectors.
Note 3: general OTC guideline without specific quantitative limits is not included in the list.
Note 4: Domestic deposit rate setting is not included since this is not about FX deposit or capital flows.
Note 5: the measure on joint holding accounts of non-resident Indians and a close relative of resident Indians is not included in the list.
Note 6: personal remittances such as gifts or small amount transfers to relatives are not included here.
Note 7: "Set-off" of export receivables against import payables is a liberalisation of procedure, and not a net increase or decrease in flows. So this is not included in the list.

**Indonesia**

From Jan 2004 to July 2013

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 1 | 2-Aug-04 | Effective 2 August 2004, banks that were required to incorporate market risk in the calculation of capital were made subject to a maximum net open position of 30% of capital, while other banks were subject to a maximum net open position of 20% of capital. Previously, banks must maintain a maximum overall on- and off-balance sheet position and on-balance sheet net open position, both intraday and end-day, of 20% of capital. (No.6/20/PBI/2004) | http://www.bi.go.id/web/en/Peraturan/Perbankan/pbi+062004+english.htm |
| 2 | 10-Jan-05 | Effective 10 January 2005, short-term borrowing (maturities up to one year) by banks were limited 30% of bank capital, while long-term borrowing (maturities of more than one year) by banks required approval by BI. Previously, banks were allowed to receive foreign commercial borrowing with maturities of no more than two years in an amount not exceeding the equivalent of USD 20 million a credit on a bilateral basis without prior approval from the BI, but the banks must maintain the total amount of such borrowings at or below a maximum of 30% of their capital. (No.7/1/PBI/2005) | http://www.bi.go.id/web/en/Peraturan/Perbankan/bir+7105.htm |
| 3 | 20-Jan-05 | Resident banks were prohibited from owning 'assets in the form of stock' or 'securities with an underlying reference stock' (issued by non-residents). (No.7/4/PBI/2005) | http://www.bi.go.id/web/en/Peraturan/Perbankan/bir+7405.htm |
| 4 | 14-Jul-05 | If there is no underlying local investment activity, effective 14 July 2005, the limit on forward contracts against rupiah offered by domestic banks to non-residents was reduced to the equivalent of $1 million from $3 million a customer. These restrictions do not apply to investment-related transactions, such as equity participation, purchase of securities and provision of credit. (No.7/14/PBI/2005) | http://www.bi.go.id/web/en/Peraturan/Moneter/bir+71405.htm |
| 5 | 13-Oct-08 | With retroactive effect from 13 October 2008, the central bank lifted the limit on banks' short-term foreign borrowing to 30% of capital. (BANK INDONESIA REGULATION NUMBER: 10/20/PBI/2008) | http://www.bi.go.id/NR/rdonlyres/C2E95614-917F-49D8-88F6-38370ADE50F4/18016/PBI_102008.pdf |
| 6 | 7-Jul-10 | BI imposed (re-instated) a one-month minimum holding period for all investors (both domestic and foreign) for purchases of SBIs in both the primary and secondary markets. (No.12/11/PBI/2010) | http://www.bi.go.id/web/en/Peraturan/Moneter/pbi_121110.htm |
| 7 | 7-Jul-10 | To reduce the volatility of inflows and address concerns that central bank sterilisation was attracting further inflows, the central bank phased out one- and three-month SBIs in favour of nine- and 12-month SBIs, and expanded the supply of non-tradable term deposits up to six months tenor, which were only available to banks operating in Indonesia. | |
| 8 | 1-Nov-10 | A statutory reserve requirement for rupiah deposits based on the loan-to-deposit ratio was established and the statutory reserve requirement of 1% for deposit accounts in foreign currency was introduced. (PBI No. 12/19/PBI/2010). | http://www.bi.go.id/NR/exeres/2559D180-BF87-4A65-97CE-A3A663CD0195.htm |
| 9 | 1-Mar-11 | The reserve requirement on deposit accounts in foreign exchange was raised to 5% from 1% (No. 13/10/PBI/2011). | http://www.bi.go.id/NR/exeres/827B11FB-74FD-455A-A36E-CA2AAAFB1FBF.htm |
| 10 | 1-Jun-11 | The reserve requirement on deposit accounts in foreign exchange was raised to 8% from 5% (No.13/10/PBI/2011) | http://www.bi.go.id/NR/exeres/827B11FB-74FD-455A-A36E-CA2AAAFB1FBF.htm |
| 11 | 13-May-11 | The minimum holding period for all investors (both domestic and foreign) for purchases of Bank Indonesia certificates (SBIs) in both the primary and secondary markets was lengthened from one month to six months. (No.13/13/DPM) | http://www.bi.go.id/web/en/Peraturan/Moneter/se_131311.htm |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 12 | 1-Jan-13 | To ensure that receipt of export proceeds takes place through a domestic foreign exchange bank in the Indonesia banking system, Bank Indonesia introduced regulation No. 13/20/PBI/2011 and amended it by regulation No. 14/25/PBI/2012. There is no obligation to keep these funds in a domestic bank and no restriction on subsequent transfers abroad. There is also no obligation to convert the foreign exchange into domestic currency. This requirement does not apply to agreements signed before 2 January 2012, during a transition period that ends on 31 December 2012 (that is, the requirement became effective on 1 January 2013). | http://rulebook-jica.ekon.go.id/english/4919_14_25_PBI_2012_e.html |
| 13 | 1-Jul-13 | Export proceeds not received through a foreign exchange bank because of a contractual arrangement for payment through a trustee outside Indonesia became subject to requirement for receipt through a foreign exchange bank. | http://rulebook-jica.ekon.go.id/english/4919_14_25_PBI_2012_e.html |

Note 1: verification requirements on the purchase of foreign exchange introduced in December 2008 are not included in the list.
Note 2: central bank requiring banks to submit accurate information is not about material restrictions on capital flows, so it is not included in the list.
Note 3: dollar liquidity provision operations are not included in the list.

**Korea**

From Jan 2004 to January 2013

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 1 | 15-Jan-04 | In order to rein in the use of NDF contracts for foreign exchange speculation, the overbought or long positions of non-deliverable forwards between domestic and foreign financial institutions could not exceed 110% (ie imposed a ceiling) of the overbought position as of 14 January 2004. | |
| 2 | 19-Jan-04 | The oversold or short positions of non-deliverable forwards between domestic and foreign financial institutions were required to be more than 90% (ie imposed a floor) of the oversold position as of 16 January 2004. | |
| 3 | 1-Apr-04 | The asset/liability ratios that foreign exchange banks must maintain in foreign currencies were increased from 80% to 85% for short-term liabilities with a maturity of less than three months, and from 50% to at least 80% for long-term loans with a maturity of one year or longer. | |
| 4 | 20-Apr-04 | The floor on oversold or short positions of non-deliverable forwards between domestic and foreign financial institutions was abolished. | |
| 5 | 31-Mar-05 | The sum of the assets of an insurance company denominated in foreign currency must not exceed 30% (previously, 20%) of its total assets. | |
| 6 | 1-Jul-05 | The limit on individuals' overseas direct investment was raised from USD 1 million to USD 3 million. | |
| 7 | 1-Jul-05 | The limit on purchase of real estate abroad by individuals intending to reside abroad for more than two years was raised from USD 300,000 to USD 500,000. | |
| 8 | 1-Jul-05 | The limit on overseas direct investment in financial and insurance companies by residents, excluding financial institutions, was removed. | |
| 9 | 1-Jan-06 | The limit for individuals to purchase real estate abroad without BOK approval was raised from USD 500,000 to USD 1 million. | |
| 10 | 1-Jan-06 | On 1 January 2006, the government allowed domestic asset management companies to issue or raise funds for foreign currency-denominated indirect investment securities in order to expand their business scope. | |
| 11 | 6-Jan-06 | On 6 January 2006, the limit on individuals' overseas direct investment was raised from USD 3 million to USD 10 million. | |
| 12 | 2-Mar-06 | The limit on the repatriation requirements for proceeds from capital transactions and invisible transactions was increased from USD 100,000 to USD 500,000. The limit on the repatriation requirements of export proceeds was raised from USD 100,000 to USD 500,000. In particular, export earnings exceeding USD 500,000 (previously USD 100,000) must be repatriated within one and a half years (previously six months) of receipt. These funds, however, may be held abroad and used for overseas transactions in accordance with the regulations on foreign exchange transactions. | |
| 13 | 2-Mar-06 | Effective 2 March 2006, loans to non-residents exceeding the equivalent of USD 500,000 (previously, USD 100,000) must be repaid within 3 years of the maturity date. | |
| 14 | 2-Mar-06 | The limit on purchase of real estate abroad by individuals intending to reside abroad for more than two years was eliminated. Also, individuals were no longer obliged to sell any overseas properties within three years of returning to Korea. | |
| 15 | 2-Mar-06 | On 2 March 2006, the government raised the ceiling on investment in overseas funds by indirect investment organisations (funds) from up to 5% of assets to 20%, and the ceiling on investment in the same foreign asset management funds by funds of funds from up to 50% of total assets to 100%. | |
| 16 | 2-Mar-06 | On 2 March 2006, all restrictions on the range of foreign securities in which residents can invest were abolished. The government abolished the limits on foreign securities investment by individual investors. | |
| 17 | 2-Mar-06 | In March 2006, the limit on individuals' overseas direct investment was completely lifted. Previously the limit was USD 10 million. | |
| 18 | 2-Mar-06 | The overall net open position of foreign exchange banks measured by the sum of the net short positions or the sum of the net long positions, whichever is greater, was limited to 30% (previously, 20%) of the total equity capital at the end of the previous month. | |
| 19 | 22-May-06 | Real estate purchases abroad of less than USD 1 million for investment purposes by individuals and firms are allowed, subject to notification to a foreign exchange bank. | |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 20 | 22-May-06 | The overall net open position (short-hand position) of foreign exchange banks measured by the sum of the net short positions or the sum of the net long positions, whichever is greater, was limited to 50% (previously, 30%) of the total equity capital at the end of the previous month. | |
| 21 | 22-May-06 | Credit and loans to non-residents in domestic currency of more than KRW 10 billion (previously KRW 1 billion) granted by foreign exchange banks required BOK notification (that is, notification threshold changed). | |
| 22 | 23-Dec-06 | On 23 December 2006, in order to slow down rapid growth in private credit partly due to increased foreign currency borrowing by banks and to stabilise property prices, the central bank increased the reserve requirement ratio from 5% to 7% for demand deposits, money market deposit account and other non-savings deposits, and reduced the reserve requirement ratio from 1% to 0% for long-term savings deposits, while maintaining the 2% reserve requirement ratio for time deposits, CDs and instalment deposits. Overall, the average reserve requirement ratio increased from around 3% to around 3.8%. On 23 December 2006, the central bank increased the reserve requirement ratio from 5% to 7% for demand deposits in foreign currency, while the reserve requirement ratios for the other types of deposits remained the same. | |
| 23 | 26-Feb-07 | Effective 26 February 2007, the definition of inward direct investments was extended to include all domestic stocks (previously, only stocks listed on or registered with the domestic securities markets were included; after this measure, non-listed stocks and non-registered stocks were also included). | |
| 24 | 26-Feb-07 | Effective 26 February 2007, the limit on purchases of real estate abroad by individuals for investment purposes was raised from USD 1 million to USD 3 million. There were no controls on the purchase of real estate abroad by individuals intending to reside abroad for more than two years. | |
| 25 | 9-Mar-07 | Effective 9 March 2007, certain examination requirements prior to inward direct investment, including financing and appropriateness, were eliminated, except for investments in the banking and insurance businesses. | |
| 26 | 19-Apr-07 | The Financial Supervisory Service requested 36 foreign banks operating in Korea to slow down short-term foreign currency borrowing. | |
| 27 | 01-Jun-07 | The government exempted domestic asset management companies from taxation on capital gains through overseas stock purchases in foreign investment funds. | |
| 28 | 01-Jan-08 | In order to enhance the equity of the tax burden between domestic and foreign financial institutions, by revising the "Enforcement Decree of the Act concerning International Tax Adjustment", the government announced a plan to regulate short-term foreign currency borrowing by lowering the ceiling for tax deductibility of interest expenditure resulting from the borrowing of foreign bank branches from their headquarters, from 6 times of their capital to 3 times, effective from 1 January 2008. | |
| 29 | 10-Aug-07 | The Bank of Korea limited foreign currency lending to 'actual uses overseas by end users' and 'funding domestic facilities investment by manufacturers'. | |
| 30 | 17-Dec-07 | The threshold for exemption from the prior reporting requirement on won-denominated loans to non-residents extended by commercial banks (and other credit institutions) was raised from KRW 10 billion to KRW 30 billion. The threshold for exemption from the prior reporting requirement on won-denominated securities lending to non-residents extended by commercial banks (and other credit institutions) was raised from KRW 10 billion to KRW 50 billion. | |
| 31 | 14-Jan-08 | The overbought or long positions of non-deliverable forwards between foreign exchange banks and foreign financial institutions were limited to 110% of the positions at the end of the previous month. | |
| 32 | 28-Jan-08 | Effective 28 January 2008, the Bank of Korea allowed foreign currency lending to 'fund domestic facilities investment by non-manufacturers' (that is, funding capital investment by domestic firms). | |
| 33 | 01-Jun-08 | In June 2008, the limit on purchases of real estate abroad by individuals for investment purposes was abolished (previously the limit was USD 3 million). | |
| 34 | 01-Jun-08 | In June 2008, the government raised the ceiling on enterprises' integrated management of overseas funds from USD 10 million to USD 30 million. | |
| 35 | 14-Jul-08 | In order to encourage foreign banks' domestic branches to expand borrowing from their headquarters, the government announced that the tax deductibility ceiling for foreign bank branches would be raised back from 3 times of their capital to 6 times, effective for 2008 business year (which starts on 1 January 2008 and ends on 31 December 2008). | |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 36 | 8-Sep-08 | Effective 8 September 2008, the limitation of 110% on overbought or long positions of non-deliverable forwards between foreign exchange banks and foreign financial institutions was abolished. | |
| 37 | 27-Oct-08 | The Bank of Korea allowed foreign currency borrowing by domestic exporters for payment of knock-in-knock-out and other currency option transactions. | |
| 38 | 01-Dec-08 | The Bank of Korea abolished restrictions on the rollover of foreign currency lending for use as working capital procured before 10 August 2007. | |
| 39 | 01-Mar-09 | In March 2009, the "Standard Guideline concerning the Exchange Risk Management of Public Institutions" was revised to ease curbs on domestic public institutions' overseas borrowing. (BOK Annual Report 2009) | |
| 40 | 01-May-09 | In May 2009, the government revised the "Special Tax Treatment Control Act" to provide non-residents with a favourable tax reduction or exemption when paying transfer tax on the acquisition of unsold apartments or paying income tax on dividend income for funds that invested to purchase unsold apartments. The government also established a fund exclusively for overseas Koreans and lowered the withholding tax rate on dividend income for the fund. | |
| 41 | 21-May-09 | The government announced the removal of withholding tax on bond (government bonds and central bank paper) interest income of non-residents, other tax benefits and relaxation of restrictions on foreign currency deposits by non-residents and foreign currency borrowing by residents. Through the revision of the "Income Tax Act" and the "Corporate Tax Act", foreigners were exempted from paying tax on interest rate income and capital gains arising from their investment in government bonds. | |
| 42 | 01-Jan-10 | In order to avoid excessive regulatory costs associated with compliance of stringent 7-day gap ratio, the required ratio of "(foreign currency assets with residual maturity of less than seven days) minus (foreign currency liabilities with residual maturity of less than seven days)" to "total foreign currency assets with residual maturity of less than seven days" was lowered from at or above zero to at or above -3%. | |
| 43 | 01-Jan-10 | The authorities capped corporate FX hedging limit to 125% of real transactions (export and import) being hedged when domestic banks and foreign bank branches sell FX derivatives products (including forward transactions) to corporates. | |
| 44 | 01-Jan-10 | Effective 1 January 2010, the authorities strengthened the mid-to-long-term funding resources ratio by changing the definition of mid-to-long-term funding from the maturity of one year or longer to the maturity of longer than one year, and also by raising the minimum required ratio of mid-to-long-term funding to mid-to-long-term lending in foreign loan portfolios from 80% to 90%. | |
| 45 | 01-Jul-10 | Effective 1 July 2010, the authorities changed the liquidity weightings applied to foreign exchange assets in the calculation of the 7-day, 1-month and 3-month FX liquidity ratios from '100% for all asset classes' to '35%~100% depending on the recoverability or marketability of each asset class', in order to reflect the recoverable rate of FX assets during a liquidity crunch. The application of these new liquidity weights resulted in significant reductions in the 7-day, 1-month and 3-month FX liquidity ratios. | |
| 46 | 01-Jul-10 | Effective 1 July 2010, the authorities introduced mandatory minimum holdings of safe foreign currency assets, under which domestic banks should hold safe foreign currency assets at least (1) 2% of the total foreign currency assets, or (2) the maximum possible amount of withdrawal of foreign currency liabilities within two months. Here, banks' safe foreign exchange asset holdings comprise (1) government bonds rated higher than A, (2) deposits in the central banks of countries rated higher than A, and (3) corporate bonds rated higher than A. | |
| 47 | 01-Jul-10 | Purchases of domestic facilities with foreign-currency-denominated loans are generally no longer an exception to the mandatory "overseas use only" policy; the exception may only be applied to small- and medium-size manufacturers for the purposes of purchasing domestic facilities. | |
| 48 | 01-Aug-10 | The maximum derivatives trading limit, including forward transactions, for corporate clients was reduced from 125% to 100% of real transactions (import and export) being hedged. | |
| 49 | 01-Aug-10 | Effective 1 August 2010, the authorities strengthened the mid-to-long-term funding resources ratio by including foreign currency-denominated securities held to maturity in the calculation of mid-to-long-term loans, and by the minimum required ratio of mid-to-long-term financing to mid-to-long-term lending in foreign loan portfolios from 90% to 100%. | |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 50 | 01-Aug-10 | Effective 1 August 2010, the banks were required to meet the foreign currency liquidity ratios on a daily basis voluntarily and report their daily foreign currency liquidity ratios to the authorities every month. | |
| 51 | 09-Oct-10 | The maximum limits on banks' foreign exchange derivative contracts (including futures, FX swaps, currency swaps and NDFs) were set at 50% (domestic banks) and 250% (foreign bank branches) of bank capital in the previous month, in order to control banks' short-term debt and to indirectly reduce external borrowing by the banking sector by limiting derivatives positions. This measure was introduced in July 2010 with a three-month grace period to help financial institutions and companies carry out financial and real trade transactions without the imposition of excessive burden. | |
| 52 | 01-Jan-11 | Effective 1 January 2011, the authorities reintroduced a withholding tax of 14% on interest income and of 20% on trading income (capital gains) from bond (government bonds and central bank paper (so called Monetary Stabilisation Bonds)) holding of both foreign investors and domestic investors, in order to limit the influence of foreign investors on the domestic market and slow inflows in the bond market. This was done through the amendment of the "Income Tax Act" and the "Corporate Tax Act" in December 2010. | |
| 53 | 1-Jun-11 | The maximum limits on banks' foreign exchange derivative contracts were reduced from 50% to 40% (domestic banks) and from 250% to 200% (foreign bank branches) of the previous month's bank capital. | |
| 54 | 25-Jul-11 | Investment by foreign exchange agencies in domestically-issued foreign-currency denominated bonds issued for Korean won financing were restricted, and these agencies were required to sell bonds that are issued for the purpose of converting the proceeds into won. This measure was introduced from 25 July 2011 to deal with banks and foreign bank branches circumventing regulations designed to limit foreign borrowing. | |
| 55 | 01-Aug-11 | In order to reduce capital flow volatility, to encourage long-term and stable sources of foreign currency funding and to collect funds for potential relief loans to banking sector and helping economy cope with external shocks, the government charged Macroprudential Stability Levy on non-deposit foreign currency liabilities of domestic banks and foreign bank branches in Korea: 0.2% levy for liabilities with maturity of less than one year; 0.1% levy for liabilities with maturity equal to or greater than one year and less than three years; 0.05% for liabilities with maturity equal to or greater than three years and less than five years; and 0.02% for liabilities with maturity of five years and more. These levy rates were announced in July 2011. In its first announcement in December 2010, the levy rates were 0.05% for liabilities with maturity of three years and more, while the other rates for the shorter maturities were the same. | |
| 56 | 01-Jan-13 | The maximum limits on banks' foreign exchange derivative contracts were reduced from 40% to 30% (domestic banks) and from 200% to 150% (foreign bank branches) of the previous month's bank capital. | |
| 57 | 1-Jan-13 | In order to provide incentives for banks to attract foreign currency deposits instead of foreign currency wholesale funding, the government and the Bank of Korea allowed deduction of banks' foreign currency deposits when they calculate their foreign currency liabilities subject to the imposition of the Macroprudential Stability Levy. This method was applied to the levy to be paid from business year of 2013. | |

**Malaysia**

From Jan 2004 to April 2013

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 1 | 01-Apr-04 | The limits on ringgit loans by banking institutions to non-residents (excluding stockbroking companies, custodian banks and correspondent banks) for any purpose (excluding the purchase or construction of immovable property or the purchase of land only) to finance activities in the real sector in Malaysia were raised to an aggregate of RM 10 million (previously, RM 200,000). | |
| 2 | 01-Apr-04 | Resident banks and nonbanks were permitted to extend credit facilities to non-residents to finance or refinance the purchase or construction of any immovable property in Malaysia (excluding financing for purchase of land only) up to a maximum of three property loans in aggregate. | |
| 3 | 11-Sep-04 | Effective 11 September 2004, tax exemption was given on interest income derived by non-resident companies from ringgit-denominated Islamic securities and debentures, excluding convertible loan stocks, approved by Securities Commission and securities issued by the Government of Malaysia. According to Exhibit 6 of Chan, Ahmand and Wooldridge (2007), this measure was partial abolishment of the withholding tax. | BNM Annual Report 2004, page 207 |
| 4 | 1-Apr-05 | Residents were permitted to enter into forward contracts with licensed onshore banks and approved merchant banks to hedge exposures related mainly to anticipated transactions (previously limited to firm commitments only), as well as exposures arising from approved investments abroad. (Press Release 23 Mar 2005) | http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press_all&ac=994&lang=en |
| 5 | 1-Apr-05 | Non-residents were permitted to enter into forward contracts with licensed onshore banks and approved merchant banks mainly to hedge exposures with respect to payments or receipts for current transactions and to committed outflows and inflows out of, or into, ringgit assets, subject to certain conditions. (Press Release 23 Mar 2005) | http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press_all&ac=994&lang=en |
| 6 | 1-Apr-05 | Residents (individuals or companies on a corporate group basis) without domestic ringgit credit facilities were allowed to invest abroad any amount of own foreign currency held onshore or offshore, up to RM 10 million from a foreign currency facility, and any amount of ringgit converted into foreign currency. (Press Release 23 Mar 2005) Residents (individuals or companies on a corporate group basis) with domestic ringgit credit facilities were allowed to invest abroad any amount of own foreign currency held onshore or offshore, up to RM 10 million from a foreign credit facility, or ringgit converted to foreign currency, subject to limits of RM 10 million a calendar year on a corporate group basis for companies, and RM 100,000 a calendar year for individuals. (Press Release 23 Mar 2005) | http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press_all&ac=994&lang=en |
| 7 | 1-Apr-05 | The limit on foreign currency credits obtained by residents companies from non-residents was raised from RM 5 million to RM 50 million in aggregate on a corporate group basis, and the limit on foreign currency credits obtained by resident individuals from non-residents was raised from RM 5 million to RM 10 million. No limit applies to the tenure of onshore foreign currency trade financing. Offshore trade financing for non-export purposes is subject to a limit of RM 5 million. Trade financing for export must be obtained onshore and is not subject to any limits on amount or tenure. (Press Release 23 Mar 2005) | http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press_all&ac=994&lang=en |
| 8 | 1-Apr-05 | Resident fund and asset management companies were allowed to invest abroad up to (1) 100% of funds managed on behalf of non-residents and resident clients with no domestic ringgit credit facilities and (2) 30% of total funds managed on behalf of resident clients with domestic ringgit credit facilities. (Press Release 23 Mar 2005) | http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press_all&ac=994&lang=en |
| 9 | 1-Apr-05 | The limit on investments abroad for investment-linked funds offered by resident insurers was increased to 30% from 10% pf the total NAV of the funds. (Press Release 23 Mar 2005) | http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press_all&ac=994&lang=en |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 10 | 1-Apr-05 | Resident unit trust management companies were allowed to invest abroad up to 30% and 100% of NAV attributable to resident and non-resident subscribers, respectively. (Press Release 23 Mar 2005) | http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press_all&ac=994&lang=en |
| 11 | 01-Apr-05 | Resident insurers and takaful operators were allowed to invest abroad up to 5% of their margins of solvency or total assets, and up to 30% of the NAV of investment-linked funds marketed by them. (Foreign Exchange Administration Policies, Annex of Annual Report 2004) | http://www.bnm.gov.my/files/publication/ar/en/2004/zcp14_001.pdf |
| 12 | 07-Apr-06 | Restricted investment scheme (collective investment securities funds of limited distribution to sophisticated investors) were allowed to invest in foreign securities subject to prior approval by BNM and the Securities Commission. | |
| 13 | 01-Jan-07 | The FIC Guidelines on Property on the acquisition of residential properties valued at not less than RM 250,000 for personal use by foreign investors were relaxed. | |
| 14 | 10-Jan-07 | Reserve requirements on foreign currency deposit liabilities were removed. | |
| 15 | 18-Jan-07 | The sublimit for investment in any one foreign jurisdiction of 2% of an insurer's solvency margin was removed. A licensed insurer continued to be allowed to invest abroad up to a maximum of 5% of its margin of solvency (overall limit). | |
| 16 | 01-Apr-07 | Residents were allowed to hedge foreign currency loan repayment up to the full amount of the underlying commitment (previously, commitment was limited to 24 months). (KL.EC 100/6/2007/3(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=3&bb=file |
| 17 | 01-Apr-07 | The requirement that non-residents reinvest the proceeds of the sale of ringgit assets prior to the maturity of a forward foreign exchange contract within seven business days was abolished. | |
| 18 | 01-Apr-07 | Resident companies were authorised to use the proceeds from the listing of shares through initial public offerings on the main board of the Bursa Malaysia for offshore investment. (KL.EC 100/6/2007/7(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=7&bb=file |
| 19 | 01-Apr-07 | The amount resident companies (on a corporate group basis) with domestic ringgit borrowing facilities are permitted to invest in foreign currency assets through conversion of ringgit into foreign currency was increased to RM 50 million a calendar year from the previous limit of RM 10 million. The amount resident individuals with domestic ringgit borrowing facilities may invest in foreign currency assets through conversion of ringgit into foreign currency was increased to RM 1 million a calendar year from the previous limit of RM 100,000. Investment in foreign currency assets, amongst others, include (1) lending to non-residents, (2) placement of foreign currency funds onshore and offshore, and (3) purchase of approved foreign currency investment products marketed by licensed onshore banks and any resident permitted by the Controller of Foreign Exchange. (KL.EC 100/6/2007/7(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=7&bb=file |
| 20 | 01-Apr-07 | Non-resident companies were authorised to use abroad proceeds from the listing of shares through an initial public offering on the main board of the Bursa Malaysia. (KL.EC 100/6/2007/7(b)) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=7&bb=file |
| 21 | 01-Apr-07 | The amount insurance companies and takaful operators of investment-linked funds may invest in foreign currency assets was increased from 30% to 50% of the total NAV of the funds. (KL.EC 100/6/2007/7(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=7&bb=file |
| 22 | 01-Apr-07 | Resident unit trust companies were authorized to invest in foreign currency assets up to 50% of the NAV (previously, 30%) attributable to residents. (KL.EC 100/6/2007/7(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=7&bb=file |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 23 | 01-Apr-07 | Resident fund management companies were authorized to invest up to 50% of funds of resident clients with domestic credit facilities (previously, 30%). (KL.EC 100/6/2007/7(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=7&bb=file |
| 24 | 01-Apr-07 | Effective 1 April 2007, residents were allowed to issue foreign currency bonds in Malaysia. This measure increases foreign currency borrowing by residents, so classified as loosening inflows. (KL.EC 100/6/2007/8(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=8&bb=file |
| 25 | 01-Apr-07 | Non-residents were allowed to issue foreign currency bonds in Malaysia. (KL.EC 100/6/2007/8(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=8&bb=file |
| 26 | 01-Apr-07 | Effective 1 April 2007, limits on residents' borrowing in foreign currency were increased from RM 50 million to RM 100 million for resident companies (including financial institutions other than licensed onshore banks) on a corporate group basis, and from RM 5 million to RM 10 million for resident individuals from non-residents (licensed onshore banks) as well as through issuance of foreign currency bonds in Malaysia. Approval is required for amounts exceeding the above limits. Licensed onshore banks were already allowed to borrow freely in foreign currency from non-residents. (KL.EC 100/6/2007/8(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=8&bb=file |
| 27 | 01-Apr-07 | Non-residents were allowed to obtain an unlimited number of property loans. Non-residents may borrow from residents to finance investments related to any number of properties. Previously, non-residents were not allowed to obtain more than three property loans. (KL.EC 100/6/2007/3(b)-10(b) | http://www.bnm.gov.my/microsites/fxadmin/circulars/20070401_01.pdf |
| 28 | 01-Apr-07 | Nonbank residents became eligible to lend foreign exchange to non-residents up to the following limits: (1) Residents without ringgit credit facilities may lend any amount. (2) Resident companies and individuals with ringgit credit facilities may lend up to RM 50 million and RM 1 million a year, respectively. (KL.EC 100/6/2007/5(b) | http://www.bnm.gov.my/index.php?ch=190&pg=595&ac=5&bb=file |
| 29 | 1-Apr-07 | The net open position limit of licensed onshore banks, previously capped at 20% of the banks' capital base, was abolished. (Press Release 1 Apr.2007) | http://www.bnm.gov.my/index.php?ch=8&pg=14&ac=1406 |
| 30 | 1-Apr-07 | The limit imposed on licensed onshore banks for foreign currency accounts maintained by residents was abolished. This is about maintenance of accounts abroad. (Press Release 1 Apr.2007) | http://www.bnm.gov.my/index.php?ch=8&pg=14&ac=1406 |
| 31 | 01-Apr-07 | The amount licensed insurers may invest abroad was increased from 5% to 10 % of their solvency margin. (Foreign Exchange Administration Policies, Annex of Annual Report 2007) | http://www.bnm.gov.my/files/publication/ar/en/2007/zcp07_001.pdf |
| 32 | 01-Oct-07 | Effective 1 October 2007, resident unit trusts and fund management companies were allowed to invest abroad up to (1) 100% of the NAV of Islamic funds, (2) 100% of the NAV of funds managed on behalf of non-residents and resident clients with no domestic ringgit credit facilities, and (3) 50% of the NAV or total funds managed on behalf of resident clients with domestic ringgit credit facilities. (Foreign Exchange Administration Policies, Annex of Annual Report 2007) | http://www.bnm.gov.my/files/publication/ar/en/2007/zcp07_001.pdf |
| 33 | 28-May-08 | Licensed onshore banks and other residents were allowed to lend any amount in ringgit to non-resident nonbank companies and individuals to finance activities in the real sector in Malaysia. Previously, the limit was up to RM 10 million. (KL.EC 100/6/2008/2 (b) | http://www.bnm.gov.my/microsites/fxadmin/circulars/20080528.pdf |
| 34 | 28-May-08 | Resident companies were authorised to borrow any amount in foreign currency from (1) a non-resident nonbank parent company, (2) other resident companies within the same corporate group in Malaysia, and (3) licensed onshore banks and licensed IIBs. (KL.EC 100/6/2008/2 (b) | http://www.bnm.gov.my/microsites/fxadmin/circulars/20080528.pdf |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 35 | 28-May-08 | Resident companies were authorized to borrow any amount in ringgit from non-resident nonbank parent companies to finance activities in the real sector in Malaysia and up to RM 1 million from other non-residents for use in Malaysia. (KL.EC 100/6/2008/2 (b) | http://www.bnm.gov.my/micrositesfxadmin/circulars/20080528.pdf |
| 36 | 28-May-08 | Resident individuals were allowed to borrow in ringgit up to RM 1 million in aggregate from non-resident nonbank companies or individuals for use in Malaysia. Previously, borrowing in ringgit of any amount from non-residents required permission from the Controller of Foreign Exchange. (KL.EC 100/6/2008/2 (b) | http://www.bnm.gov.my/micrositesfxadmin/circulars/20080528.pdf |
| 37 | 01-Jan-09 | Licensed insurers were required to hold an additional 8% of capital on mismatched currency positions. (BNM/RH/GL 003-24 version 3.0 p.30) | http://www.bnm.gov.my/guidelines/02_insurance_takaful/01_capital_adequacy/gl_003_24_200613.pdf |
| 38 | 18-Feb-09 | Foreign-incorporated collective investment schemes became eligible to be offered and marketed in Malaysia to Malaysian investors, provided they are from a recognised jurisdiction listed in Appendix I of the Securities Commission's Guidelines on Offering, Marketing, and Distribution of Foreign Funds. | |
| 39 | 27-Apr-09 | Non-residents became eligible to participate in the equity of (1) commercial banks, not exceeding 30%; (2) investment banks, not exceeding 70%; (3) insurance companies, not exceeding 70% (Foreign equity limits above 70% are considered on a case-by-case basis for insurance industry. Existing foreign insurers that participate in the process are accorded flexibility in meeting the divestment requirement; (4) takaful operators, not exceeding 70%.); (5) international Islamic banks, up to 100%; and (6) Islamic banks, not exceeding 70%. (Press Release 27 Apr.2007) | http://www.pmo.gov.my/?menu=news&news_id=44&news_cat=4&page=1729# |
| 40 | 02-Apr-10 | Residents may pay non-residents for derivatives transactions (other than currency derivatives contracts) on specified exchanges (under the CMSA) via a resident futures broker as follows: (a) for hedging purposes—no limit; and (b) for any other purpose, subject to prevailing limits on investment in foreign currency assets, up to RM 10 million a calendar year (companies) and RM 1 million a calendar year (individual) on residents with domestic ringgit borrowing. (KL.EC 100/6/2010/3 (b) | http://www.bnm.gov.my/micrositesfxadmin/circulars/20100405.pdf |
| 41 | 18-Aug-10 | BNM abolished the cap on hedging by residents (with licensed onshore banks and licensed IIBs) for anticipated current account transactions, which previously limited the amount that could be hedged to the cumulative amount received or paid in the preceding 12 months. (KL.EC 100/6/2010/6 (b) | http://www.bnm.gov.my/micrositesfxadmin/circulars/20100818.pdf |
| 42 | 18-Aug-10 | Resident companies may borrow any amount in foreign currency from non-resident nonbank-related companies, including the ultimate holding, parent/head office, subsidiary/branch, associate, or sister (common shareholder) company (previously, this applied only to non-resident nonbank parent/head office companies). (KL.EC 100/6/2010/6 (b) | http://www.bnm.gov.my/micrositesfxadmin/circulars/20100818.pdf |
| 43 | 15-Oct-10 | During the presentation of the 2011 Budget on October 15, 2010, the Government has given approval for the Employees Provident Fund (EPF) to invest up to 20 percent (previously, up to 7 percent) of the size of its funds abroad. As of December 2010, in terms of book value, the EPF invested approximately 9.77 per cent of total assets globally. As of end-2010, it intended to carefully allocate up to 20 per cent of its total funds into global investment by 2013. (Annual Report 2010 of the EPF). The EPF had about USD 117 billion under management as of June 2010, implying potential outflows of up to USD 15 billion. | http://www.lawnet.com.my/lawnetpublic/Speech2011.pdf |
| 44 | 1-Jun-11 | The RM 5 million limit on foreign currency trade financing obtained by residents from non-residents is no longer applicable. Residents may obtain foreign currency credit facilities, including trade financing facilities, from non-residents up to the prevailing aggregate limit equivalent to RM 100 million for companies on a corporate group basis and RM 10 million for individuals. (KL.EC 100/6/2011/3 (b) | http://www.bnm.gov.my/micrositesfxadmin/circulars/20110530_Circular_letter_DIA_Public.pdf |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 45 | 1-Jun-11 | Resident companies are free to borrow in ringgit any amount from non-resident, nonbank, related companies to finance activities in the real sector in Malaysia. (KL.EC 100/6/2011/3 (b) | http://www.bnm.gov.my/microsites/fxadmin/circulars/20110530_Circular_letter_DIA_Public.pdf |
| 46 | 1-Jun-11 | Resident companies that meet the prudential requirements stipulated by the BNM may undertake any amount of direct investment abroad. (KL.EC 100/6/2011/3 (b) | http://www.bnm.gov.my/microsites/fxadmin/circulars/20110530_Circular_letter_DIA_Public.pdf |
| 47 | 1-Jul-12 | The minimum value for the acquisition of residential property by foreigners was raised from RM 250,000 to RM 500,000. | http://www.propertyinmalaysia.com/regulations-guidelines-can-foreigners-buy-property-in-malaysia.php |
| 48 | 31-Jan-12 | Licensed domestic banks may undertake settlement in ringgit or a foreign currency equivalent with nonbank non-residents for ringgit-denominated interest rate derivatives offered by the licensed domestic bank to the nonbank non-resident. (KL.EC 100/6/2012/1 (b) | http://www.bnm.gov.my/microsites/fxadmin/circulars/20120130_circular_domestic_financial_markets.pdf |

Note 1: when approval requirements change into registration requirement, we do not include them in the list.
Note 2: entry into market of new players such as investment banks is not counted in here.
Note 3: resident companies paying other resident companies in foreign currency are not included in the list.

**Philippines**

From Jan 2004 to Dec 2012

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 1 | 4-Jun-04 | Foreign Currency Deposit Units (FCDUs) and Expanded Foreign Currency Deposit Units (EFCDUs) of domestic banks were allowed to engage in repurchase agreements involving foreign currency–denominated government securities (that is, to borrow in foreign currency), subject to the following conditions. (a) The repurchase agreements shall involve only government securities held as Trading Account Securities under the foreign currency deposit unit (FCDU)/expanded FCDU (EFCDU) books; (b) The government securities subject of repurchase agreements are to be booked under the account "Government Securities Sold under Repurchase Agreements - FCDU/EFCDU"; (c) The borrowings shall only be from FCDUs/EFCDUs, non-resident financial institutions and offshore banking units; (d) The maximum term of the repurchase agreements shall be one (1) year; (e) The borrowings shall be booked under "Bills Payable" and included in the computation of the total FCDU/EFCDU liabilities subject to the mandatory 100% asset cover and 30% liquidity cover; (f) The government securities used as collateral of the borrowing and any margin (in the form of cash or securities) that the lender will collect from the bank anytime the market value of the collateralized securities fall below the amount of the loan shall be considered as eligible asset cover for the 100% cover requirement of the said borrowings. Any excess in the value if the securities or cash used as collateral in a repurchase arrangement cannot be used as cover for the other FCDU/EFCDU liabilities; (g) The government securities used as collateral of the borrowings and any margin (in the form of cash or securities) that the lender will collect from the bank anytime the market value of the collateralized securities fall below the amount of the loan shall not be eligible for the 30% liquid asset cover requirement; (h) Banks shall, at all times, comply with the 100% FCDU/EFCDU asset cover and 30% liquidity cover; and (i) Banks shall monitor and assess the risks inherent in these repurchase transaction. (Circular no 433) | http://www.bsp.gov.ph/regulations/regulations.asp?id=156 |
| 2 | 27-Jan-05 | EFCDUs of universal or commercial banks without expanded derivatives authority are permitted to invest, for their own account, in foreign-currency-denominated structured products issued by banks and special purpose vehicles of high credit quality, provided (1) the revenue streams are linked only to interest rate indices and/or foreign exchange rates other than those that involve the peso, and (2) the minimum total return of such investments is now lower than zero. (Circular no 466) | http://www.bsp.gov.ph/regulations/regulations.asp?id=121 |
| 3 | 3-Feb-05 | All universal and commercial banks with expanded derivative authority were permitted to invest in securities overlying any tranches of securitization structures. Universal banks and commercial banks without expanded derivatives authority were permitted to invest only in securities overlying tranches of securitization structures that were rated at least. A, or its equivalent, by a BSP-recognized credit rating agency. (Circular no 468) | http://www.bsp.gov.ph/regulations/regulations.asp?id=1789 |
| 4 | 2-Apr-07 | The maximum amount of foreign exchange a bank could sell to a resident for any nontrade purpose (excluding payments related to foreign loans and investments) without documentation was increased to $10,000 or its equivalent. For sales in excess of the limit, a resident must submit the prescribed supporting documents. The "no splitting rule," which required that cumulative sales to a resident within a 20-day period not exceed the maximum amount of foreign exchange that can be sold to a resident, was eliminated. Notarization is no longer required for applications to purchase foreign exchange exceeding $10,000. (Circular no 561, section 2) | http://www.bsp.gov.ph/regulations/regulations.asp?id=1737 |
| 5 | 2-Apr-07 | The amount of foreign exchange that may be purchased by residents from banks to fund their outward investment without BSP approval and registration was increased (from USD 6 million) to USD 12 million per investor a year. (Circular no 561, section 44) | http://www.bsp.gov.ph/regulations/regulations.asp?id=1737 |
| 6 | 2-Apr-07 | Banks' allowable open foreign exchange position (either overbought or oversold) was set at the lower of 20% of their unimpaired capital or USD 50 million. Previously, the limit on a bank's long (overbought) foreign exchange positions was 2.5% of its unimpaired capital or the equivalent of USD 5 million, whichever was smaller, while no limit applied on short (oversold) foreign exchange positions. (Circular no 561, section 1) | http://www.bsp.gov.ph/regulations/regulations.asp?id=1737 |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 7 | 21-Jan-08 | Authorised agent banks (AABs) were permitted to sell foreign exchange for advance payment of imports, whether full or partial, up to $100,000 or its equivalent without BSP approval; larger amounts must be referred to the BSP for approval. Previously, financing for advance payment of imports was not allowed. (Circular no 590, section 13) | http://www.bsp.gov.ph/regulations/regulations.asp?id=1976 |
| 8 | 21-Jan-08 | The limit for purchasing foreign exchange for nontrade current account transactions (excluding payments related to foreign loans and investments) without supporting documents from AABs and AAB-forex corporations was increased (from USD 10,000) to USD 30,000 an application. (Circular no 590, section 2) | http://www.bsp.gov.ph/regulations/regulations.asp?id=1976 |
| 9 | 21-Jan-08 | Residents were allowed to freely invest abroad without BSP approval up to $30 million or its equivalent (previously, $12 million) an investor a year, or a fund a year for qualified investors, if funded by foreign exchange purchased from the banking system. (Circular no 590, section 44) | http://www.bsp.gov.ph/regulations/regulations.asp?id=1976 |
| 10 | 21-Jan-08 | FCDUs of thrift banks and rural banks were allowed to borrow from foreign banks abroad, offshore banking units, and EFCDUs of commercial banks regardless of maturity. (Previously there was a short-term maturity restrictions.) (Circular no 590, section 72.1) | http://www.bsp.gov.ph/regulations/regulations.asp?id=1976 |
| 11 | 21-Jan-08 | Qualified investors (investment firms and collective investment funds) were allowed to purchase foreign exchange from AABs to fund outward investments up to $30 million a fund a year. Qualified investors may apply for a higher annual investment limit with the BSP. (Circular no 590, section 44) | http://www.bsp.gov.ph/regulations/regulations.asp?id=1976 |
| 12 | 31-Oct-08 | Net unrealised losses arising from marking-to-market of financial assets/liabilities and revaluation of third currencies to USD in the FCDU/EFCDU book were exempted until March 31, 2009, from the calculation of banks' FCDU/EFCDU asset cover requirement. (Circular no 629) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2265 |
| 13 | 8-Mar-09 | Private banks' foreign borrowings exceeding one year that are intended for relending no longer require BSP approval. Previously, medium- and long-term loans for relending required BSP approval and registrations. (Circular no 645, section 4) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2334 http://www.bsp.gov.ph/regulations/regulations.asp?id=2265 |
| 14 | 1-Apr-09 | The exemption of unrealized mark-to-market losses from the calculation of banks' FCDU asset cover requirement that had been introduced on 30 October 2008 was eliminated as planned. (Circular nos 651 and 629) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2363 |
| 15 | 27-May-09 | BSP-registered foreign exchange dealers (FXDs) and money changers (MCs) (both are nonbank BSP-supervised entities) were allowed to sell foreign exchange for advance payment of imports, regardless of amount, on submission of required documents. Previously, AAB-forex corporations, FXDs and MCs were not allowed to sell foreign exchange for advance payment of imports. (Circular no 652 D) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2378 |
| 16 | 27-May-09 | BSP-registered FXDs and MCs were allowed, on submission of the required application form, to sell foreign exchange for nontrade current account purposes up to $10,000 or its equivalent without need for supporting documents. Purchases by residents for transactions exceeding $10,000 require submission of the required supporting documents. (Circular no 652 A) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2378 |
| 17 | 27-May-09 | Residents may purchase foreign exchange from FXDs and MCs for outward investments regardless of amount, provided such purchases are supported by documents prescribed under existing regulations. (Circular no 652 C) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2378 |
| 18 | 19-Aug-10 | All dividends earned by banks from a subsidiary or an affiliate abroad should be inwardly remitted to the Philippines no later than sixty days after the date of payment. Effective 19 August 22010, reinvestment of said dividend proceeds or deposits/placements thereof in the investor banks' accounts at foreign correspondent banks abroad were deemed compliance with these requirements. (Circular no 692) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2574 |
| 19 | 19-Aug-10 | AABs and/or AAB-foreign exchange corporations were permitted to sell foreign exchange for advance payment for imports, whether full or partial, up to US$1 million (previously, US$100,000) or its equivalent without BSP approval. (Circular no 698, section 13) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2630 |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 20 | 24-Nov-10 | AABs and/or AAB-foreign exchange corporations may sell foreign exchange to non-resident tourists or "balikbayans" (Filipinos resident abroad) in the amount shown to have been sold by them for pesos to said entities. Departing non-resident tourists or balikbayans may reconvert at airports or other ports of exit unspent pesos up to US$5,000 (previously, US$200) or its equivalent in foreign currency calculated at prevailing exchange rates, without proof of previous sale of foreign exchange for pesos. (Circular no 698, section 3) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2630 |
| 21 | 24-Nov-10 | Purchases of foreign exchange from AABs and/or AAB-foreign exchange corporations for nontrade current account transactions (excluding payments related to foreign loans and investments) were permitted up to US$60,000 (previously, US$30,000) or its equivalent in other foreign currency on submission of an application form without supporting documents. Purchases by residents for nontrade transactions exceeding US$60,000 (previously, US$30,000) require submission of an application form and presentation of prescribed supporting documents. (Circular no 698, section 2) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2630 |
| 22 | 24-Nov-10 | AABs and/or AAB-foreign exchange corporations may sell foreign exchange for prepayments (i.e., payments before original due dates) of MLT private sector loans (including bonds and notes) that are not publicly guaranteed and are covered by a BSP registration document without BSP approval, provided, among other things, the foreign exchange purchases do not exceed US$50 million a day and a notice of intended prepayment was submitted to the BSP at least one month before the target payment date. Previously, prepayment of MLT private sector loans required BSP approval. (Circular no 698, section 29) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2630 |
| 23 | 24-Nov-10 | Foreign exchange acquired or received by residents as dividends/ earnings or divestment proceeds from outward investments by Philippine residents and investments in bonds/notes by residents offshore funded by foreign exchange purchased from AABs and/or AAB-foreign exchange corporations must be inwardly remitted and sold for pesos through AABs within 30 banking days (previously, 7 banking days) of receipt. The proceeds, if intended for reinvestment in instruments eligible as outward investment, need not be inwardly remitted and sold for pesos through AABs, provided they are reinvested within 30 banking days (previously, 2 banking days) of receipt. (Circular no 698, section 44 3) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2630 |
| 24 | 24-Nov-10 | Residents were allowed to purchase foreign exchange from AABs and/ or AAB-foreign exchange corporations for investments abroad up to US$60 million (previously, US$30 million) or its equivalent per investor a year, or a fund a year for qualified investors. Purchases to fund outward investments exceeding the limit require BSP approval. (Circular no 698, section 44 1-b) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2630 |
| 25 | 1-Nov-10 | BSP halted the rollover of FX forward book in order to absorb dollars and thus stem peso appreciation. | |
| 26 | 27-Jan-11 | Regular banking units of thrift banks may now invest in readily marketable foreign-currency-denominated debt securities, subject to regulations, particularly on risk management. (Circular no 707) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2658 |
| 27 | 1-Feb-11 | BSP made a "Gentlemen's agreement" with domestic banks to limit banks' net open NDF positions. | |
| 28 | 10-Dec-11 | AABs and/or AAB-foreign exchange corporations were allowed to sell foreign exchange for advance payment of imports, without prior BSP approval, subject to certain conditions and documentation. Previously, they were allowed only up to US$1 million without BSP approval. (Circular no 742, section 13) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2846 |
| 29 | 10-Dec-11 | Nontrade current account transactions for which foreign exchange may be freely purchased from AABs or AAB-foreign exchange corporations without prior BSP approval were expanded to include (1) expansion of the definition of charters and leases to include foreign-owned equipment (the previous definition limited lease agreements to vessels/carriers between non-resident lessors and resident lessees); (2) refund of unused foreign grant/aid funds; (3) refund of drawn and unused foreign loan proceeds; (4) payment of underwriting expenses/ fees/commissions, including brokers' fees payable/due to non-residents for initial public offerings of Philippine shares; and (5) settlement by the Philippine Deposit Insurance Corporation of FCDU deposit claims against banks that ceased operations. (Circular no 742, section 22) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2846 |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 30 | 10-Dec-11 | Foreign exchange acquired or received by residents as dividends/ earnings or divestment proceeds from outward investments by Philippine residents or investments in bonds/notes issued by residents offshore and funded by foreign exchange purchased from AABs and/ or AAB-foreign exchange corporations are no longer required to be repatriated and sold for pesos. Previously, this was required within 30 banking days of receipt. (Circular no 742, section 44) | http://www.bsp.gov.ph/regulations/regulations.asp?id=2846 |
| 31 | 01-Jan-12 | BSP increased capital charges for NDF positions from 10% to 15%. The higher risk weights applied to the net open position of NDFs on 01 January 2012. | |
| 32 | 17-Jul-12 | BSP banned foreigners from investing in Special Deposit Accounts. | |
| 33 | 26-Mar-13 | BSP introduced a cap on the NDF exposure of domestic banks of 20% of qualified capital and that of foreign banks of 100% of qualified capital. This measure formalised the Gentlemen's agreement made in early 2011. BSP also forbid pre-termination of NDF contracts. (Circular no 790) | |

Note 1: the measure of allowing universal banks and commercial banks with expanded derivatives authority to invest in CLNs and CLDs is not included since they are about purchasing credit risk transfer instruments and the underlying assets are not necessarily foreign currency denominated assets.
Note 2: changes in the liquidity reserve requirements and cash reserve requirements on peso-denominated deposits are not included in the list.
Note 3: Definitions of FCDU and OBU can be found at:
http://www.bsp.gov.ph/regulations/regulations.asp?type=1&id=1563
Note 4: The minimum capital required for a thrift bank with authority to operate an FCDU or for those desiring to operate an FCDU is not included.
Note 5: registration requirements changing into reporting requirements are not included in the list.
Note 6: requirements on documentation are not included in the list.

**Singapore**

From Jan 2004 to Jan 2013

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 1 | 8-Dec-11 | A new additional buyer's stamp duty (ABSD) was imposed on purchases of certain categories of residential property: (1) Foreigners and non-individuals (corporate entities) that buy residential property must pay a 10% ABSD. (2) Permanent residents who own one residence and buy second and subsequent residential property must pay a 3% ABSD. (3) Singapore citizens (Singaporeans) who own two and buy third and subsequent residential property must pay a 3% ABSD. The ABSD is applied on top of the existing BSD rates, which have not been modified. (Press Releases 7 Dec 2011 1) | http://www.mas.gov.sg/News-and-Publications/Press-Releases/2011/ABSD-for-a-Stable-and-Sustainable-Property-Market.aspx |
| 2 | 12-Jan-13 | The government raised the Additional Buyer's Stamp Duty rate applied to foreigners and non-individuals (corporate entities) from 10% to 15%. | |

**Thailand**

From Jan 2004 to Mar 2013

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 1 | 09-Jan-05 | The Ministry of Finance (MOF) eliminated 15% withholding tax on income of foreign investors from holding of government bonds. (Royal Thai Government Gazette) | http://www.rd.go.th/publish/22680.0.html |
| 2 | 11-Apr-06 | The MOF allowed foreign companies to issue baht-denominated bonds domestically with a minimum maturity of three years. (MOF Press Release 42/2006) | http://www2.mof.go.th/press_releases_detail.php?id=3 |
| 3 | 10-May-06 | The maximum outstanding balance of all foreign currency accounts with future obligations was increased to USD 50 million (previously, USD 10 million) for a juridical person and USD 500,000 for a natural person. The maximum amount of cash deposits allowed was increased to USD 10,000 a resident a day from USD 5,000. (ECD(02)W or.23/2549) | http://www2.bot.or.th/fipcs/Documents/FOG/2549/EngPDF/25490054.pdf |
| 4 | 15-Nov-06 | In order to curb speculation in THB, Thai financial institutions were not allowed to issue or sell bills of exchange in baht of any maturity to non-residents. (Press Release 42/2006) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2549/n4249e.pdf |
| 5 | 15-Nov-06 | In order to curb speculation in THB, financial institutions were allowed to undertake FX/THB derivatives transactions with non-residents without approval from the Bank of Thailand. The transactions which are comparable to domestic financial institutions providing Thai Baht liquidity to non-residents or domestic financial institutions' borrowings in Thai Baht from non-residents without underlying trade and investment in Thailand were permitted not more than 50 million Baht per group of non-residents. Such rules on the borrowings without underlying shall be applied for the maturity of not more than 3 months. (Press Release 42/2006) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2549/n4249e.pdf |
| 6 | 4-Dec-06 | Financial institutions were not allowed to sell or buy any types of debt securities to and from non-residents through sell-and-buy-back transactions for any maturity. Such transactions are financial instruments which non-residents can undertake to evade the BOT's measures of preventing THB speculation implemented on 15 November 2006. (Press Release 48/2006) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2549/n4849e.pdf |
| 7 | 4-Dec-06 | Financial institutions were not allowed to sell and buy foreign currencies to and from non-residents or credit or debit their baht account resulting from investments in government or BOT debt securities if the duration of such investments was less than or equal to three months. Financial institutions were allowed to sell and buy foreign currencies to and from non-residents or credit or debit their baht account resulting from investments in government or BOT debt securities if the duration of such investments was longer than three months. (Press Release 48/2006) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2549/n4849e.pdf |
| 8 | 4-Dec-06 | The limit of B 50 million was applied to debt securities with maturities not exceeding six months (previously, three months) issued by domestic financial institutions and sold to non-residents without underlying transaction. The limit of B 50 million was applied to derivatives transactions resulting in the borrowing of baht from non-residents by domestic financial institutions without underlying transaction with maturities not exceeding six months (previously, three months). The limit of B 50 million was applied to loans granted by non-residents to domestic financial institutions without underlying transactions with maturities not exceeding six months (previously three months). (Press Release 48/2006) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2549/n4849e.pdf |
| 9 | 19-Dec-06 | A URR of 30% was put in place for certain types of capital inflows, except for FDI and amounts not exceeding USD 20,000. A full refund of the principal may be obtained if the funds remain in Thailand at least one year. For shorter periods, BOT approval is required to refund two-thirds of the URR. (Press Release 51/2006) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2549/n5149e.pdf |
| 10 | 22-Dec-06 | Equity investments in companies listed on the stock exchange were exempted from the URR. (Press Release 52/2006) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2549/n5249e.pdf |
| 11 | 15-Jan-07 | Foreign exchange earners were allowed to deposit foreign exchange in their foreign currency accounts (or foreign currencies received from abroad without future foreign exchange obligations were allowed to be deposited in foreign currency accounts) without future foreign exchange obligation, up to USD 50,000 for a natural person or USD 2 million for a juridical person. (Press Release 1/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n0150e.pdf |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 12 | 15-Jan-07 | Thai juridical persons were allowed to invest in or lend to their parent companies a maximum of USD 20 million. The maximum amount of Thai direct investment or lending to a business abroad (that is affiliated company) (on condition that the natural person or the individual person in Thailand holds shares or owns not less than 10%) was increased from no more than USD 10 million a person a year to no more than USD 50 million a person a year. (Press Release 1/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n0150e.pdf |
| 13 | 15-Jan-07 | Seven types of institutional investors—the Government Pension Fund, Social Security Fund, provident funds, mutual funds (excluding private funds), securities companies, insurance companies, and specialized financial institutions —were allowed to invest in securities issued abroad by Thai juridical persons without limit. For investment in foreign securities issued by non-residents, such investors are allowed to invest up to USD 50 million, but the investment must not exceed the limit set by the regulators, board of directors, or management of each institutional investor. Investment exceeding such limits requires BOT approval. (Press Release 1/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n0150e.pdf |
| 14 | 01-Feb-07 | The following transactions became exempt from the URR: (1) direct investment, government loans, and investment in immovable assets; (2) foreign loans signed prior to December 19, 2006; (3) sales of foreign exchange agreed to before December 19, 2006; (4) interbank transactions on their own accounts; (5) foreign currencies sold or exchanged by embassies and international organizations; (6) rollovers of hedging swap transactions; (7) foreign currency loans or foreign currencies from the issuance of debt instruments; (8) foreign currencies for the purchase of nonperforming loans or for payments of guarantee obligations under court order; and (9) traveller's checks and foreign banknotes. (Press Release 5/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n0550e.pdf |
| 15 | 01-Feb-07 | The BOT introduced an option in cases of foreign currency borrowing to either withhold the URR or fully hedge against foreign exchange risk. (Press Release 5/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n0550e.pdf |
| 16 | 15-Mar-07 | The BOT introduced an option in cases of investment in debt securities and unit trusts to either withhold the URR or fully hedge against foreign exchange risk through a swap with a maturity of at least three months. (Press Release 13/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n1350e.pdf |
| 17 | 24-Jul-07 | Any company listed on the SET, with certain conditions, was allowed to make outward foreign direct investment up to USD 100 million or its equivalent a year. (Press Release 33/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n3350e.pdf |
| 18 | 24-Jul-07 | The limit for remittance of funds for purchase of immovable property by residents abroad was increased from USD 500,000 to USD 1 million a person a year. (Press Release 33/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n3350e.pdf |
| 19 | 22-Nov-07 | Domestic financial institutions were allowed to purchase baht bonds or debentures issued and sold by non-residents as permitted by the MOF. (BOT.ECD (02) C. 2256 /2550) | http://www2.bot.or.th/fipcs/Documents/FOG/2550/EngPDF/25500553.pdf |
| 20 | 18-Dec-07 | Investment in newly issued units of existing property funds by existing unit holders of such property funds were made exempt from the URR. (Press Release 62/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n6250e.pdf |
| 21 | 18-Dec-07 | Foreign currency borrowing or issuance of debt securities abroad not exceeding USD 1 million with a maturity of at least one year were made exempt from the URR. (Press Release 62/2007) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2550/n6250e.pdf |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 22 | 4-Feb-08 | The limits on lending and direct investment abroad were increased and its scope expanded to include affiliated companies abroad with no direct shareholding as follows: (1) Lending to affiliated business entities abroad, when combined with investing in such entities abroad, is allowed in an aggregate amount not exceeding USD 100 million a year (previously, USD 50 million). (2) Lending to parent companies abroad that hold shares or own not less than 10% of the resident entity, or affiliated business entities of such parent companies abroad, when combined with investing in such companies abroad, is allowed in an aggregate amount not exceeding USD 100 million a year. (3) Companies registered on the SET, with certain qualifications, are allowed to lend abroad in accordance with (1) and (2) above, not exceeding USD 100 million a case a year. (ECD.(02)W or.28/2551) | http://www2.bot.or.th/fipcs/Documents/FOG/2551/EngPDF/25510031.pdf |
| 23 | 4-Feb-08 | The limit for remittance of funds to purchase real estate abroad was increased from USD 1 million to USD 5 million a person a year. (ECD.(02)W or.28/2551) | http://www2.bot.or.th/fipcs/Documents/FOG/2551/EngPDF/25510031.pdf |
| 24 | 24-Feb-08 | Residents were allowed to deposit foreign currency funds originating from abroad into FCAs without restrictions. The limit on the outstanding balance of FCAs with funds originating in Thailand was increased. (Exchange control regulations in Thailand) | http://www.bot.or.th/English/ForeignExchangeRegulations/FXRegulation/Pages/ExchangeControlLaw.aspx |
| 25 | 3-Mar-08 | Non-residents were allowed to open two types of non-resident baht accounts, NRBS and NRBA. The total daily outstanding amount at the end of the day for each type of account may not exceed THB 300 million a non-resident. Transfers are not allowed between different types of accounts. Previously, non-residents were allowed to maintain baht accounts for settlement purposes only; deposits held for other purposes had to have a maturity of at least six months. (BOT.ECD.(02)C.371/2551) | http://www2.bot.or.th/fipcs/Documents/FOG/2551/EngPDF/25510070.pdf |
| 26 | 3-Mar-08 | The limit imposed on domestic financial institutions for borrowing or undertaking transactions comparable to borrowing from non-residents without underlying trade or investment in Thailand was decreased from THB 50 million to THB 10 million for an institution or a group of non-residents, regardless of maturities. The same limit was imposed on non-residents lending in baht to domestic financial institutions, undertaking investment in baht-denominated bonds and other debt securities issued by domestic financial institutions, or undertaking foreign exchange derivatives transactions comparable to lending in baht to financial institutions, without underlying trade or investment in Thailand. (BOT.ECD.(02)C.371/2551) | http://www2.bot.or.th/fipcs/Documents/FOG/2551/EngPDF/25510070.pdf |
| 27 | 3-Mar-08 | The limit imposed on domestic financial institutions in providing baht liquidity to non-residents or undertaking transactions that would result in an obligation to deliver foreign currencies to non-residents in the future without underlying trade or investment in Thailand (that is, domestic financial institutions making swap transactions with non-residents) was increased to THB 300 million from THB 50 million an institution a group of non-residents. (BOT.ECD.(02)C.371/2551) | http://www2.bot.or.th/fipcs/Documents/FOG/2551/EngPDF/25510070.pdf |
| 28 | 3-Mar-08 | Individual or corporate investors were allowed to invest in securities abroad through private funds or securities companies under the guidelines specified by the SEC with approval from the BOT. (BOT.ECD.(02)C.371/2551) | http://www2.bot.or.th/fipcs/Documents/FOG/2551/EngPDF/25510070.pdf |
| 29 | 3-Mar-08 | The BOT lifted the URR measure. Foreign currencies sold or exchanged with financial institutions in Thailand for investment in debt securities and unit trusts were no longer subject to a 30% reserve requirement or a requirement that they be fully hedged. (ECD.(02)C.37/2551) | http://www2.bot.or.th/fipcs/Documents/FOG/2551/EngPDF/25510068.pdf |
| 30 | 5-Aug-09 | Thai companies with assets of at least B 5 billion were allowed to invest in securities abroad up to USD 50 million an entity. (Press Release 36/2009) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2552/n3652e.pdf |
| 31 | 5-Aug-09 | Exporters and importers in Thailand were allowed to engage in forward transactions to hedge foreign exchange exposure based on a one-year forecast of underlying trade and services. Previously, corporation in Thailand were able to engage in forward transactions with authorised banks to hedge against foreign exchange risk, provided supporting documents indicating future foreign currency receipts or obligations are submitted. (Press Release 36/2009) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2552/n3652e.pdf |

| No | Effective date | Details of the Measure | Web-link of measures |
|---|---|---|---|
| 32 | 5-Aug-09 | Certain institutional investors were allowed to engage in derivatives transactions linked to foreign variables not involving foreign exchange/baht with domestic and foreign counterparties to hedge risk exposure and enhance yield. (Press Release 36/2009) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2552/n3652e.pdf |
| 33 | 2-Feb-10 | To provide more flexibility for importers and exporters in managing their exchange rate risk as well as to enhance their ability to manage risk, exporters and importers may freely unwind forward transactions for hedging foreign exchange exposure of underlying trade and services. (Press Release 6/2010) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2553/n0653e.pdf |
| 34 | 12-Oct-10 | Exporters who export goods valued at less than USD 50,000 or its equivalent (previously, USD 20,000) are allowed to retain their export proceeds abroad. (Press Release 45/2010) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2553/n4553e.pdf |
| 35 | 12-Oct-10 | Thai juridical persons may (1) invest abroad in the form of direct investment or lend to affiliated companies abroad without limit and (2) lend to non-affiliated companies up to USD 50 million or its equivalent a year. (Press Release 45/2010) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2553/n4553e.pdf |
| 36 | 12-Oct-10 | Corporations and individuals may purchase real estate abroad up to USD 10 million (previously, USD 5 million) a year. (Press Release 45/2010) | http://www.bot.or.th/Thai/PressAndSpeeches/Press/News2553/n4553e.pdf |
| 37 | 13-Oct-10 | To slow inflows into the government bond market, the MOF reimposed 15% withholding tax on interest income and capital gains tax on foreign investors' holding of government bonds purchased or transferred on or after 13 October 2010 (retroactively implemented). | http://www.rd.go.th/publish/32182.0.html |
| 38 | 19-Oct-12 | Companies listed on the Stock Exchange of Thailand were allowed to invest without limit in securities issued abroad by Thai juridical persons and up to USD 50 million per investor in foreign securities without Bank of Thailand approval. (EXCHANGE CONTROL REGULATIONS IN THAILAND : A Guide for the General Public) | http://www.bot.or.th/English/ForeignExchangeRegulations/FXRegulation/Pages/ExchangeControlLaw.aspx |
| 39 | 16-Jan-13 | The Bank of Thailand approval requirement for individual and corporate investors to invest in foreign securities through private funds or securities companies was eliminated. (EXCHANGE CONTROL REGULATIONS IN THAILAND : A Guide for the General Public) | http://www.bot.or.th/English/ForeignExchangeRegulations/FXRegulation/Pages/ExchangeControlLaw.aspx |
| 40 | 11-Mar-13 | Equity participation in the securities business (securities companies, asset management companies) by foreigners was allowed to up to 100%. Previously, 100% equity participation by foreigners was allowed in the brokerage business; in other security businesses, equity participation by foreigners exceeding 49% was subject to Ministry of Commerce approval. | |

Note: the following measure does not change the total amount of outflows, so not included in the list: certain institutional investors were allowed to deposit foreign currency with financial institutions abroad for the purpose of investment in securities abroad. The outstanding balances of such foreign currency accounts must be counted toward the limit of the outstanding balances of foreign securities investments. (Press Release 33/2007)

# Appendix 2: DCC GARCH model

The Dynamic Conditional Correlation (DCC) GARCH model by Engle (2002) and Engle and Sheppard (2001) is employed to examine the time varying correlation coefficients, since it has flexibility of univariate GARCH models coupled with parsimonious parametric model for correlations. In addition, it takes time varying volatility into account and addresses possible feedback effects. The DCC GARCH model, assumes time varying correlation, which is dynamic enough to account for the continuous change in the market and to fit the transmission process of contagion. The DCC GARCH estimation is simple and consists of two steps. The first step is the univariate GARCH calculation. The second step is the correlation estimates allowing for an interaction of the innovations in the conditional variance equations.

## Step 1: Univariate GARCH model

Consider a log return series $(r_t)$ of the stock index[23], let $a_t = r_t - \mu_t$ be the innovation at time $t$. Then $a_t$ follows a univariate GARCH (p,q) model if

$$a_t = \sigma_t \epsilon_t,$$

Mean equation for $r_t$ is $r_t = \mu_t + a_t$

Variance equation for $r_t$ is $\sigma_t^2 = \alpha_0 + \sum_{i=1}^{p} \alpha_i a_{t-i}^2 + \sum_{j=1}^{q} \beta_j \sigma_{t-j}^2$

where $\epsilon_t$ is a sequence of iid random variables with zero mean and unit variance, $\alpha_0 > 0$, $\alpha_i \geq 0$, $\beta_j \geq 0$, and $\sum_{i=1}^{\max(p,q)} (\alpha_i + \beta_i) < 1$

## Step 2: Multivariate GARCH model

In the multivariate analysis, the vector of the return series $\{\boldsymbol{r}_t\}$ becomes

$$\boldsymbol{r}_t = \boldsymbol{\mu}_t + \boldsymbol{a}_t,$$

where $\boldsymbol{r}_t$ follows multivariate time series model. $\boldsymbol{\mu}_t = E(\boldsymbol{r}_t | \boldsymbol{F}_{t-1})$ is conditional expectation of given past information $\boldsymbol{F}_{t-1}$. The shock or innovation of the series at time $t$ is represented by $\boldsymbol{\alpha}_t = (\alpha_{1t}, \alpha_{2t,\ldots}, \alpha_{kt})'$ . The mean equation for $\boldsymbol{r}_t$ is

$$\boldsymbol{\mu}_t = \boldsymbol{v}\boldsymbol{x}_t + \sum_{i=1}^{p} \boldsymbol{\phi}_i \boldsymbol{r}_{t-i}$$

where $\boldsymbol{x}_t$ denotes m-dimensional vector of exogenous variables with $\boldsymbol{x}_{1t} = 1$. In addition, $\boldsymbol{v}$ is $k \times m$ matrix. $p$ and $q$ are non-negative integer.

In the multivariate GARCH analysis, the conditional covariance matrix of $\boldsymbol{\alpha}_t$ given $\boldsymbol{F}_{t-1}$ is a $k \times k$ positive definite matrix $\boldsymbol{H}_t$ defined by $\boldsymbol{H}_t = cov(\boldsymbol{a}_t | \boldsymbol{F}_{t-1})$. The time evolution of the $\{\boldsymbol{H}_t\}$ process is a volatility model for the return series $\boldsymbol{r}_t$. The conditional variance-covariance matrix is represented by

[23] The daily return of the stock index is the continuously compounded return or log return of the index at time *t*.

$$H_t = \begin{bmatrix} \sigma_{1,t}^2 & \sigma_{12,t} & \cdots & \sigma_{1n,t} \\ \sigma_{12,t} & \sigma_{2,t}^2 & & \sigma_{2n,t} \\ \vdots & & \ddots & \vdots \\ \sigma_{1n,t} & \sigma_{2n,t} & \cdots & \sigma_{n,t}^2 \end{bmatrix}$$

$$\boldsymbol{\sigma_{i,t}^2 = \omega_i + \sum_{i=1}^{q} \beta_i \sigma_{i,t-j}^2 + \sum_{i=1}^{p} \alpha_{i,j} a_{i,t-j}^2},$$

$$\sigma_{ij,t} = \rho_{ij}\sigma_{i,t}\sigma_{j,t}, \quad \text{where} \quad i, j = 1 \dots k \ \text{ and } \ i \neq j.$$

Using conditional correlation coefficient and variance of $\boldsymbol{\alpha_t}$ to reparametrize $\boldsymbol{H_t}$; the DCC GARCH model can be briefly presented as follows:

$$\boldsymbol{H_t \equiv [\sigma_{ij,t}] = D_t \rho_t D_t},$$

where $\boldsymbol{D_t} = diag\{\sqrt{\sigma_{11,t}}, \dots, \sigma_{kk,t}$ , which is $k \times k$ diagonal matrix consisting of standard deviation of element of $\boldsymbol{\alpha_t}$. The $\sqrt{\sigma_{ii,t}}$ is the i[th] element of the standard deviations implied by the estimation of univariate GARCH models, which are computed separately.

In addition, $\boldsymbol{\rho_t}$ is conditional correlation matrix of $\boldsymbol{\alpha_t}$ as can directly be seen from rewriting this equation as:

$$\boldsymbol{\rho_t = D_t^{-1} H_t D_t^{-1}}.$$

A special property of dynamic conditional correlation models is that $\boldsymbol{\rho_t}$ is allowed to be time varying. $\boldsymbol{\rho_t}$ is symmetric with unit diagonal element. The time evolution of $\boldsymbol{H_t}$ is govern by that of conditional variance $\sigma_{ii,t}$ and the elements $\rho_{tij,}$ of $\boldsymbol{\rho_t}$, where $j < i$ and $1 \leq i \leq k$.

Engle (2002) proposed that $\boldsymbol{H_t}$ is a positive definite matrix and satisfies

$$\boldsymbol{H_t = (1 - \theta_1 - \theta_2)\overline{H} + \theta_1 \epsilon_{t-1} \epsilon_{t-1}' + \theta_2 H_{t-1}},$$

where $\boldsymbol{\epsilon_t}$ is the standardize innovation vector with elements $\epsilon_{it} = a_{it}/\sqrt{\sigma_{ii,t}}$ . $\boldsymbol{\overline{H}}$ is unconditional covariance matrix of $\boldsymbol{\epsilon_t}$, and $\theta_1$ and $\theta_2$ are non-negative scalar parameters satisfying $0 < \theta_1 + \theta_2 < 1$ . The $\boldsymbol{D_t^{-1}}$ matrix is the normalization matrix to guarantee that $\boldsymbol{\rho_t}$ is a correlation matrix. Nevertheless, $\theta_1$ and $\theta_2$ are scalar so that all unconditional correlations have the same dynamics. This may be hard to justify in real applications, especially when the dimensions $k$ is large (Tsay, 2010).[24]

In the conditional covariance equation above, elements of $\theta_1$ can be interpreted as the (cross country) market shock spillover when $i \neq j$. Elements of $\theta_2$ are capturing the (cross country) market volatility spillover.

[24] In the literature, the alternative measure of the conditional correlation is the BEKK-GARCH model. However, the model subjects to the problem as well. First, parameters in the equation for ∑_t do not have direct interpretation concerning lagged values of volatility or shocks. Second, the number of parameters employed increase rapidly with number of variables.

# Appendix 3: Country by country regression results

**Appendix table 1: Panel regressions on the correlation of the percent share of bond flows involving one economy (A) vs the other economies (B) (Model 1)**

| | Variables | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | 0.04 | -1.96** | 4.32*** | -1.96** | -2.81*** | 3.28*** | -0.43 | 1.22 | 16.33*** | -4.31*** | 1.18 | -3.78*** |
| | | (1.02) | (0.96) | (1.02) | (0.83) | (0.89) | (1.12) | (0.84) | (0.79) | (1.39) | (0.99) | (1.03) | (0.90) |
| | VIX(-1) | 0.59*** | 0.62*** | 0.32*** | 0.24*** | 0.47*** | 0.29*** | 0.45*** | 0.16*** | -0.11** | 0.42*** | 0.16*** | 0.33*** |
| | | (0.04) | (0.04) | (0.04) | (0.04) | (0.04) | (0.05) | (0.04) | (0.03) | (0.05) | (0.04) | (0.04) | (0.04) |
| | VIX (% change) (-1) | -0.06*** | -0.07*** | -0.02 | -0.02 | -0.05*** | -0.05** | -0.04** | -0.02 | 0.02 | -0.04** | 0.00 | -0.03 |
| | | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) | (0.02) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.08*** | 0.10*** | 0.02** | 0.03*** | 0.06*** | 0.03*** | 0.04*** | 0.03*** | 0.02** | 0.02*** | 0.00 | 0.02** |
| | | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **Local factor** | A's expected appreciation(-1) | -0.40 | -2.63*** | 23.61*** | -1.60*** | -2.41*** | 0.76 | -1.63** | -7.78*** | -1.38 | -2.13*** | -4.94** | 1.66*** |
| | | (0.96) | (0.33) | (8.39) | (0.19) | (0.44) | (1.34) | (0.83) | (1.10) | (1.17) | (0.49) | (2.21) | (0.13) |
| | A's interest differential(-1) | -1.10*** | -0.20* | 9.29*** | -0.53*** | 0.81*** | 0.57 | -1.56*** | -1.81*** | -3.76*** | -0.91*** | -0.46 | 0.35 |
| | | (0.33) | (0.10) | (1.94) | (0.13) | (0.12) | (0.37) | (0.26) | (0.27) | (0.46) | (0.21) | (0.59) | (0.24) |
| | B's expected appreciation(-1) | 0.73*** | 0.42 | -0.63** | 1.39*** | 0.45* | 0.20 | 0.51** | 1.13*** | 0.62* | 1.45*** | -0.57** | 0.62* |
| | | (0.28) | (0.28) | (0.28) | (0.26) | (0.25) | (0.29) | (0.22) | (0.21) | (0.33) | (0.25) | (0.24) | (0.37) |
| | B's interest differential(-1) | 0.94*** | -0.03 | -1.37*** | 0.90*** | 0.33** | 0.83*** | 0.77*** | 0.56*** | 0.34* | 1.49*** | -0.52*** | -0.53*** |
| | | (0.18) | (0.19) | (0.17) | (0.13) | (0.17) | (0.20) | (0.15) | (0.14) | (0.19) | (0.14) | (0.16) | (0.17) |
| **Instantaneous impact of CFMs** | A's tightening measure(-1) | . | . | . | -0.38 | . | . | -4.84 | . | . | -3.07 | . | 5.80* |
| | | . | . | . | (3.04) | . | . | (4.13) | . | . | (4.75) | . | (3.24) |
| | A's loosening measure(-1) | . | 0.64 | . | . | 4.93*** | . | 2.79 | 2.14 | . | . | . | -7.91* |
| | | . | (1.81) | . | . | (1.43) | . | (2.41) | (4.07) | . | . | . | (4.57) |
| | B's tightening measure(-1) | 4.83 | 6.35 | -6.47 | 6.12 | 0.87 | 4.76 | 5.67 | 2.33 | -14.00 | 1.68 | 0.34 | 1.03 |
| | | (7.23) | (6.86) | (7.15) | (7.08) | (6.23) | (7.56) | (6.13) | (5.37) | (8.56) | (6.91) | (6.29) | (7.58) |
| | B's loosening measure(-1) | 2.57 | 3.03 | 1.89 | 1.26 | 3.94 | 3.54 | 2.85 | 3.35 | 3.86 | 0.63 | 2.21 | 4.80 |
| | | (3.65) | (4.24) | (3.60) | (2.92) | (4.25) | (3.81) | (3.02) | (2.77) | (4.32) | (3.18) | (3.17) | (3.19) |
| | Others' tightening measure(-1) | -0.26 | 4.99** | -4.78** | 1.25 | -0.10 | -1.11 | 1.09 | -1.10 | -13.90*** | 1.63 | 0.87 | -2.47 |
| | | (2.31) | (2.20) | (2.28) | (2.26) | (2.00) | (2.42) | (1.96) | (1.72) | (2.74) | (2.20) | (2.01) | (2.42) |
| | Others' loosening measure(-1) | 2.42** | 4.27*** | 0.05 | 2.46*** | 0.52 | 3.02** | 1.33 | 2.23** | 2.75** | 4.03*** | 1.14 | 2.24** |
| | | (1.13) | (1.29) | (1.12) | (0.91) | (1.36) | (1.19) | (0.93) | (0.91) | (1.35) | (1.01) | (0.99) | (0.99) |
| | Constant | 46.23*** | 57.87*** | 57.50*** | 71.04*** | 55.37*** | 51.36*** | 68.37*** | 74.89*** | 62.61*** | 64.11*** | 72.14*** | 68.64*** |
| | | (0.83) | (0.78) | (1.00) | (0.84) | (0.90) | (1.15) | (0.62) | (0.67) | (1.39) | (0.74) | (0.87) | (0.68) |
| | Observations | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 |
| | Adjusted $R^2$ | 0.088 | 0.108 | 0.069 | 0.063 | 0.113 | 0.056 | 0.063 | 0.050 | 0.066 | 0.081 | 0.021 | 0.074 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 2: Panel regressions on the correlation of the percent share of bond flows involving one economy (A) vs the other economies (B) (Model 2)

| | Variables | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | 0.09 | -1.85* | 4.31*** | -1.86** | -2.69*** | 3.36*** | -0.46 | 1.30* | 16.36*** | -4.21*** | 1.20 | -3.71*** |
| | | (1.02) | (0.96) | (1.02) | (0.83) | (0.89) | (1.12) | (0.84) | (0.79) | (1.39) | (0.99) | (1.03) | (0.90) |
| | VIX(-1) | 0.59*** | 0.62*** | 0.31*** | 0.23*** | 0.46*** | 0.29*** | 0.45*** | 0.16*** | -0.12** | 0.41*** | 0.16*** | 0.33*** |
| | | (0.04) | (0.04) | (0.04) | (0.04) | (0.04) | (0.05) | (0.04) | (0.03) | (0.05) | (0.04) | (0.04) | (0.04) |
| | VIX (% change) (-1) | -0.06*** | -0.07*** | -0.02 | -0.02 | -0.05*** | -0.05* | -0.04** | -0.02 | 0.02 | -0.04** | 0.00 | -0.02 |
| | | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) | (0.02) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.08*** | 0.10*** | 0.02** | 0.03*** | 0.06*** | 0.03*** | 0.04*** | 0.03*** | 0.02** | 0.02*** | 0.00 | 0.02** |
| | | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **Local factor** | A's expected appreciation(-1) | -0.43 | -2.73*** | 23.81*** | -1.58*** | -2.37*** | 0.69 | -1.46* | -7.87*** | -1.10 | -2.20*** | -5.10** | 1.70*** |
| | | (0.96) | (0.33) | (8.42) | (0.19) | (0.44) | (1.34) | (0.82) | (1.10) | (1.17) | (0.49) | (2.22) | (0.13) |
| | A's interest differential(-1) | -1.11*** | -0.23** | 9.36*** | -0.50*** | 0.81*** | 0.56 | -1.54*** | -1.82*** | -3.69*** | -0.89*** | -0.50 | 0.33 |
| | | (0.33) | (0.10) | (1.95) | (0.13) | (0.12) | (0.37) | (0.26) | (0.27) | (0.46) | (0.21) | (0.60) | (0.24) |
| | B's expected appreciation(-1) | 0.74*** | 0.44 | -0.62** | 1.39*** | 0.46* | 0.21 | 0.52** | 1.14*** | 0.65* | 1.46*** | -0.56** | 0.64* |
| | | (0.28) | (0.28) | (0.28) | (0.26) | (0.25) | (0.29) | (0.22) | (0.21) | (0.33) | (0.25) | (0.24) | (0.37) |
| | B's interest differential(-1) | 0.94*** | -0.02 | -1.36*** | 0.91*** | 0.35** | 0.84*** | 0.78*** | 0.57*** | 0.40** | 1.51*** | -0.51*** | -0.52*** |
| | | (0.18) | (0.19) | (0.17) | (0.13) | (0.17) | (0.20) | (0.15) | (0.14) | (0.19) | (0.14) | (0.16) | (0.17) |
| **Long term impact of CFMs** | A's cumulative tightening measure(-1) | . | . | . | 0.71 | . | . | -3.18 | . | . | -5.06 | . | 5.47** |
| | | . | . | . | (2.16) | . | . | (2.93) | . | . | (3.43) | . | (2.30) |
| | A's cumulative loosening measure(-1) | . | 0.52 | . | . | 4.33*** | . | -0.18 | 3.38 | . | . | . | -6.95** |
| | | . | (1.29) | . | . | (0.99) | . | (1.71) | (2.88) | . | . | . | (3.24) |
| | B's cumulative tightening measure(-1) | 5.83 | 7.55 | -5.48 | 5.76 | 1.16 | 5.23 | 5.70 | 2.64 | -14.34** | 2.03 | 0.95 | 1.44 |
| | | (5.13) | (4.86) | (5.06) | (5.01) | (4.41) | (5.35) | (4.34) | (3.80) | (6.04) | (4.89) | (4.46) | (5.37) |
| | B's cumulative loosening measure(-1) | 2.52 | 2.68 | 1.72 | 1.44 | 4.00 | 3.27 | 3.26 | 3.38* | 4.24 | 1.03 | 1.71 | 4.56** |
| | | (2.55) | (2.93) | (2.52) | (2.04) | (3.03) | (2.67) | (2.11) | (1.94) | (3.01) | (2.23) | (2.22) | (2.23) |
| | Others' cumulative tightening measure(-1) | 0.44 | 6.12*** | -4.28*** | 0.64 | 0.08 | -0.73 | 0.96 | -0.77 | -14.85*** | 1.84 | 1.11 | -1.99 |
| | | (1.65) | (1.57) | (1.63) | (1.61) | (1.42) | (1.72) | (1.39) | (1.22) | (1.94) | (1.57) | (1.44) | (1.73) |
| | Others' cumulative loosening measure(-1) | 1.90** | 3.63*** | 0.32 | 2.17*** | 0.51 | 2.32*** | 1.68*** | 1.84*** | 2.64*** | 3.93*** | 0.83 | 2.04*** |
| | | (0.78) | (0.90) | (0.77) | (0.63) | (0.94) | (0.82) | (0.65) | (0.62) | (0.93) | (0.71) | (0.68) | (0.69) |
| | Constant | 46.12*** | 57.69*** | 57.56*** | 70.81*** | 55.36*** | 51.31*** | 68.28*** | 74.82*** | 62.79*** | 63.96*** | 72.08*** | 68.53*** |
| | | (0.84) | (0.79) | (1.00) | (0.85) | (0.90) | (1.15) | (0.62) | (0.67) | (1.39) | (0.74) | (0.87) | (0.68) |
| | Observations | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 | 4631 |
| | Adjusted $R^2$ | 0.088 | 0.111 | 0.070 | 0.064 | 0.115 | 0.057 | 0.065 | 0.052 | 0.074 | 0.084 | 0.021 | 0.076 |

* p<0.1, ** p<0.05, *** p<0.01.

**Appendix table 3: Country by country panel regressions on the percent share of bond flows involving one economy vs the other economies (Model 1)**

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.67*** | -0.76*** | -1.02*** | -0.70*** | -0.63*** | -0.58*** | -0.84*** | -0.63*** | -0.49*** | -0.48*** | -0.52*** | -0.85*** |
| | | (0.02) | (0.04) | (0.05) | (0.03) | (0.04) | (0.02) | (0.04) | (0.03) | (0.02) | (0.04) | (0.05) | (0.04) |
| | VIX(-1) | 0.01*** | -0.00 | 0.01*** | 0.01*** | 0.01*** | 0.00*** | -0.01*** | 0.01*** | 0.00*** | -0.00 | -0.01*** | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00*** | -0.00 | -0.00 | -0.00*** | 0.00 | 0.00*** | 0.00*** | -0.00*** | 0.00** | 0.00*** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.24*** | 0.16*** | 0.02 | 0.20*** | 0.44*** | -0.01 | 0.30*** | 0.93*** | 0.18*** | 0.34*** | 0.39*** | -0.08*** |
| | | (0.02) | (0.01) | (0.20) | (0.01) | (0.02) | (0.02) | (0.03) | (0.04) | (0.02) | (0.02) | (0.11) | (0.01) |
| | Interest differential(-1) | 0.11*** | 0.05*** | -0.33*** | 0.02*** | 0.08*** | 0.05*** | 0.16*** | 0.24*** | -0.03*** | 0.19*** | 0.27*** | 0.05*** |
| | | (0.01) | (0.00) | (0.05) | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) |
| **Instantaneous impact of CFMs** | Own bond measure(-1) | . | -0.22*** | . | 0.08 | -0.01 | . | 0.09 | -0.14** | . | -0.12 | . | -0.04 |
| | | . | (0.06) | . | (0.08) | (0.06) | . | (0.09) | (0.07) | . | (0.18) | . | (0.11) |
| | Other countries measure(-1) | -0.01 | -0.02 | 0.01 | -0.08*** | -0.08** | -0.06*** | -0.09*** | -0.01 | -0.03* | -0.04* | -0.00 | -0.01 |
| | | (0.02) | (0.04) | (0.04) | (0.03) | (0.04) | (0.02) | (0.03) | (0.03) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Constant | 0.00 | 0.46*** | 0.34*** | 0.39*** | 0.39*** | 0.32*** | 0.40*** | 0.08*** | 0.44*** | 0.14*** | 0.70*** | 0.45*** |
| | | (0.02) | (0.03) | (0.04) | (0.03) | (0.03) | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Observations | 4631 | 5610 | 5610 | 5610 | 5610 | 4631 | 5610 | 5214 | 4631 | 5610 | 5610 | 5610 |
| | Adjusted $R^2$ | 0.279 | 0.244 | 0.174 | 0.352 | 0.272 | 0.390 | 0.247 | 0.364 | 0.347 | 0.368 | 0.194 | 0.211 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 4: Country by country panel regressions on the percent share of bond flows involving one economy vs the other economies (Model 2)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.67*** | -0.75*** | -1.02*** | -0.70*** | -0.63*** | -0.58*** | -0.85*** | -0.64*** | -0.49*** | -0.48*** | -0.54*** | -0.84*** |
| | | (0.02) | (0.04) | (0.05) | (0.03) | (0.04) | (0.02) | (0.04) | (0.03) | (0.02) | (0.04) | (0.05) | (0.04) |
| | VIX(-1) | 0.01*** | -0.00 | 0.01*** | 0.01*** | 0.01*** | 0.00*** | -0.01*** | 0.01*** | 0.00*** | 0.00 | -0.01*** | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.00*** | -0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00*** | -0.00 | -0.00 | -0.00*** | -0.00 | 0.00*** | 0.00*** | -0.00*** | 0.00** | 0.00** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.24*** | 0.16*** | -0.11 | 0.20*** | 0.43*** | -0.01 | 0.32*** | 0.94*** | 0.18*** | 0.35*** | 0.29*** | -0.08*** |
| | | (0.02) | (0.01) | (0.20) | (0.01) | (0.02) | (0.02) | (0.03) | (0.04) | (0.02) | (0.02) | (0.11) | (0.01) |
| | Interest differential(-1) | 0.11*** | 0.04*** | -0.36*** | 0.01*** | 0.08*** | 0.05*** | 0.16*** | 0.24*** | -0.03*** | 0.18*** | 0.24*** | 0.05*** |
| | | (0.01) | (0.00) | (0.05) | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) |
| **Instantaneous and lagged impact of CFMs** | Own bond measure(-1) | . | -0.25*** | . | 0.10 | -0.06 | . | 0.07 | -0.13* | . | 0.03 | . | -0.05 |
| | | . | (0.06) | . | (0.07) | (0.06) | . | (0.09) | (0.07) | . | (0.18) | . | (0.11) |
| | Own bond measure(-2) | . | -0.65*** | . | 0.18** | 0.43*** | . | -0.02 | 0.36*** | . | 0.66*** | . | -0.24** |
| | | . | (0.06) | . | (0.07) | (0.06) | . | (0.09) | (0.07) | . | (0.18) | . | (0.11) |
| | Own bond measure(-3) | . | -0.00 | . | 0.42*** | -0.34*** | . | 0.10 | -0.10 | . | 0.63*** | . | -0.28** |
| | | . | (0.06) | . | (0.07) | (0.06) | . | (0.09) | (0.07) | . | (0.18) | . | (0.11) |
| | Own bond measure(-4) | . | -0.01 | . | 0.27*** | 0.41*** | . | 0.34*** | -0.11* | . | 0.22 | . | 0.10 |
| | | . | (0.06) | . | (0.07) | (0.06) | . | (0.09) | (0.07) | . | (0.18) | . | (0.11) |
| | Other countries' measure(-1) | -0.01 | -0.01 | 0.00 | -0.09*** | -0.09** | -0.06*** | -0.09*** | -0.02 | -0.03* | -0.05* | -0.01 | -0.02 |
| | | (0.02) | (0.03) | (0.04) | (0.03) | (0.04) | (0.02) | (0.03) | (0.03) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Other countries' measure(-2) | 0.04* | 0.31*** | 0.16*** | 0.17*** | 0.08** | 0.03* | 0.10*** | 0.06*** | 0.03 | 0.25*** | 0.11*** | 0.23*** |
| | | (0.02) | (0.03) | (0.04) | (0.03) | (0.04) | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Other countries' measure(-3) | -0.05** | 0.08** | 0.06 | -0.07*** | 0.05 | 0.00 | -0.00 | -0.02 | -0.02 | 0.01 | 0.03 | 0.06* |
| | | (0.02) | (0.03) | (0.04) | (0.03) | (0.04) | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Other countries' measure(-4) | 0.02 | 0.22*** | 0.18*** | 0.11*** | -0.03 | 0.00 | 0.06** | 0.11*** | -0.02 | 0.17*** | 0.17*** | 0.17*** |
| | | (0.02) | (0.03) | (0.04) | (0.03) | (0.04) | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Constant | 0.00 | 0.44*** | 0.35*** | 0.43*** | 0.38*** | 0.32*** | 0.41*** | 0.08*** | 0.44*** | 0.14*** | 0.70*** | 0.45*** |
| | | (0.02) | (0.03) | (0.04) | (0.03) | (0.03) | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Observations | 4631 | 5577 | 5577 | 5577 | 5577 | 4631 | 5577 | 5214 | 4631 | 5577 | 5577 | 5577 |
| | Adjusted $R^2$ | 0.281 | 0.273 | 0.181 | 0.370 | 0.290 | 0.390 | 0.252 | 0.371 | 0.347 | 0.383 | 0.199 | 0.223 |

* p<0.1, ** p<0.05, *** p<0.01.

**Appendix table 5: Country by country panel regressions on the percent share of bond flows involving one economy vs the other economies (Model 3)**

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.67*** | -0.75*** | -1.02*** | -0.69*** | -0.61*** | -0.58*** | -0.83*** | -0.63*** | -0.48*** | -0.47*** | -0.52*** | -0.84*** |
| | | (0.02) | (0.04) | (0.05) | (0.03) | (0.04) | (0.02) | (0.04) | (0.03) | (0.02) | (0.04) | (0.05) | (0.04) |
| | VIX(-1) | 0.01*** | -0.00 | 0.01*** | 0.01*** | 0.01*** | 0.00*** | -0.01*** | 0.01*** | 0.00*** | 0.00 | -0.01*** | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00*** | -0.00 | -0.00 | -0.00*** | -0.00 | 0.00*** | 0.00*** | -0.00*** | 0.00** | 0.00** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.24*** | 0.17*** | 0.01 | 0.20*** | 0.44*** | -0.01 | 0.29*** | 0.94*** | 0.18*** | 0.35*** | 0.38*** | -0.08*** |
| | | (0.02) | (0.01) | (0.20) | (0.01) | (0.02) | (0.02) | (0.03) | (0.04) | (0.02) | (0.02) | (0.11) | (0.01) |
| | Interest differential(-1) | 0.11*** | 0.05*** | -0.34*** | 0.02*** | 0.08*** | 0.05*** | 0.16*** | 0.24*** | -0.03*** | 0.19*** | 0.27*** | 0.05*** |
| | | (0.01) | (0.00) | (0.05) | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) |
| **Long term impact of CFMs** | Own cumulative measure(-1) | . | -0.45*** | . | 0.13** | 0.20*** | . | 0.03 | 0.12** | . | 0.33*** | . | -0.14* |
| | | . | (0.04) | . | (0.05) | (0.04) | . | (0.07) | (0.05) | . | (0.13) | . | (0.08) |
| | Others' cumulative measure(-1) | 0.01 | 0.15*** | 0.09*** | 0.05** | -0.01 | -0.02 | 0.00 | 0.03 | -0.00 | 0.10*** | 0.05* | 0.11*** |
| | | (0.01) | (0.02) | (0.03) | (0.02) | (0.03) | (0.01) | (0.02) | (0.02) | (0.01) | (0.02) | (0.03) | (0.02) |
| | Constant | 0.00 | 0.45*** | 0.34*** | 0.41*** | 0.38*** | 0.32*** | 0.41*** | 0.08*** | 0.44*** | 0.14*** | 0.70*** | 0.45*** |
| | | (0.02) | (0.03) | (0.04) | (0.03) | (0.03) | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Observations | 4631 | 5621 | 5621 | 5621 | 5621 | 4631 | 5621 | 5214 | 4631 | 5621 | 5621 | 5621 |
| | Adjusted $R^2$ | 0.280 | 0.260 | 0.176 | 0.351 | 0.274 | 0.388 | 0.246 | 0.365 | 0.346 | 0.371 | 0.195 | 0.214 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 6: Country by country panel regressions on the percent share of bond flows involving one economy vs the other economies (Model 4)

| | Variables | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.67*** | -0.76*** | -1.02*** | -0.70*** | -0.62*** | -0.58*** | -0.83*** | -0.63*** | -0.48*** | -0.48*** | -0.52*** | -0.84*** |
| | | (0.02) | (0.04) | (0.05) | (0.03) | (0.04) | (0.02) | (0.04) | (0.03) | (0.02) | (0.04) | (0.05) | (0.04) |
| | VIX(-1) | 0.01*** | -0.00 | 0.01*** | 0.01*** | 0.01*** | 0.00*** | -0.01*** | 0.01*** | 0.00*** | -0.00 | -0.01*** | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00*** | -0.00 | -0.00 | -0.00*** | -0.00 | 0.00*** | 0.00*** | -0.00*** | 0.00** | 0.00** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.24*** | 0.16*** | 0.02 | 0.20*** | 0.45*** | -0.01 | 0.30*** | 0.92*** | 0.18*** | 0.34*** | 0.39*** | -0.08*** |
| | | (0.02) | (0.01) | (0.20) | (0.01) | (0.02) | (0.02) | (0.03) | (0.04) | (0.02) | (0.02) | (0.11) | (0.01) |
| | Interest differential(-1) | 0.11*** | 0.05*** | -0.33*** | 0.02*** | 0.08*** | 0.05*** | 0.16*** | 0.24*** | -0.03*** | 0.19*** | 0.28*** | 0.05*** |
| | | (0.01) | (0.00) | (0.05) | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) |
| **Instantaneous impact of CFMs** | Own tightening measure(-1) | . | . | . | 0.11 | . | . | -0.11 | . | . | -0.16 | . | 0.41*** |
| | | . | . | . | (0.12) | . | . | (0.18) | . | . | (0.18) | . | (0.16) |
| | Own loosening measure(-1) | . | 0.23*** | . | . | -0.06 | . | -0.16 | 0.25** | . | . | . | 0.49*** |
| | | . | (0.07) | . | . | (0.06) | . | (0.11) | (0.11) | . | . | . | (0.16) |
| | Others' tightening measure(-1) | 0.07 | 0.11 | 0.11 | 0.11 | 0.31*** | -0.01 | 0.01 | 0.21*** | -0.11** | 0.34*** | -0.05 | 0.02 |
| | | (0.05) | (0.09) | (0.11) | (0.09) | (0.09) | (0.04) | (0.08) | (0.06) | (0.04) | (0.08) | (0.10) | (0.11) |
| | Others' loosening measure(-1) | -0.02 | 0.04 | 0.00 | 0.08** | 0.24*** | 0.05** | 0.11*** | 0.04 | -0.02 | 0.09*** | -0.02 | -0.00 |
| | | (0.03) | (0.05) | (0.05) | (0.03) | (0.05) | (0.02) | (0.04) | (0.03) | (0.02) | (0.03) | (0.05) | (0.04) |
| | Constant | 0.00 | 0.46*** | 0.33*** | 0.39*** | 0.38*** | 0.32*** | 0.40*** | 0.08*** | 0.45*** | 0.13*** | 0.70*** | 0.44*** |
| | | (0.02) | (0.03) | (0.04) | (0.03) | (0.03) | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Observations | 4631 | 5610 | 5610 | 5610 | 5610 | 4631 | 5610 | 5214 | 4631 | 5610 | 5610 | 5610 |
| | Adjusted $R^2$ | 0.280 | 0.244 | 0.174 | 0.351 | 0.275 | 0.388 | 0.247 | 0.366 | 0.347 | 0.370 | 0.194 | 0.213 |

* p<0.1, ** p<0.05, *** p<0.01.

**Appendix table 7: Country by country panel regressions on the percent share of bond flows involving one economy vs the other economies (Model 5)**

| | Variables | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.67*** | -0.77*** | -1.02*** | -0.70*** | -0.62*** | -0.58*** | -0.83*** | -0.64*** | -0.48*** | -0.47*** | -0.52*** | -0.84*** |
| | | (0.02) | (0.04) | (0.05) | (0.03) | (0.04) | (0.02) | (0.04) | (0.03) | (0.02) | (0.04) | (0.05) | (0.04) |
| | VIX(-1) | 0.01*** | -0.00 | 0.01*** | 0.01*** | 0.01*** | 0.00*** | -0.01*** | 0.01*** | 0.00*** | -0.00 | -0.01*** | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** | -0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00*** | -0.00 | -0.00 | -0.00*** | -0.00 | 0.00*** | 0.00*** | -0.00*** | 0.00** | 0.00** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.24*** | 0.17*** | 0.01 | 0.20*** | 0.45*** | -0.01 | 0.29*** | 0.94*** | 0.18*** | 0.35*** | 0.39*** | -0.08*** |
| | | (0.02) | (0.01) | (0.20) | (0.01) | (0.02) | (0.02) | (0.03) | (0.04) | (0.02) | (0.02) | (0.11) | (0.01) |
| | Interest differential(-1) | 0.11*** | 0.05*** | -0.34*** | 0.02*** | 0.08*** | 0.05*** | 0.16*** | 0.24*** | -0.03*** | 0.19*** | 0.27*** | 0.05*** |
| | | (0.01) | (0.00) | (0.05) | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) |
| **Long term impact of CFMs** | Own cumulative tightening measure(-1) | . | . | . | 0.14* | . | . | -0.11 | . | . | 0.32** | . | 0.20* |
| | | . | . | . | (0.09) | . | . | (0.13) | . | . | (0.13) | . | (0.11) |
| | Own cumulative loosening measure(-1) | . | 0.53*** | . | . | -0.26*** | . | -0.09 | -0.19** | . | . | . | 0.48*** |
| | | . | (0.05) | . | . | (0.04) | . | (0.08) | (0.08) | . | . | . | (0.11) |
| | Others' cumulative tightening measure(-1) | 0.09** | 0.05 | 0.17** | 0.08 | 0.29*** | 0.04 | 0.06 | 0.14*** | -0.08** | 0.20*** | 0.00 | 0.14* |
| | | (0.04) | (0.06) | (0.08) | (0.06) | (0.06) | (0.03) | (0.06) | (0.04) | (0.03) | (0.06) | (0.07) | (0.08) |
| | Others' cumulative loosening measure(-1) | -0.02 | -0.16*** | -0.07** | -0.06** | 0.16*** | 0.01 | 0.01 | -0.00 | -0.03** | -0.09*** | -0.07** | -0.13*** |
| | | (0.02) | (0.03) | (0.03) | (0.02) | (0.04) | (0.01) | (0.03) | (0.02) | (0.01) | (0.02) | (0.03) | (0.03) |
| | Constant | 0.00 | 0.44*** | 0.33*** | 0.41*** | 0.37*** | 0.32*** | 0.41*** | 0.08*** | 0.46*** | 0.14*** | 0.70*** | 0.44*** |
| | | (0.02) | (0.03) | (0.04) | (0.03) | (0.03) | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) | (0.04) | (0.03) |
| | Observations | 4631 | 5621 | 5621 | 5621 | 5621 | 4631 | 5621 | 5214 | 4631 | 5621 | 5621 | 5621 |
| | Adjusted $R^2$ | 0.280 | 0.259 | 0.175 | 0.351 | 0.279 | 0.388 | 0.246 | 0.365 | 0.348 | 0.371 | 0.195 | 0.217 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 8: Panel regressions on correlations of bond returns (GBI HD) involving one economy (A) vs the other economies (B) (Model 1)

| Variables | | AU | CN | HK | ID | IN | JP | KR | NZ | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.10 | 1.73*** | 0.39*** | -0.67*** | 0.21** | -0.49*** | -1.49*** | -0.40*** | 1.39*** | 1.54*** |
| | | (0.09) | (0.09) | (0.10) | (0.11) | (0.09) | (0.10) | (0.10) | (0.10) | (0.11) | (0.10) |
| | VIX(-1) | -0.00 | -0.05*** | -0.04*** | -0.18*** | 0.05*** | 0.02*** | 0.02*** | -0.03*** | -0.09*** | -0.05*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | 0.00 | 0.01** | 0.01*** | 0.01*** | 0.00 | 0.00 | 0.00 | 0.01*** | 0.02*** | 0.01** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00*** | 0.01*** | 0.01*** | -0.01*** | -0.00 | 0.00*** | -0.00*** | -0.00 | 0.01*** | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | A's expected appreciation(-1) | -0.08* | -0.89*** | 1.14*** | -0.45*** | 0.23*** | 0.12** | 0.26*** | -0.02 | 0.32*** | 0.07*** |
| | | (0.04) | (0.03) | (0.37) | (0.02) | (0.03) | (0.05) | (0.05) | (0.04) | (0.12) | (0.01) |
| | A's interest differential(-1) | -0.28*** | 0.16*** | 1.78*** | 0.24*** | 0.01 | 0.17*** | 0.29*** | -0.50*** | 0.88*** | 0.27*** |
| | | (0.02) | (0.01) | (0.09) | (0.02) | (0.01) | (0.02) | (0.03) | (0.03) | (0.04) | (0.03) |
| | B's expected appreciation(-1) | 0.00 | 0.01 | -0.02 | -0.18*** | 0.10*** | 0.15*** | -0.20*** | -0.08*** | 0.03 | -0.18*** |
| | | (0.02) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) |
| | B's interest differential(-1) | 0.31*** | 0.09*** | 0.04*** | 0.15*** | -0.12*** | -0.06*** | 0.03* | 0.23*** | 0.01 | -0.08*** |
| | | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) |
| **Instantaneous impact of CFMs** | A's tightening measure(-1) | . | . | . | -1.50*** | . | . | -0.41 | . | . | -1.82** |
| | | . | . | . | (0.56) | . | . | (1.15) | . | . | (0.81) |
| | A's loosening measure(-1) | . | -0.47 | . | . | -0.79*** | . | 0.51 | . | . | -1.54* |
| | | . | (0.30) | . | . | (0.29) | . | (0.66) | . | . | (0.81) |
| | B's tightening measure(-1) | -2.77** | -0.89 | -3.13*** | -1.45 | -0.49 | -1.89* | -2.88** | -2.27* | -2.27* | -0.70 |
| | | (1.17) | (1.06) | (1.20) | (2.15) | (1.13) | (1.13) | (1.30) | (1.16) | (1.17) | (1.40) |
| | B's loosening measure(-1) | -0.72 | -1.08 | -0.20 | -0.81 | 0.47 | 0.75 | -0.33 | -0.06 | -0.58 | 0.14 |
| | | (0.61) | (0.69) | (0.62) | (0.68) | (0.80) | (0.58) | (0.66) | (0.60) | (0.60) | (0.65) |
| | Others' tightening measure(-1) | 0.17 | 0.62* | 0.29 | 1.09* | 0.67* | 0.54 | 0.01 | -0.08 | 0.45 | 0.10 |
| | | (0.39) | (0.35) | (0.40) | (0.65) | (0.37) | (0.37) | (0.43) | (0.39) | (0.39) | (0.45) |
| | Others' loosening measure(-1) | -0.21 | 0.13 | -0.22 | -0.62*** | -0.16 | -0.08 | 0.02 | -0.31* | -0.26 | -0.63*** |
| | | (0.19) | (0.20) | (0.19) | (0.21) | (0.24) | (0.18) | (0.20) | (0.19) | (0.19) | (0.20) |
| | Constant | 28.92*** | 6.56*** | 31.59*** | -0.28*** | 8.83*** | 21.61*** | 18.76*** | 25.92*** | 28.00*** | 17.44*** |
| | | (0.08) | (0.07) | (0.09) | (0.10) | (0.08) | (0.10) | (0.07) | (0.10) | (0.09) | (0.07) |
| | Observations | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 |
| | Adjusted $R^2$ | 0.020 | 0.132 | 0.057 | 0.151 | 0.024 | 0.011 | 0.028 | 0.060 | 0.060 | 0.022 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 9: Panel regressions on correlations of bond returns (GBI HD) involving one economy (A) vs the other economies (B) (Model 2)

| Variables | | AU | CN | HK | ID | IN | JP | KR | NZ | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | 0.09 | 1.66*** | 0.38*** | -0.88*** | 0.26*** | -0.86*** | -1.14*** | -0.55*** | 0.83*** | 1.73*** |
| | | (0.09) | (0.09) | (0.10) | (0.11) | (0.10) | (0.10) | (0.10) | (0.10) | (0.11) | (0.10) |
| | VIX(-1) | -0.00 | -0.01** | -0.02*** | -0.19*** | 0.04*** | 0.05*** | 0.07*** | -0.02*** | -0.06*** | -0.05*** |
| | | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | 0.00 | 0.00 | 0.01** | 0.01*** | 0.00 | -0.01 | -0.00 | 0.01** | 0.02*** | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.01*** | 0.01*** | 0.01*** | -0.01*** | -0.01*** | 0.01*** | 0.01*** | 0.00 | 0.01*** | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | A's expected appreciation(-1) | -0.03 | -0.64*** | 1.94*** | -0.44*** | 0.14*** | 0.15*** | 0.27*** | -0.01 | 0.15 | 0.06*** |
| | | (0.04) | (0.03) | (0.38) | (0.02) | (0.04) | (0.05) | (0.05) | (0.04) | (0.11) | (0.02) |
| | A's interest differential(-1) | -0.46*** | -0.03* | 1.31*** | 0.29*** | -0.23*** | -0.13*** | -0.66*** | -0.39*** | 0.39*** | 0.30*** |
| | | (0.02) | (0.01) | (0.10) | (0.02) | (0.03) | (0.03) | (0.03) | (0.03) | (0.05) | (0.05) |
| | B's expected appreciation(-1) | -0.01 | 0.01 | -0.03 | -0.19*** | 0.10*** | 0.14*** | -0.13*** | -0.07*** | 0.02 | -0.14*** |
| | | (0.02) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) |
| | B's interest differential(-1) | 0.29*** | 0.19*** | -0.00 | 0.10*** | -0.21*** | -0.03 | -0.04* | 0.14*** | -0.05** | -0.08*** |
| | | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| **Long term impact of CFMs** | A's cumulative tightening measure(-1) | . | . | . | -0.79*** | . | . | 2.49*** | . | . | -0.70*** |
| | | . | . | . | (0.05) | . | . | (0.14) | . | . | (0.10) |
| | A's cumulative loosening measure(-1) | . | 0.47*** | . | . | -0.42*** | . | 0.32*** | . | . | -0.32*** |
| | | . | (0.04) | . | . | (0.02) | . | (0.06) | . | . | (0.07) |
| | B's cumulative tightening measure(-1) | -0.15*** | 0.19*** | 0.06 | 0.49*** | 0.39*** | 0.28*** | -1.29*** | -0.21*** | 0.47*** | -0.13* |
| | | (0.05) | (0.05) | (0.05) | (0.12) | (0.05) | (0.05) | (0.06) | (0.05) | (0.05) | (0.07) |
| | B's cumulative loosening measure(-1) | -0.20*** | -0.36*** | -0.17*** | 0.03 | 0.72*** | -0.07*** | -0.13*** | -0.02 | -0.05*** | 0.03 |
| | | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| | Others' cumulative tightening measure(-1) | 0.10*** | 0.08*** | 0.28*** | 0.56*** | 0.31*** | 0.16*** | 0.13*** | 0.12*** | 0.29*** | 0.01 |
| | | (0.02) | (0.02) | (0.02) | (0.08) | (0.03) | (0.02) | (0.05) | (0.02) | (0.02) | (0.04) |
| | Others' cumulative loosening measure(-1) | 0.08*** | -0.13*** | 0.01 | 0.05*** | 0.24*** | 0.04*** | 0.09*** | 0.01 | -0.00 | 0.07*** |
| | | (0.01) | (0.01) | (0.01) | (0.01) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| | Constant | 28.50*** | 5.47*** | 30.41*** | -0.91*** | 8.83*** | 19.64*** | 17.20*** | 25.30*** | 26.52*** | 17.79*** |
| | | (0.08) | (0.09) | (0.11) | (0.12) | (0.09) | (0.14) | (0.08) | (0.13) | (0.11) | (0.11) |
| | Observations | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 | 20511 |
| | Adjusted $R^2$ | 0.061 | 0.152 | 0.078 | 0.164 | 0.058 | 0.033 | 0.185 | 0.065 | 0.091 | 0.028 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 10: Country by country panel regressions on bond returns (GBI HD) involving one economy vs the other economies (Model 1)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | 0.04*** | 0.05*** | 0.04*** | -0.00 | 0.10*** | -0.00 | 0.02*** | 0.00 | -0.04*** | 0.31*** | 0.02*** | 0.03*** |
| | | (0.01) | (0.01) | (0.00) | (0.02) | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.08) | (0.01) | (0.01) |
| | VIX(-1) | -0.00 | -0.00*** | -0.00 | 0.01*** | -0.00 | 0.00*** | 0.00*** | 0.00*** | 0.00*** | -0.00 | 0.00 | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | 0.01*** | 0.00*** | 0.00*** | -0.02*** | 0.00*** | 0.00*** | 0.00*** | 0.00* | 0.01*** | -0.00*** | 0.00*** | 0.00* |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00 | 0.00 | 0.00*** | -0.00*** | -0.00 | 0.00*** | 0.00 | 0.00*** | 0.00*** | 0.00 | 0.00** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | -0.02*** | 0.01*** | -0.04** | 0.06*** | 0.01** | 0.06*** | 0.01** | 0.01*** | -0.02*** | 0.40*** | 0.06*** | -0.00*** |
| | | (0.00) | (0.00) | (0.02) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.02) | (0.01) | (0.00) |
| | Interest differential(-1) | -0.00 | -0.00 | -0.01* | 0.04*** | -0.00 | 0.01*** | 0.00 | 0.02*** | 0.00** | 0.07*** | 0.01*** | 0.00 |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) |
| **Instantaneous impact of CFMs** | Own bond measure(-1) | . | -0.01 | . | 0.01 | -0.01 | . | 0.04 | . | . | -0.19 | . | 0.06 |
| | | . | (0.02) | . | (0.10) | (0.03) | . | (0.03) | . | . | (0.16) | . | (0.04) |
| | Other countries' measure(-1) | 0.01 | -0.00 | 0.03*** | 0.12*** | 0.02 | 0.00 | 0.05*** | 0.02** | 0.02** | -0.06 | -0.01 | -0.04*** |
| | | (0.01) | (0.01) | (0.01) | (0.04) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.05) | (0.01) | (0.01) |
| | Constant | -0.01 | 0.01*** | 0.00 | -0.17*** | -0.00 | -0.00 | -0.00 | -0.06*** | -0.05*** | -0.07*** | -0.00 | -0.02*** |
| | | (0.01) | (0.00) | (0.00) | (0.02) | (0.01) | (0.00) | (0.00) | (0.01) | (0.01) | (0.02) | (0.00) | (0.00) |
| | Observations | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 12727 | 25905 | 8041 | 25905 | 25905 |
| | Adjusted $R^2$ | 0.063 | 0.006 | 0.023 | 0.043 | 0.011 | 0.063 | 0.012 | 0.012 | 0.050 | 0.052 | 0.009 | 0.007 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 11: Country by country panel regressions on bond returns (GBI HD) involving one economy vs the other economies (Model 2)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | 0.04*** | 0.05*** | 0.04*** | -0.06*** | 0.10*** | -0.00 | 0.03*** | -0.00 | -0.03*** | 0.42*** | 0.02*** | 0.03*** |
| | | (0.01) | (0.01) | (0.00) | (0.02) | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.08) | (0.01) | (0.01) |
| | VIX(-1) | -0.00 | -0.00*** | -0.00 | 0.00*** | -0.00* | 0.00*** | 0.00*** | 0.00*** | 0.00*** | -0.00* | 0.00 | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | 0.01*** | 0.00*** | 0.00*** | -0.02*** | 0.00*** | 0.00*** | 0.00*** | 0.00 | 0.01*** | -0.01*** | 0.00*** | 0.00* |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00 | 0.00*** | 0.00*** | -0.00 | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00*** | 0.00*** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | -0.02*** | 0.01*** | -0.04** | 0.06*** | 0.01** | 0.06*** | 0.01** | 0.01*** | -0.02*** | 0.40*** | 0.06*** | -0.00*** |
| | | (0.00) | (0.00) | (0.02) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.02) | (0.01) | (0.00) |
| | Interest differential(-1) | 0.00*** | -0.00*** | 0.00 | 0.02*** | -0.00** | -0.00*** | -0.00 | 0.02*** | 0.01*** | 0.00 | -0.00*** | -0.00 |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) |
| **Instantaneous and lagged impact of CFMs** | Own bond measure(-1) | . | -0.00 | . | 0.01 | -0.00 | . | 0.04 | . | . | -0.09 | . | 0.06 |
| | | . | (0.02) | . | (0.10) | (0.03) | . | (0.03) | . | . | (0.17) | . | (0.04) |
| | Own bond measure(-2) | . | 0.01 | . | -0.11 | 0.08*** | . | -0.10*** | . | . | 0.18 | . | 0.06 |
| | | . | (0.02) | . | (0.10) | (0.03) | . | (0.03) | . | . | (0.17) | . | (0.04) |
| | Own bond measure(-3) | . | 0.02 | . | -0.05 | -0.13*** | . | -0.01 | . | . | -0.45*** | . | 0.07* |
| | | . | (0.02) | . | (0.10) | (0.03) | . | (0.03) | . | . | (0.17) | . | (0.04) |
| | Own bond measure(-4) | . | 0.01 | . | 0.08 | 0.00 | . | 0.08** | . | . | 0.02 | . | -0.19*** |
| | | . | (0.02) | . | (0.10) | (0.03) | . | (0.03) | . | . | (0.16) | . | (0.04) |
| | Other countries' measure(-1) | 0.01 | -0.01 | 0.03*** | 0.12*** | 0.02 | -0.00 | 0.05*** | 0.02** | 0.02** | -0.07 | -0.01 | -0.04*** |
| | | (0.01) | (0.01) | (0.01) | (0.04) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.05) | (0.01) | (0.01) |
| | Other countries' measure(-2) | -0.05*** | -0.01 | 0.01 | -0.01 | 0.03* | 0.01 | -0.04*** | 0.00 | -0.01 | 0.09* | -0.03*** | -0.03*** |
| | | (0.01) | (0.01) | (0.01) | (0.04) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.05) | (0.01) | (0.01) |
| | Other countries' measure(-3) | 0.01 | 0.01 | -0.01 | -0.06* | 0.04** | 0.01 | -0.02 | 0.00 | 0.01 | 0.10** | -0.02** | -0.04*** |
| | | (0.01) | (0.01) | (0.01) | (0.04) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.05) | (0.01) | (0.01) |
| | Other countries' measure(-4) | 0.02 | 0.02 | 0.01* | 0.01 | -0.02 | 0.02*** | 0.05*** | 0.01 | 0.01 | -0.22*** | 0.00 | 0.02* |
| | | (0.01) | (0.01) | (0.01) | (0.04) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.05) | (0.01) | (0.01) |
| | Constant | -0.01 | 0.03*** | 0.00 | -0.13*** | -0.00 | -0.00 | -0.01 | -0.06*** | -0.05*** | -0.02 | 0.00 | -0.02*** |
| | | (0.01) | (0.00) | (0.00) | (0.02) | (0.01) | (0.00) | (0.00) | (0.01) | (0.01) | (0.02) | (0.00) | (0.00) |
| | Observations | 25872 | 25872 | 25872 | 25872 | 25872 | 25872 | 25872 | 12727 | 25872 | 8041 | 25872 | 25872 |
| | Adjusted $R^2$ | 0.063 | 0.004 | 0.023 | 0.034 | 0.012 | 0.025 | 0.013 | 0.011 | 0.048 | 0.019 | 0.006 | 0.007 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 12: Country by country panel regressions on bond returns (GBI HD) involving one economy vs the other economies (Model 3)

| | Variables | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | 0.03*** | 0.05*** | 0.04*** | -0.00 | 0.11*** | -0.01 | 0.02*** | 0.00 | -0.04*** | 0.26*** | 0.03*** | 0.04*** |
| | | (0.01) | (0.01) | (0.00) | (0.02) | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.08) | (0.01) | (0.01) |
| | VIX(-1) | -0.00 | -0.00** | 0.00 | 0.01*** | -0.00 | 0.00*** | 0.00*** | 0.00*** | 0.00*** | 0.00** | 0.00 | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | 0.01*** | 0.00*** | 0.00*** | -0.02*** | 0.00*** | 0.00*** | 0.00*** | 0.00* | 0.01*** | -0.00*** | 0.00*** | 0.00** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | -0.00 | 0.00 | 0.00*** | -0.00*** | 0.00 | 0.00*** | -0.00 | 0.00*** | 0.00*** | 0.00*** | 0.00** | 0.00** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | -0.02*** | 0.01*** | -0.07*** | 0.06*** | 0.01*** | 0.06*** | 0.01*** | 0.01*** | -0.02*** | 0.42*** | 0.06*** | -0.01*** |
| | | (0.00) | (0.00) | (0.02) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.02) | (0.01) | (0.00) |
| | Interest differential(-1) | 0.00 | 0.00 | -0.00 | 0.04*** | -0.00 | 0.01*** | 0.00*** | 0.02*** | 0.00** | 0.11*** | 0.01*** | 0.02*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) |
| **Long term impact of CFMs** | Own cumulative measure(-1) | . | 0.00 | . | 0.01** | -0.00** | . | -0.00 | . | . | 0.05 | . | -0.02*** |
| | | . | (0.00) | . | (0.01) | (0.00) | . | (0.00) | . | . | (0.03) | . | (0.00) |
| | Others' cumulative measure(-1) | 0.00*** | 0.00*** | 0.00*** | 0.00*** | 0.00 | -0.00*** | 0.00*** | -0.00 | 0.00 | -0.01*** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | Constant | -0.00 | 0.03*** | 0.02*** | -0.16*** | 0.00 | -0.01*** | 0.00 | -0.07*** | -0.05*** | -0.39*** | 0.01* | -0.02*** |
| | | (0.01) | (0.01) | (0.01) | (0.02) | (0.01) | (0.00) | (0.00) | (0.01) | (0.01) | (0.08) | (0.01) | (0.01) |
| | Observations | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 12727 | 25905 | 8041 | 25905 | 25905 |
| | Adjusted $R^2$ | 0.065 | 0.007 | 0.025 | 0.043 | 0.011 | 0.063 | 0.012 | 0.011 | 0.051 | 0.056 | 0.009 | 0.009 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 13: Country by country panel regressions on bond returns (GBI HD) involving one economy vs the other economies (Model 4)

| | Variables | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | 0.04*** | 0.05*** | 0.04*** | -0.00 | 0.10*** | -0.00 | 0.02*** | 0.00 | -0.04*** | 0.31*** | 0.02*** | 0.03*** |
| | | (0.01) | (0.01) | (0.00) | (0.02) | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.08) | (0.01) | (0.01) |
| | VIX(-1) | -0.00 | -0.00*** | -0.00 | 0.01*** | -0.00 | 0.00*** | 0.00*** | 0.00*** | 0.00*** | -0.00 | 0.00 | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | 0.01*** | 0.00*** | 0.00*** | -0.02*** | 0.00*** | 0.00*** | 0.00*** | 0.00* | 0.01*** | -0.00*** | 0.00*** | 0.00* |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00 | 0.00 | 0.00*** | -0.00*** | -0.00 | 0.00*** | 0.00 | 0.00*** | 0.00*** | 0.00 | 0.00** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | -0.02*** | 0.01*** | -0.04** | 0.06*** | 0.01** | 0.06*** | 0.01** | 0.01*** | -0.02*** | 0.40*** | 0.06*** | -0.00*** |
| | | (0.00) | (0.00) | (0.02) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.02) | (0.01) | (0.00) |
| | Interest differential(-1) | 0.00 | -0.00 | -0.01** | 0.04*** | -0.00 | 0.01*** | 0.00 | 0.02*** | 0.00*** | 0.07*** | 0.01*** | 0.00 |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) |
| **Instantaneous impact of CFMs** | Own tightening measure(-1) | . | . | . | 0.01 | . | . | 0.01 | . | . | -0.19 | . | 0.13** |
| | | . | . | . | (0.10) | . | . | (0.07) | . | . | (0.16) | . | (0.06) |
| | Own loosening measure(-1) | . | 0.01 | . | . | 0.01 | . | -0.06 | . | . | . | . | 0.02 |
| | | . | (0.02) | . | . | (0.03) | . | (0.04) | . | . | . | . | (0.06) |
| | Others' tightening measure(-1) | -0.08*** | 0.01 | 0.01 | 0.51*** | -0.04 | -0.03** | 0.10*** | 0.01 | 0.02 | 0.03 | 0.01 | -0.10*** |
| | | (0.03) | (0.03) | (0.02) | (0.12) | (0.03) | (0.01) | (0.03) | (0.01) | (0.02) | (0.10) | (0.02) | (0.03) |
| | Others' loosening measure(-1) | -0.04** | 0.01 | -0.03*** | -0.08** | -0.05** | -0.01 | -0.04*** | -0.02*** | -0.02** | 0.08 | 0.01 | 0.03* |
| | | (0.01) | (0.01) | (0.01) | (0.04) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.05) | (0.01) | (0.01) |
| | Constant | -0.01 | 0.01*** | 0.00 | -0.18*** | -0.00 | -0.00 | -0.00 | -0.06*** | -0.05*** | -0.07*** | -0.00 | -0.02*** |
| | | (0.01) | (0.00) | (0.00) | (0.02) | (0.01) | (0.00) | (0.00) | (0.01) | (0.01) | (0.02) | (0.00) | (0.00) |
| | Observations | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 12727 | 25905 | 8041 | 25905 | 25905 |
| | Adjusted $R^2$ | 0.064 | 0.006 | 0.024 | 0.044 | 0.011 | 0.063 | 0.012 | 0.012 | 0.051 | 0.052 | 0.009 | 0.007 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 14: Country by country panel regressions on bond returns (GBI HD) involving one economy vs the other economies (Model 5)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | 0.03*** | 0.05*** | 0.04*** | -0.01 | 0.11*** | -0.01 | 0.02*** | 0.02 | -0.04*** | 0.41*** | 0.03*** | 0.04*** |
| | | (0.01) | (0.01) | (0.00) | (0.02) | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.09) | (0.01) | (0.01) |
| | VIX(-1) | -0.00 | -0.00** | 0.00 | 0.01*** | -0.00 | 0.00*** | 0.00** | 0.00*** | 0.00*** | 0.00*** | 0.00 | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | 0.01*** | 0.00*** | 0.00*** | -0.02*** | 0.00*** | 0.00*** | 0.00*** | 0.00* | 0.01*** | -0.00*** | 0.00*** | 0.00** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00 | 0.00 | 0.00*** | -0.00*** | 0.00 | 0.00*** | -0.00 | 0.00*** | 0.00*** | 0.00** | 0.00** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | -0.02*** | 0.01*** | -0.07*** | 0.06*** | 0.01*** | 0.06*** | 0.01*** | 0.01*** | -0.01*** | 0.43*** | 0.06*** | -0.01*** |
| | | (0.00) | (0.00) | (0.02) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.02) | (0.01) | (0.00) |
| | Interest differential(-1) | 0.00 | 0.00 | -0.00 | 0.04*** | -0.00** | 0.01*** | 0.00*** | 0.04*** | 0.00** | 0.12*** | 0.01*** | 0.02*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.00) |
| **Long term impact of CFMs** | Own cumulative tightening measure(-1) | . | . | . | 0.01 | . | . | 0.01 | . | . | 0.12*** | . | -0.05*** |
| | | . | . | . | (0.01) | . | . | (0.01) | . | . | (0.03) | . | (0.01) |
| | Own cumulative loosening measure(-1) | . | -0.00 | . | . | 0.00 | . | 0.00 | . | . | . | . | 0.02*** |
| | | . | (0.00) | . | . | (0.00) | . | (0.00) | . | . | . | . | (0.00) |
| | Others' cumulative tightening measure(-1) | 0.00** | 0.00 | 0.00*** | 0.01 | 0.01** | 0.00 | -0.00 | -0.00*** | 0.01*** | -0.07*** | 0.00 | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) |
| | Others' cumulative loosening measure(-1) | -0.00*** | -0.00** | -0.00*** | -0.00*** | -0.00 | 0.00 | -0.00** | 0.00 | -0.00*** | 0.01** | -0.00*** | -0.00 |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | Constant | -0.00 | 0.03*** | 0.02*** | -0.17*** | 0.01 | -0.02*** | 0.01 | -0.09*** | -0.05*** | -0.15 | 0.01* | -0.02*** |
| | | (0.01) | (0.01) | (0.01) | (0.02) | (0.01) | (0.00) | (0.00) | (0.01) | (0.01) | (0.09) | (0.01) | (0.01) |
| | Observations | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 12727 | 25905 | 8041 | 25905 | 25905 |
| | Adjusted $R^2$ | 0.065 | 0.007 | 0.026 | 0.043 | 0.012 | 0.063 | 0.012 | 0.012 | 0.052 | 0.057 | 0.009 | 0.010 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 15: Panel regressions on the correlation of bond returns (GBI UD) involving one economy (A) vs the other economies (B) (Model 1)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -4.38*** | 2.70*** | 2.66*** | -4.77*** | -9.84*** | -7.49*** | -4.74*** | 0.37 | -2.76*** | -2.24*** | -1.06*** |
| | | (0.26) | (0.16) | (0.24) | (0.24) | (0.23) | (0.32) | (0.24) | (0.25) | (0.28) | (0.27) | (0.22) |
| | VIX(-1) | -0.01 | -0.12*** | -0.52*** | 0.27*** | 0.21*** | -0.38*** | 0.02** | 0.16*** | -0.00 | -0.14*** | -0.15*** |
| | | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| | VIX (% change) (-1) | -0.01 | 0.02*** | 0.07*** | -0.05*** | -0.04*** | 0.06*** | -0.02** | -0.03*** | -0.01 | 0.01* | 0.01 |
| | | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00 | 0.01*** | -0.04*** | 0.02*** | 0.02*** | -0.05*** | -0.00*** | 0.03*** | -0.01*** | -0.01*** | -0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | A's expected appreciation(-1) | 0.02 | -0.11** | 15.59*** | 0.52*** | -0.84*** | 0.24 | -0.71*** | -0.86*** | -0.07 | -0.87*** | 0.24*** |
| | | (0.11) | (0.05) | (0.88) | (0.05) | (0.08) | (0.17) | (0.13) | (0.23) | (0.11) | (0.28) | (0.03) |
| | A's interest differential(-1) | -0.11* | 0.43*** | -0.24 | -0.23*** | 0.44*** | -1.84*** | -0.72*** | 0.84*** | 0.19*** | 1.16*** | -0.27*** |
| | | (0.06) | (0.02) | (0.23) | (0.04) | (0.03) | (0.07) | (0.06) | (0.07) | (0.07) | (0.10) | (0.06) |
| | B's expected appreciation(-1) | -0.56*** | -0.03 | -0.12** | -0.67*** | 0.37*** | 0.39*** | -0.04 | 0.95*** | -0.46*** | 0.10* | -0.15** |
| | | (0.06) | (0.04) | (0.06) | (0.07) | (0.06) | (0.07) | (0.06) | (0.06) | (0.06) | (0.06) | (0.08) |
| | B's interest differential(-1) | 0.20*** | -0.29*** | -0.42*** | 0.29*** | -0.23*** | -0.07 | 0.30*** | 0.04 | 0.51*** | -0.31*** | 0.13*** |
| | | (0.04) | (0.03) | (0.04) | (0.03) | (0.04) | (0.05) | (0.04) | (0.05) | (0.04) | (0.04) | (0.04) |
| **Instantaneous impact of CFMs** | A's tightening measure(-1) | . | . | . | 0.27 | . | . | 5.31* | . | . | . | -3.52** |
| | | . | . | . | (1.21) | . | . | (2.75) | . | . | . | (1.78) |
| | A's loosening measure(-1) | . | -0.49 | . | . | 1.87*** | . | 1.42 | -0.32 | . | . | 1.19 |
| | | . | (0.55) | . | . | (0.71) | . | (1.59) | (1.44) | . | . | (1.78) |
| | B's tightening measure(-1) | 3.16 | -2.04 | -5.18* | -0.50 | 3.78 | -4.34 | 4.77 | 5.39* | 1.73 | 2.59 | 2.70 |
| | | (3.33) | (2.05) | (3.05) | (4.93) | (2.93) | (3.93) | (3.29) | (3.16) | (3.35) | (2.96) | (3.24) |
| | B's loosening measure(-1) | 0.65 | -0.98 | -0.18 | 1.11 | -0.11 | -0.63 | 1.27 | 1.43 | 0.00 | 1.43 | -0.43 |
| | | (1.62) | (1.21) | (1.48) | (1.47) | (1.86) | (1.91) | (1.57) | (1.64) | (1.63) | (1.44) | (1.41) |
| | Others' tightening measure(-1) | -0.01 | -0.28 | -1.36 | 2.55* | 2.30** | -3.64*** | -0.37 | 0.17 | -0.50 | -0.28 | 0.01 |
| | | (1.04) | (0.64) | (0.95) | (1.40) | (0.92) | (1.23) | (1.02) | (0.99) | (1.05) | (0.93) | (0.99) |
| | Others' loosening measure(-1) | -0.21 | -1.06*** | -2.29*** | 0.16 | -0.46 | -2.23*** | -0.55 | 0.34 | -0.53 | -0.47 | -0.81* |
| | | (0.51) | (0.37) | (0.47) | (0.46) | (0.61) | (0.60) | (0.49) | (0.56) | (0.51) | (0.45) | (0.44) |
| | Constant | 36.92*** | 12.40*** | 29.68*** | 21.13*** | 18.87*** | 24.90*** | 31.14*** | 24.42*** | 31.08*** | 45.46*** | 33.68*** |
| | | (0.20) | (0.12) | (0.21) | (0.23) | (0.20) | (0.32) | (0.17) | (0.20) | (0.28) | (0.21) | (0.16) |
| | Observations | 23382 | 23382 | 23382 | 23382 | 23382 | 23382 | 23382 | 21870 | 23382 | 23382 | 23382 |
| | Adjusted $R^2$ | 0.037 | 0.040 | 0.272 | 0.055 | 0.101 | 0.315 | 0.056 | 0.081 | 0.023 | 0.081 | 0.044 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 16: Panel regressions on the correlation of bond returns (GBI UD) involving one economy (A) vs the other economies (B) (Model 2)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -4.68*** | 2.45*** | 2.59*** | -4.27*** | -8.18*** | -4.24*** | -4.94*** | -0.92*** | -3.03*** | -0.17 | -0.06 |
| | | (0.25) | (0.15) | (0.23) | (0.24) | (0.24) | (0.30) | (0.25) | (0.25) | (0.28) | (0.26) | (0.21) |
| | VIX(-1) | 0.03*** | -0.08*** | -0.51*** | 0.25*** | 0.20*** | -0.46*** | 0.08*** | 0.14*** | 0.02* | -0.09*** | -0.02** |
| | | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| | VIX (% change) (-1) | -0.01 | 0.02*** | 0.07*** | -0.04*** | -0.04*** | 0.08*** | -0.02*** | -0.01 | -0.02* | 0.01 | -0.01 |
| | | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **Regional factor** | Asia Economic Surprise (-1) | -0.00 | 0.01*** | -0.04*** | 0.02*** | 0.00** | -0.05*** | 0.00 | 0.01*** | -0.01*** | 0.01*** | 0.00** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | A's expected appreciation(-1) | -0.00 | 0.42*** | 9.32*** | 0.54*** | -0.69*** | 0.19 | -0.48*** | 0.48** | -0.12 | -0.77*** | 0.06* |
| | | (0.11) | (0.06) | (0.90) | (0.05) | (0.08) | (0.15) | (0.13) | (0.23) | (0.11) | (0.27) | (0.03) |
| | A's interest differential(-1) | 0.21*** | -0.04* | 0.94*** | -0.21*** | -0.95*** | 0.85*** | -0.64*** | -0.01 | 0.03 | 2.89*** | 1.26*** |
| | | (0.06) | (0.02) | (0.23) | (0.04) | (0.06) | (0.08) | (0.08) | (0.09) | (0.08) | (0.11) | (0.10) |
| | B's expected appreciation(-1) | -0.42*** | -0.14*** | -0.10* | -0.45*** | 0.43*** | 0.36*** | -0.02 | 1.00*** | -0.33*** | 0.26*** | -0.03 |
| | | (0.06) | (0.04) | (0.06) | (0.07) | (0.06) | (0.07) | (0.06) | (0.06) | (0.06) | (0.05) | (0.07) |
| | B's interest differential(-1) | -0.42*** | -0.33*** | -0.21*** | -0.45*** | -0.46*** | -0.22*** | -0.29*** | -0.50*** | 0.26*** | -1.16*** | -0.62*** |
| | | (0.05) | (0.03) | (0.04) | (0.05) | (0.05) | (0.06) | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) |
| **Long term impact of CFMs** | A's cumulative tightening measure(-1) | . | . | . | 0.77*** | . | . | 0.87** | . | . | . | -1.49*** |
| | | . | . | . | (0.12) | . | . | (0.36) | . | . | . | (0.20) |
| | A's cumulative loosening measure(-1) | . | -0.47*** | . | . | -0.85*** | . | 0.32** | 1.89*** | . | . | -1.53*** |
| | | . | (0.07) | . | . | (0.05) | . | (0.15) | (0.13) | . | . | (0.13) |
| | B's cumulative tightening measure(-1) | -1.13*** | 2.89*** | 0.84*** | -1.22*** | 1.47*** | -0.07 | 2.02*** | 1.56*** | -0.50*** | 0.03 | 1.40*** |
| | | (0.14) | (0.09) | (0.13) | (0.26) | (0.13) | (0.15) | (0.17) | (0.13) | (0.14) | (0.12) | (0.14) |
| | B's cumulative loosening measure(-1) | 0.87*** | 0.61*** | -0.07 | 1.52*** | 2.19*** | -0.99*** | 0.79*** | 1.82*** | 0.91*** | 0.93*** | 1.03*** |
| | | (0.05) | (0.04) | (0.05) | (0.05) | (0.07) | (0.06) | (0.05) | (0.05) | (0.05) | (0.04) | (0.04) |
| | Others' cumulative tightening measure(-1) | 0.46*** | 0.63*** | 0.32*** | -1.52*** | 1.09*** | 1.41*** | 1.06*** | -0.93*** | 0.06 | 1.30*** | 1.53*** |
| | | (0.06) | (0.04) | (0.06) | (0.17) | (0.07) | (0.07) | (0.12) | (0.06) | (0.06) | (0.05) | (0.08) |
| | Others' cumulative loosening measure(-1) | -0.16*** | 0.16*** | -0.36*** | 0.09*** | 0.75*** | -1.03*** | -0.44*** | 0.26*** | -0.14*** | -0.56*** | -0.47*** |
| | | (0.02) | (0.02) | (0.02) | (0.02) | (0.04) | (0.02) | (0.03) | (0.03) | (0.02) | (0.02) | (0.02) |
| | Constant | 36.36*** | 9.30*** | 33.95*** | 20.53*** | 20.33*** | 40.96*** | 31.11*** | 19.76*** | 31.98*** | 49.22*** | 36.28*** |
| | | (0.21) | (0.16) | (0.27) | (0.27) | (0.21) | (0.40) | (0.20) | (0.28) | (0.36) | (0.25) | (0.21) |
| | Observations | 23382 | 23382 | 23382 | 23382 | 23382 | 23382 | 23382 | 21870 | 23382 | 23382 | 23382 |
| | Adjusted $R^2$ | 0.061 | 0.118 | 0.294 | 0.096 | 0.163 | 0.421 | 0.095 | 0.170 | 0.046 | 0.149 | 0.168 |

* p<0.1, ** p<0.05, *** p<0.01.

**Appendix table 17: Country by country panel regressions on bond returns (GBI UD) involving one economy vs the other economies (Model 1)**

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.13*** | 0.07*** | 0.04*** | 0.02 | 0.09*** | 0.06*** | -0.39*** | -0.03*** | -0.05** | 0.19* | -0.03** | -0.01 |
| | | (0.02) | (0.01) | (0.00) | (0.03) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.10) | (0.01) | (0.01) |
| | VIX(-1) | 0.01*** | -0.00*** | -0.00 | 0.01*** | -0.00 | 0.00 | -0.01*** | 0.01*** | 0.00*** | -0.00** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.00*** | -0.00 | 0.00*** | -0.03*** | -0.01*** | 0.00*** | -0.00*** | -0.01*** | -0.00*** | -0.01*** | 0.00 | -0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00** | 0.00 | 0.00*** | -0.00*** | -0.00*** | 0.00*** | -0.00*** | -0.00*** | 0.00** | -0.00 | -0.00 | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.52*** | 0.01*** | -0.04** | 0.14*** | 0.06*** | 0.49*** | 0.77*** | 0.50*** | 0.59*** | 0.74*** | 0.64*** | -0.00 |
| | | (0.01) | (0.00) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) | (0.00) |
| | Interest differential(-1) | 0.11*** | 0.00 | -0.00 | 0.07*** | 0.00 | 0.12*** | 0.16*** | 0.09*** | 0.12*** | 0.17*** | 0.14*** | -0.00* |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) |
| **Instantaneous impact of CFMs** | Own bond measure(-1) | . | -0.06** | . | -0.08 | 0.04 | . | 0.14 | 0.27*** | . | -0.15 | . | 0.23*** |
| | | . | (0.02) | . | (0.14) | (0.05) | . | (0.12) | (0.06) | . | (0.21) | . | (0.06) |
| | Other countries' measure(-1) | -0.01 | -0.01 | 0.02*** | 0.04 | -0.09** | -0.05 | 0.31*** | -0.06*** | -0.12*** | -0.09 | -0.04** | -0.08*** |
| | | (0.04) | (0.01) | (0.01) | (0.05) | (0.03) | (0.03) | (0.04) | (0.02) | (0.04) | (0.06) | (0.02) | (0.02) |
| | Constant | -0.05*** | 0.02*** | 0.00 | -0.26*** | 0.05*** | -0.06*** | 0.19*** | -0.17*** | 0.03 | -0.12*** | -0.05*** | -0.00 |
| | | (0.02) | (0.00) | (0.00) | (0.03) | (0.01) | (0.02) | (0.01) | (0.01) | (0.02) | (0.03) | (0.01) | (0.01) |
| | Observations | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 24057 | 25905 | 8052 | 25905 | 25905 |
| | Adjusted $R^2$ | 0.120 | 0.005 | 0.018 | 0.077 | 0.019 | 0.096 | 0.193 | 0.145 | 0.147 | 0.108 | 0.102 | 0.006 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 18: Country by country panel regressions on bond returns (GBI UD) involving one economy vs the other economies (Model 2)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.13*** | 0.07*** | 0.04*** | 0.02 | 0.09*** | 0.06*** | -0.39*** | -0.03*** | -0.05** | 0.20** | -0.03** | -0.01 |
| | | (0.02) | (0.01) | (0.00) | (0.03) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.10) | (0.01) | (0.01) |
| | VIX(-1) | 0.01*** | -0.00*** | -0.00 | 0.01*** | -0.00 | 0.00 | -0.01*** | 0.01*** | 0.00*** | -0.00** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.00*** | -0.00 | 0.00*** | -0.03*** | -0.01*** | 0.00** | -0.00*** | -0.01*** | -0.00*** | -0.01*** | 0.00 | -0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00** | 0.00 | 0.00*** | -0.00*** | -0.00*** | 0.00*** | -0.00*** | -0.00*** | 0.00** | -0.00 | -0.00 | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.52*** | 0.01*** | -0.05*** | 0.14*** | 0.06*** | 0.49*** | 0.77*** | 0.50*** | 0.59*** | 0.73*** | 0.65*** | -0.00 |
| | | (0.01) | (0.00) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) | (0.00) |
| | Interest differential(-1) | 0.11*** | 0.00 | -0.00 | 0.07*** | 0.00 | 0.12*** | 0.16*** | 0.09*** | 0.12*** | 0.17*** | 0.14*** | -0.00* |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) |
| **Instantaneous and lagged impact of CFMs** | Own bond measure(-1) | . | -0.06** | . | -0.08 | 0.05 | . | 0.14 | 0.27*** | . | -0.03 | . | 0.23*** |
| | | . | (0.02) | . | (0.14) | (0.05) | . | (0.12) | (0.06) | . | (0.21) | . | (0.06) |
| | Own bond measure(-2) | . | -0.00 | . | -0.07 | 0.15*** | . | 0.48*** | 0.03 | . | 0.02 | . | -0.27*** |
| | | . | (0.02) | . | (0.14) | (0.05) | . | (0.12) | (0.05) | . | (0.21) | . | (0.06) |
| | Own bond measure(-3) | . | -0.00 | . | -0.07 | -0.26*** | . | 0.23** | -0.01 | . | -0.64*** | . | -0.00 |
| | | . | (0.02) | . | (0.14) | (0.05) | . | (0.12) | (0.05) | . | (0.21) | . | (0.06) |
| | Own bond measure(-4) | . | 0.03 | . | -0.01 | -0.06 | . | -0.30** | -0.10* | . | -0.43** | . | -0.09 |
| | | . | (0.02) | . | (0.14) | (0.05) | . | (0.12) | (0.05) | . | (0.21) | . | (0.06) |
| | Other countries' measure(-1) | -0.01 | -0.01 | 0.02*** | 0.04 | -0.08** | -0.05 | 0.31*** | -0.06*** | -0.12*** | -0.09 | -0.04** | -0.08*** |
| | | (0.04) | (0.01) | (0.01) | (0.05) | (0.03) | (0.03) | (0.04) | (0.02) | (0.04) | (0.06) | (0.02) | (0.02) |
| | Other countries' measure(-2) | -0.16*** | 0.01 | 0.02** | -0.06 | 0.03 | -0.01 | -0.11*** | 0.05** | -0.12*** | 0.13** | -0.05*** | -0.01 |
| | | (0.04) | (0.01) | (0.01) | (0.05) | (0.03) | (0.03) | (0.04) | (0.02) | (0.04) | (0.06) | (0.02) | (0.02) |
| | Other countries' measure(-3) | -0.05 | 0.00 | -0.00 | -0.15*** | -0.07** | 0.06* | -0.23*** | -0.01 | 0.02 | 0.10 | -0.07*** | -0.09*** |
| | | (0.04) | (0.01) | (0.01) | (0.05) | (0.03) | (0.03) | (0.04) | (0.02) | (0.04) | (0.06) | (0.02) | (0.02) |
| | Other countries' measure(-4) | 0.07* | 0.01 | 0.02* | -0.02 | -0.13*** | 0.06* | 0.06 | -0.02 | 0.12*** | -0.26*** | 0.02 | 0.02 |
| | | (0.04) | (0.01) | (0.01) | (0.05) | (0.03) | (0.03) | (0.04) | (0.02) | (0.04) | (0.06) | (0.02) | (0.02) |
| | Constant | -0.06*** | 0.02*** | 0.00 | -0.26*** | 0.05*** | -0.06*** | 0.19*** | -0.17*** | 0.03 | -0.11*** | -0.05*** | -0.01 |
| | | (0.02) | (0.00) | (0.00) | (0.03) | (0.01) | (0.02) | (0.01) | (0.01) | (0.03) | (0.03) | (0.01) | (0.01) |
| | Observations | 25872 | 25872 | 25872 | 25872 | 25872 | 25872 | 25872 | 24057 | 25872 | 8052 | 25872 | 25872 |
| | Adjusted $R^2$ | 0.120 | 0.005 | 0.019 | 0.077 | 0.022 | 0.097 | 0.196 | 0.145 | 0.148 | 0.111 | 0.102 | 0.007 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 19: Country by country panel regressions on bond returns (GBI UD) involving one economy vs the other economies (Model 3)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.13*** | 0.06*** | 0.04*** | 0.01 | 0.11*** | 0.06*** | -0.44*** | -0.03*** | -0.05* | 0.11 | -0.02 | -0.00 |
| | | (0.02) | (0.01) | (0.00) | (0.03) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.10) | (0.01) | (0.01) |
| | VIX(-1) | 0.01*** | -0.00* | 0.00 | 0.01*** | -0.00 | 0.00 | -0.00*** | 0.01*** | 0.00*** | 0.01*** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.00*** | -0.00 | 0.00*** | -0.03*** | -0.01*** | 0.00*** | -0.00*** | -0.01*** | -0.00*** | -0.01*** | 0.00* | -0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00** | 0.00* | 0.00*** | -0.00*** | -0.00*** | 0.00*** | -0.00*** | -0.00*** | 0.00** | 0.00*** | -0.00* | 0.00* |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.52*** | 0.01*** | -0.08*** | 0.14*** | 0.06*** | 0.49*** | 0.79*** | 0.54*** | 0.59*** | 0.77*** | 0.65*** | -0.00** |
| | | (0.01) | (0.00) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) | (0.00) |
| | Interest differential(-1) | 0.11*** | -0.00 | 0.00 | 0.06*** | -0.01** | 0.12*** | 0.19*** | 0.08*** | 0.12*** | 0.24*** | 0.15*** | 0.01*** |
| | | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) |
| **Long term impact of CFMs** | Own cumulative measure(-1) | . | -0.00*** | . | -0.01 | -0.01*** | . | 0.07*** | 0.04*** | . | 0.14*** | . | -0.04*** |
| | | . | (0.00) | . | (0.01) | (0.00) | . | (0.01) | (0.01) | . | (0.04) | . | (0.01) |
| | Others' cumulative measure(-1) | -0.00 | 0.00*** | 0.00*** | -0.00 | -0.00 | 0.00 | -0.00 | -0.02*** | 0.00 | -0.02*** | 0.00*** | 0.00 |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) |
| | Constant | -0.06*** | 0.02** | 0.03*** | -0.23*** | 0.07*** | -0.05** | 0.18*** | -0.23*** | 0.04 | -0.75*** | -0.03*** | -0.02*** |
| | | (0.02) | (0.01) | (0.01) | (0.03) | (0.01) | (0.02) | (0.02) | (0.01) | (0.03) | (0.10) | (0.01) | (0.01) |
| | Observations | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 24057 | 25905 | 8052 | 25905 | 25905 |
| | Adjusted $R^2$ | 0.120 | 0.006 | 0.021 | 0.077 | 0.020 | 0.096 | 0.194 | 0.152 | 0.147 | 0.117 | 0.102 | 0.007 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 20: Country by country panel regressions on bond returns (GBI UD) involving one economy vs the other economies (Model 4)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.13*** | 0.07*** | 0.04*** | 0.02 | 0.09*** | 0.06*** | -0.39*** | -0.03*** | -0.05** | 0.19* | -0.03** | -0.01 |
| | | (0.02) | (0.01) | (0.00) | (0.03) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.10) | (0.01) | (0.01) |
| | VIX(-1) | 0.01*** | -0.00*** | -0.00 | 0.01*** | -0.00 | 0.00 | -0.01*** | 0.01*** | 0.00*** | -0.00** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.00*** | -0.00 | 0.00*** | -0.03*** | -0.01*** | 0.00*** | -0.00*** | -0.01*** | -0.00*** | -0.01*** | 0.00 | -0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00** | 0.00 | 0.00*** | -0.00*** | -0.00*** | 0.00*** | -0.00*** | -0.00*** | 0.00** | -0.00 | -0.00 | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.52*** | 0.01*** | -0.05*** | 0.14*** | 0.06*** | 0.49*** | 0.77*** | 0.50*** | 0.59*** | 0.73*** | 0.64*** | -0.00 |
| | | (0.01) | (0.00) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) | (0.00) |
| | Interest differential(-1) | 0.11*** | 0.00 | -0.00 | 0.07*** | 0.00 | 0.12*** | 0.16*** | 0.09*** | 0.13*** | 0.17*** | 0.14*** | -0.00** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) |
| **Instantaneous impact of CFMs** | Own tightening measure(-1) | . | . | . | -0.08 | . | . | 0.40* | . | . | -0.15 | . | 0.52*** |
| | | . | . | . | (0.14) | . | . | (0.23) | . | . | (0.21) | . | (0.09) |
| | Own loosening measure(-1) | . | 0.06** | . | . | -0.04 | . | -0.06 | -0.28*** | . | . | . | 0.05 |
| | | . | (0.02) | . | . | (0.05) | . | (0.14) | (0.06) | . | . | . | (0.09) |
| | Others' tightening measure(-1) | 0.09 | -0.01 | 0.00 | 0.52*** | -0.03 | -0.26*** | 0.45*** | 0.04 | -0.10 | 0.04 | 0.05 | -0.00 |
| | | (0.09) | (0.03) | (0.02) | (0.17) | (0.06) | (0.07) | (0.09) | (0.04) | (0.09) | (0.13) | (0.04) | (0.05) |
| | Others' loosening measure(-1) | 0.03 | 0.01 | -0.03*** | 0.01 | 0.11*** | -0.00 | -0.27*** | 0.09*** | 0.13*** | 0.13* | 0.06*** | 0.09*** |
| | | (0.04) | (0.02) | (0.01) | (0.05) | (0.04) | (0.04) | (0.04) | (0.02) | (0.05) | (0.07) | (0.02) | (0.02) |
| | Constant | -0.05*** | 0.02*** | 0.00 | -0.26*** | 0.05*** | -0.06*** | 0.19*** | -0.17*** | 0.03 | -0.12*** | -0.05*** | -0.01 |
| | | (0.02) | (0.00) | (0.00) | (0.03) | (0.01) | (0.02) | (0.01) | (0.01) | (0.03) | (0.03) | (0.01) | (0.01) |
| | Observations | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 24057 | 25905 | 8052 | 25905 | 25905 |
| | Adjusted $R^2$ | 0.120 | 0.005 | 0.019 | 0.077 | 0.019 | 0.097 | 0.193 | 0.145 | 0.147 | 0.108 | 0.102 | 0.007 |

* p<0.1, ** p<0.05, *** p<0.01.

## Appendix table 21: Country by country panel regressions on bond returns (GBI UD) involving one economy vs the other economies (Model 5)

| Variables | | AU | CN | HK | ID | IN | JP | KR | MY | NZ | PH | SG | TH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Global factor** | Libor OIS spread (-1) | -0.13*** | 0.06*** | 0.04*** | 0.00 | 0.11*** | 0.06*** | -0.43*** | -0.04*** | -0.05* | 0.37*** | -0.01 | 0.00 |
| | | (0.02) | (0.01) | (0.00) | (0.03) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.11) | (0.01) | (0.01) |
| | VIX(-1) | 0.01*** | -0.00* | 0.00 | 0.01*** | -0.00 | 0.00 | -0.00*** | 0.01*** | 0.00*** | 0.01*** | 0.00*** | 0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| | VIX (% change) (-1) | -0.00*** | -0.00 | 0.00*** | -0.03*** | -0.01*** | 0.00*** | -0.00*** | -0.01*** | -0.00*** | -0.01*** | 0.00** | -0.00*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Regional factor** | Asia Economic Surprise (-1) | 0.00*** | 0.00* | 0.00*** | -0.00*** | -0.00*** | 0.00*** | -0.00*** | -0.00*** | 0.00** | 0.00*** | -0.00** | 0.00** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| **Local factor** | Expected appreciation(-1) | 0.52*** | 0.01*** | -0.08*** | 0.14*** | 0.06*** | 0.49*** | 0.79*** | 0.54*** | 0.59*** | 0.79*** | 0.65*** | -0.00** |
| | | (0.01) | (0.00) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.03) | (0.01) | (0.00) |
| | Interest differential(-1) | 0.11*** | -0.00 | 0.00 | 0.07*** | -0.00 | 0.12*** | 0.18*** | 0.07*** | 0.12*** | 0.26*** | 0.15*** | 0.01 |
| | | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) |
| **Long term impact of CFMs** | Own cumulative tightening measure(-1) | . | . | . | -0.02** | . | . | 0.10*** | . | . | 0.26*** | . | -0.08*** |
| | | . | . | . | (0.01) | . | . | (0.03) | . | . | (0.04) | . | (0.01) |
| | Own cumulative loosening measure(-1) | . | 0.01** | . | . | 0.01*** | . | -0.06*** | -0.04*** | . | . | . | 0.04*** |
| | | . | (0.00) | . | . | (0.00) | . | (0.01) | (0.01) | . | . | . | (0.01) |
| | Others' cumulative tightening measure(-1) | 0.01 | 0.00 | 0.00*** | 0.02 | -0.00 | -0.00 | 0.01 | -0.01*** | 0.01 | -0.11*** | -0.00* | 0.01*** |
| | | (0.00) | (0.00) | (0.00) | (0.02) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) | (0.02) | (0.00) | (0.00) |
| | Others' cumulative loosening measure(-1) | -0.00 | -0.00*** | -0.00*** | -0.00 | -0.00 | -0.00 | -0.00 | 0.01*** | -0.00 | 0.02*** | -0.00 | 0.00 |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) | (0.00) |
| | Constant | -0.06*** | 0.02** | 0.03*** | -0.24*** | 0.07*** | -0.05** | 0.17*** | -0.24*** | 0.03 | -0.35*** | -0.02** | -0.03*** |
| | | (0.02) | (0.01) | (0.01) | (0.03) | (0.01) | (0.02) | (0.02) | (0.01) | (0.03) | (0.12) | (0.01) | (0.01) |
| | Observations | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 25905 | 24057 | 25905 | 8052 | 25905 | 25905 |
| | Adjusted $R^2$ | 0.120 | 0.006 | 0.021 | 0.077 | 0.020 | 0.096 | 0.194 | 0.152 | 0.147 | 0.120 | 0.102 | 0.007 |

* p<0.1, ** p<0.05, *** p<0.01.