Breaking the Triple Coincidence in International Finance*

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*Views expressed here are the author's, not necessarily those of the BIS.

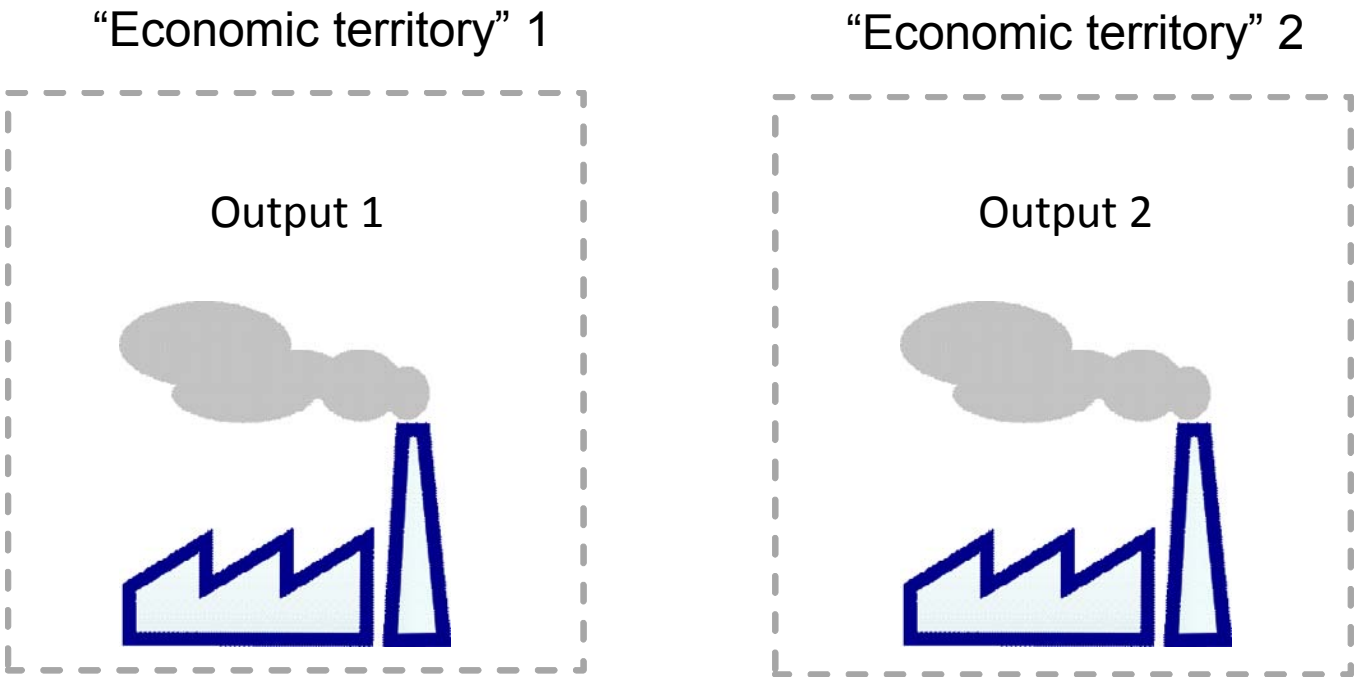


Figure 1. Boundary for national income accounting defines “economic territory”

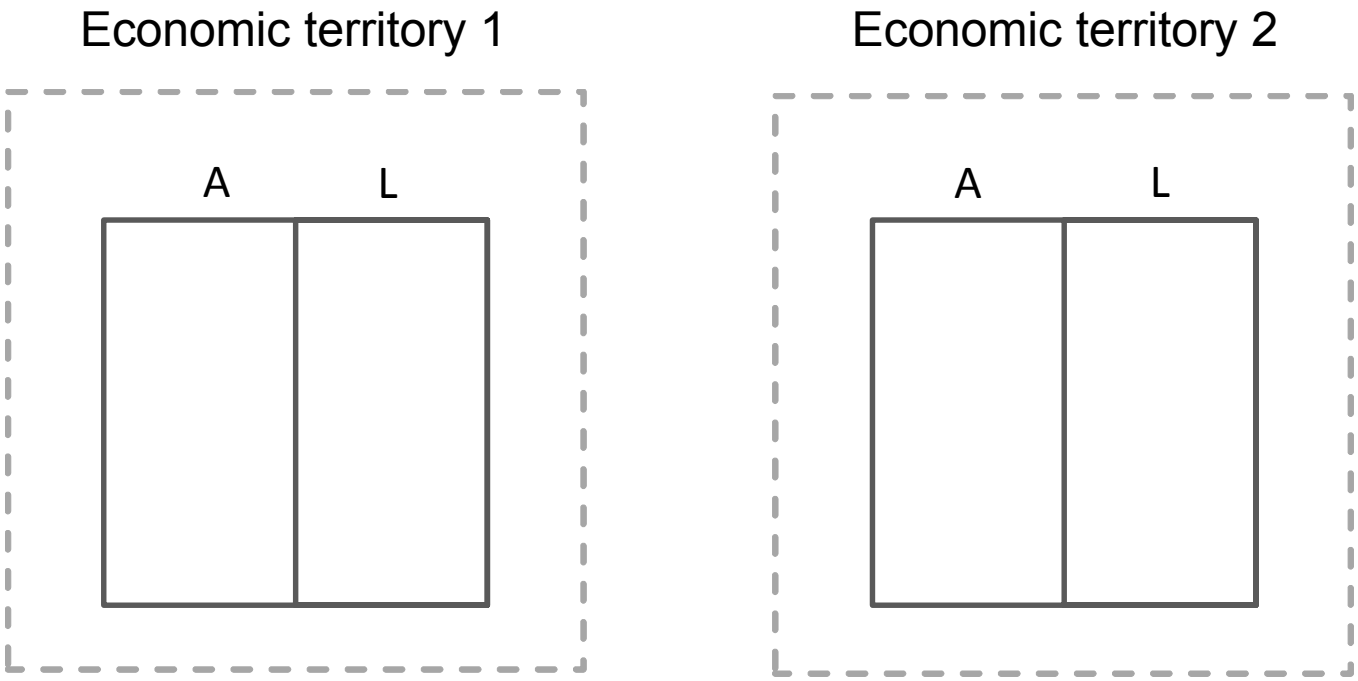


Figure 2. Boundary for national income accounting defines decision-making unit

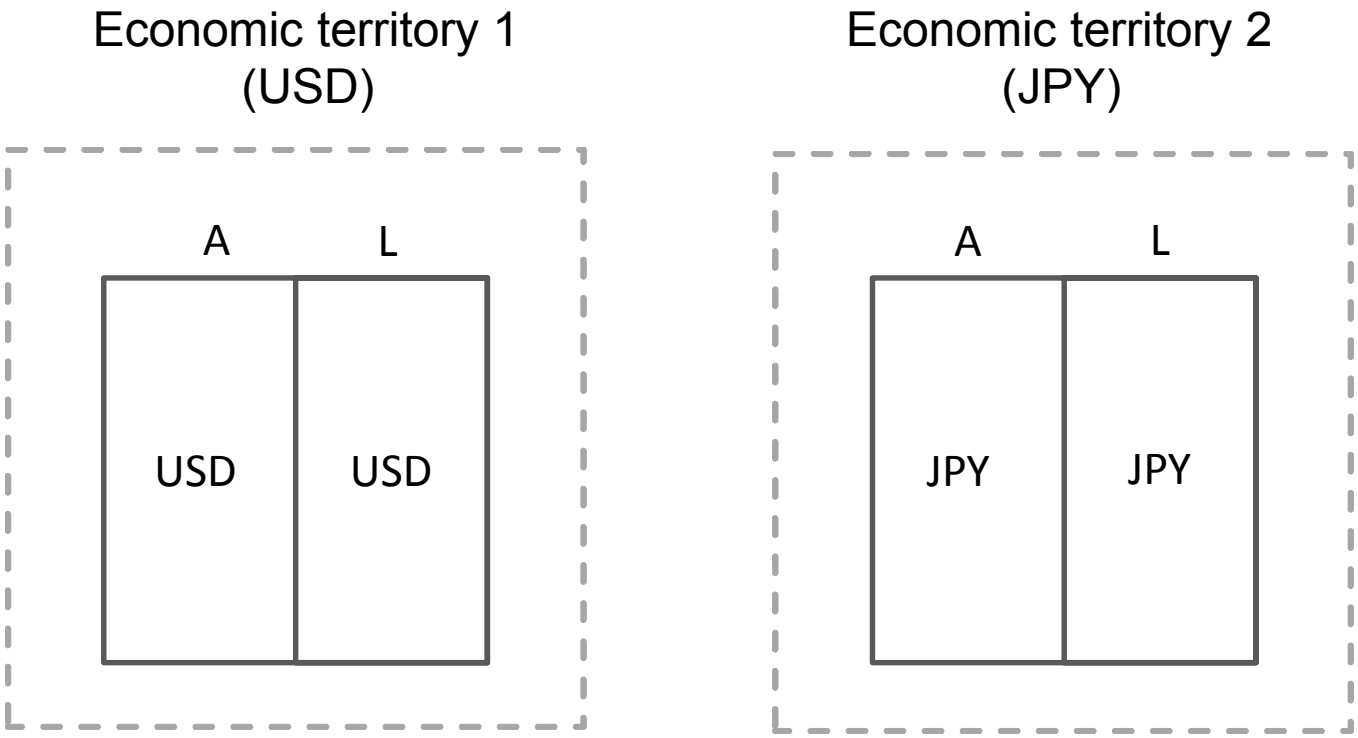


Figure 3. Boundary for national income accounting defines exchange rates as relative prices across boundary

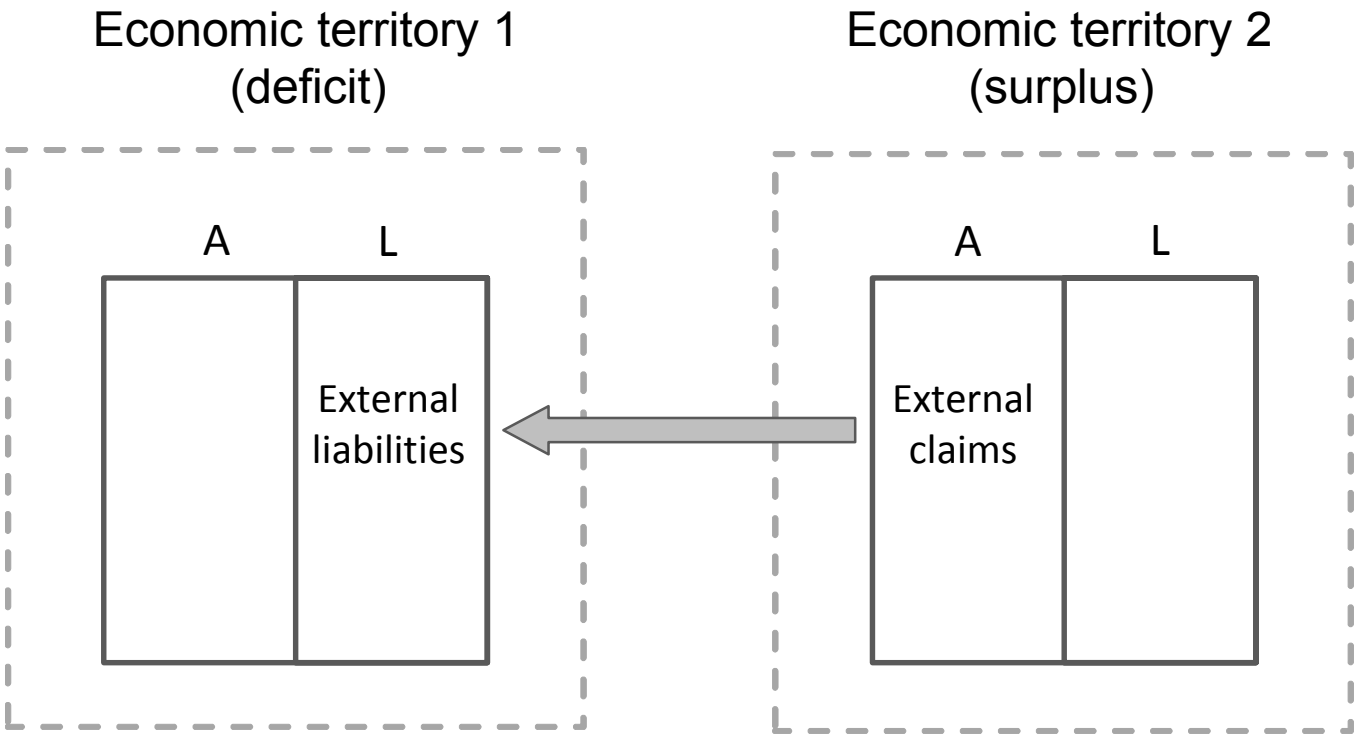


Figure 4. Boundary for national income accounting defines balance of payments and external claims/liabilities

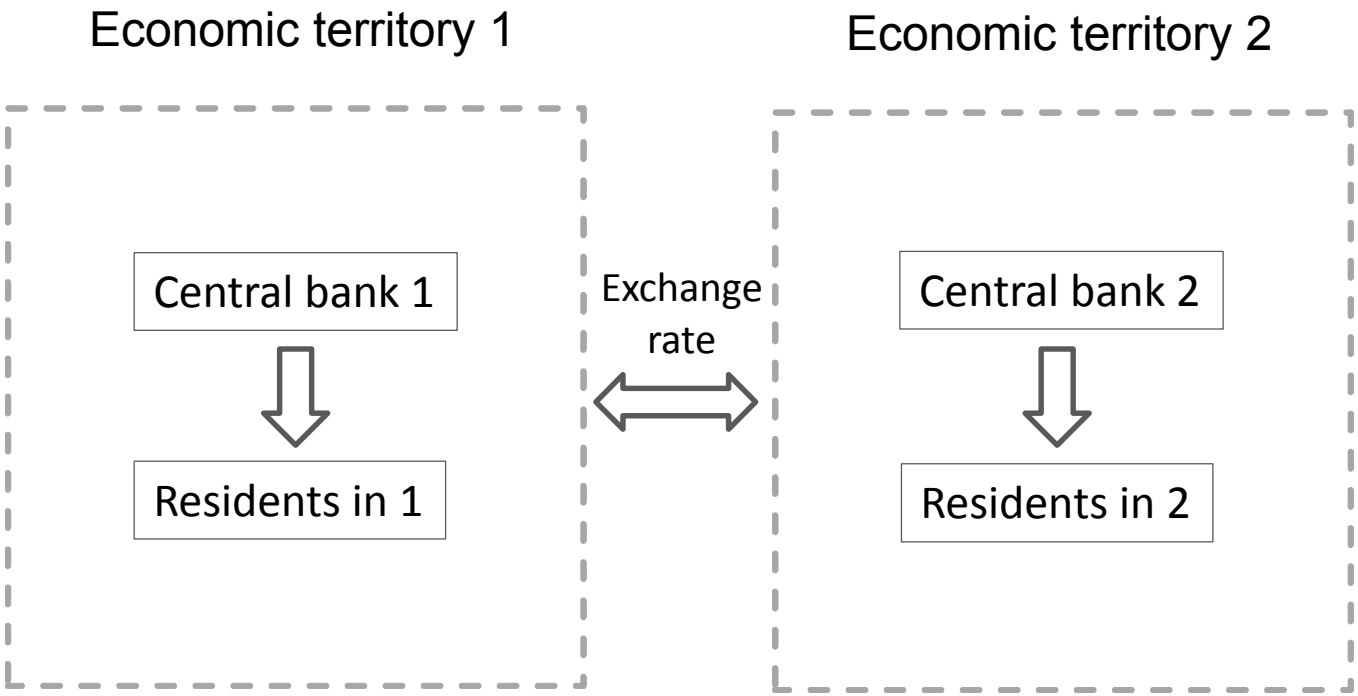


Figure 5. Boundary for national income accounting defines reach of monetary policy; floating exchange rates ensures monetary policy autonomy

"Triple Coincidence"

- Boundary of national income area
- Boundary defining decision-making unit with coherent preferences
  - Consumption and savings decisions (e.g. "global savings glut")
  - Portfolio choice decisions (e.g. preference for "safe assets")
- Boundary defining currency area
  - Exchange rate as relative price level

Three Examples

1. "Roundtrip" bank capital flows from United States to Europe and then back to the United States (2003 - 2008)

2. Offshore issuance of corporate bonds by EM borrowers (2010 -)

3. Cross-border banking and global liquidity (2003 - 2008)

Example 1

"Roundtrip" bank capital flows from Europe to the United States

(2003 - 2008)

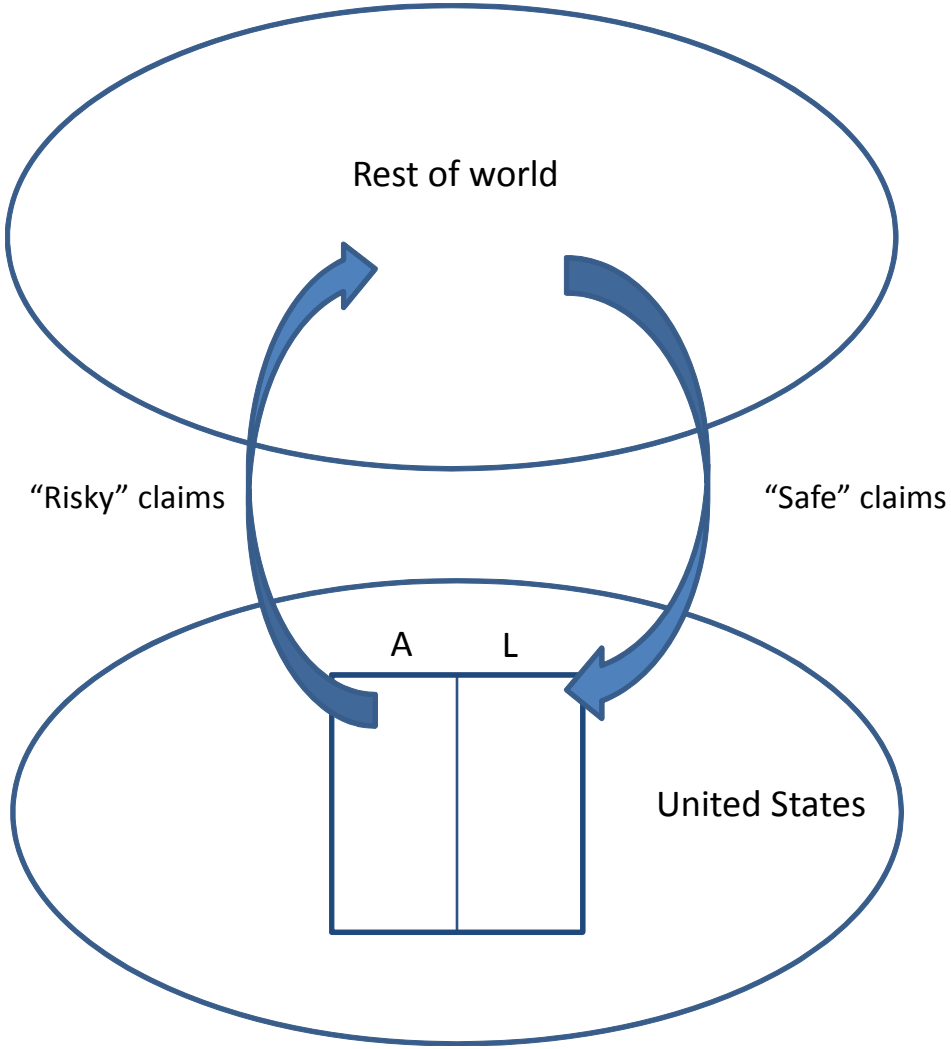


Figure 6. Schematic of "safe asset preference" view of global imbalances

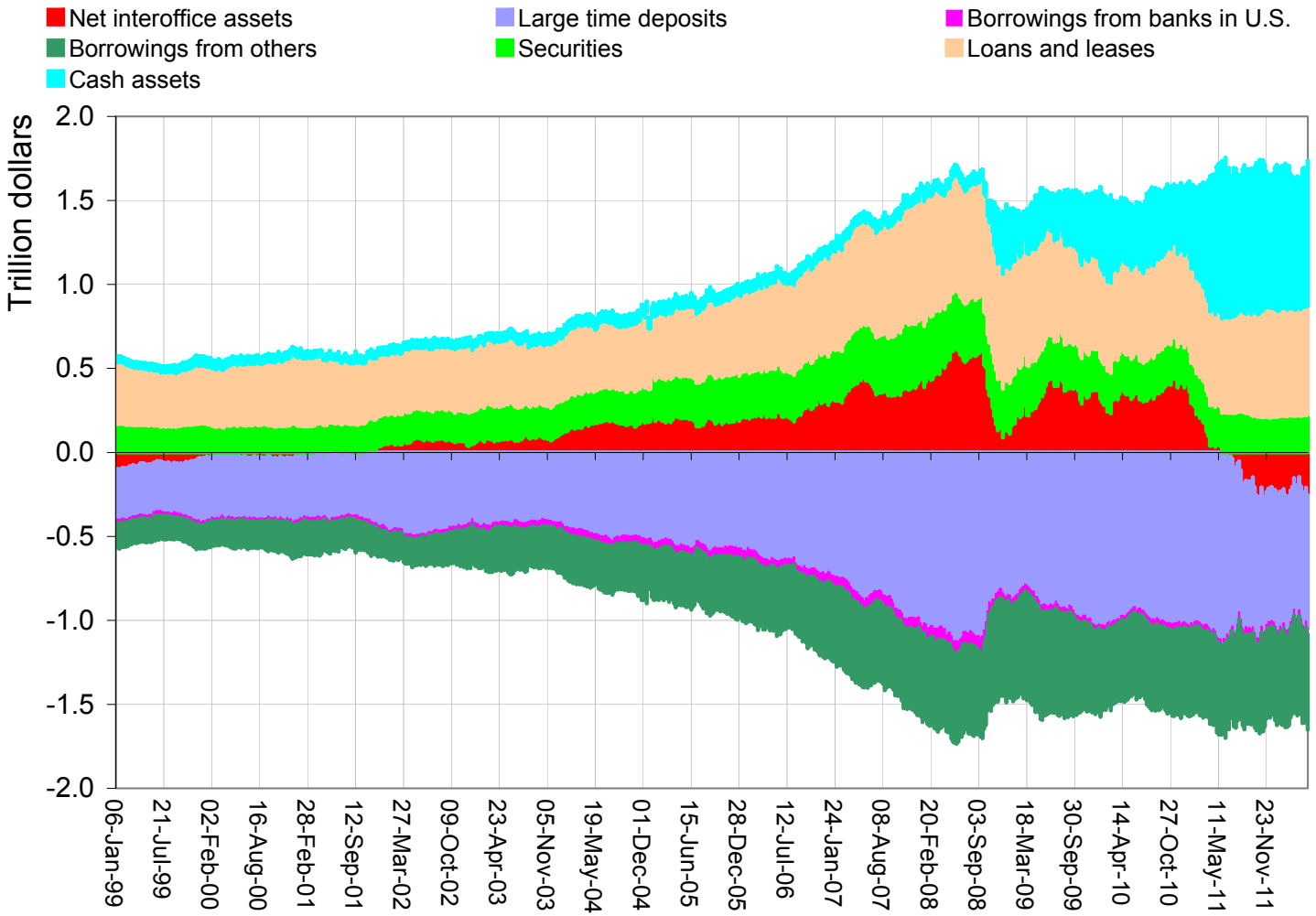


Figure 7. Assets and liabilities of foreign banks in the U.S. (Source: Federal Reserve H8 weekly series on assets and liabilities of foreign-related institutions)

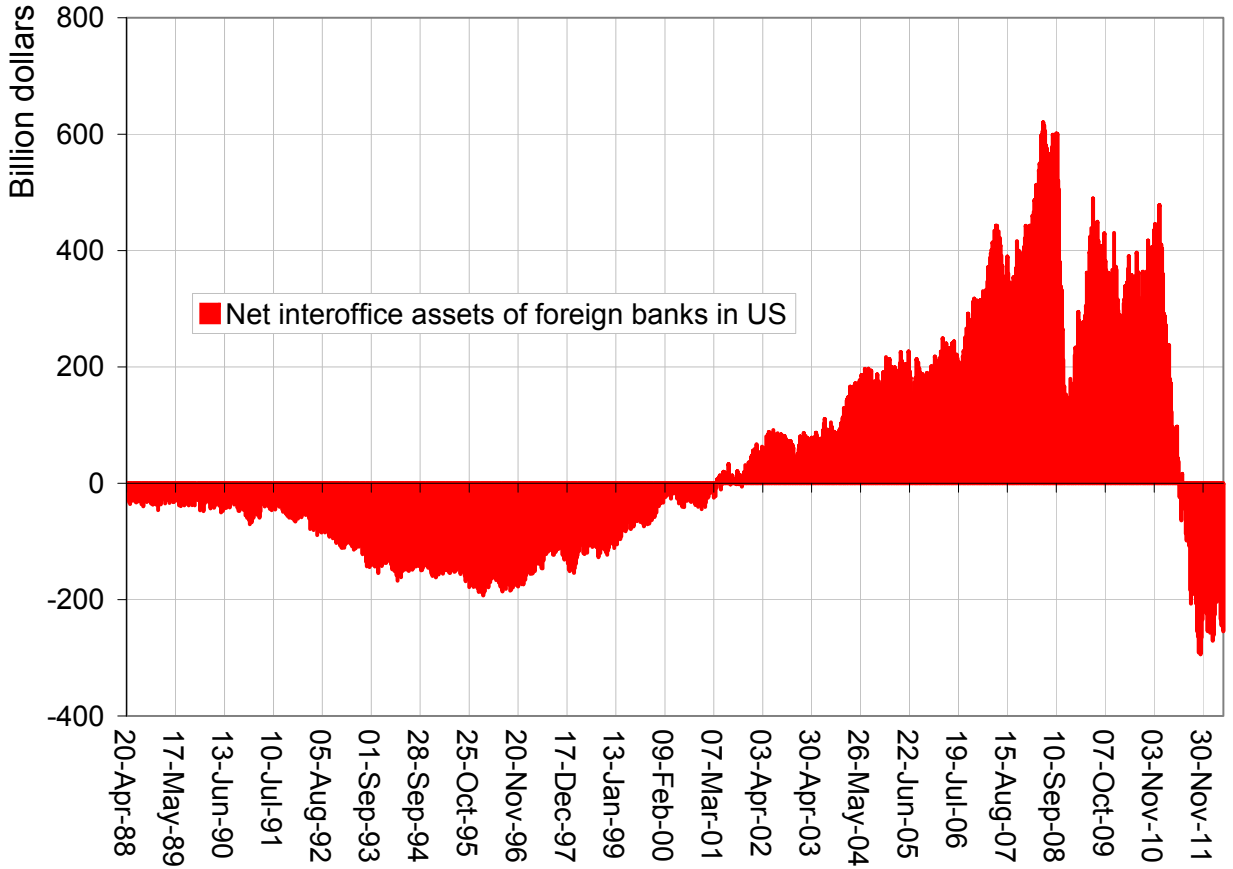


Figure 8. Net interoffice assets of foreign banks in U.S. given by negative of Federal Reserve weekly H8 series on "net due to related foreign offices of foreign-related institutions"

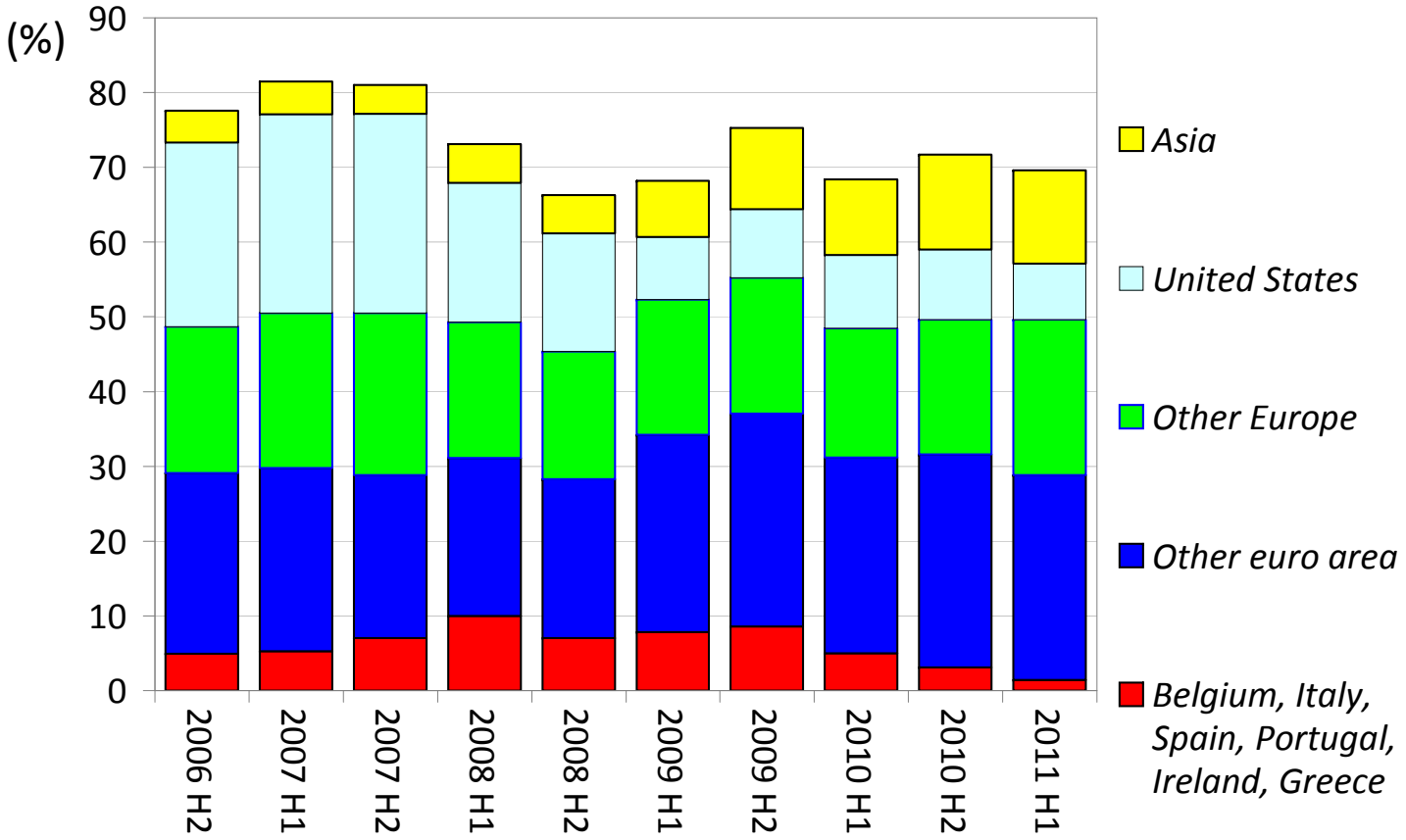


Figure 9. Amount owed by banks to US prime money market funds (% of total), based on top 10 prime MMFs, representing $755 bn of $1.66 trn total prime MMF assets (Source: IMF GFSR Sept 2011, data from Fitch).

Figure 10. Gross external assets and external liabilities of the U.S. banking system (ODC sector) by instrument (source: Errico et al. (2013))

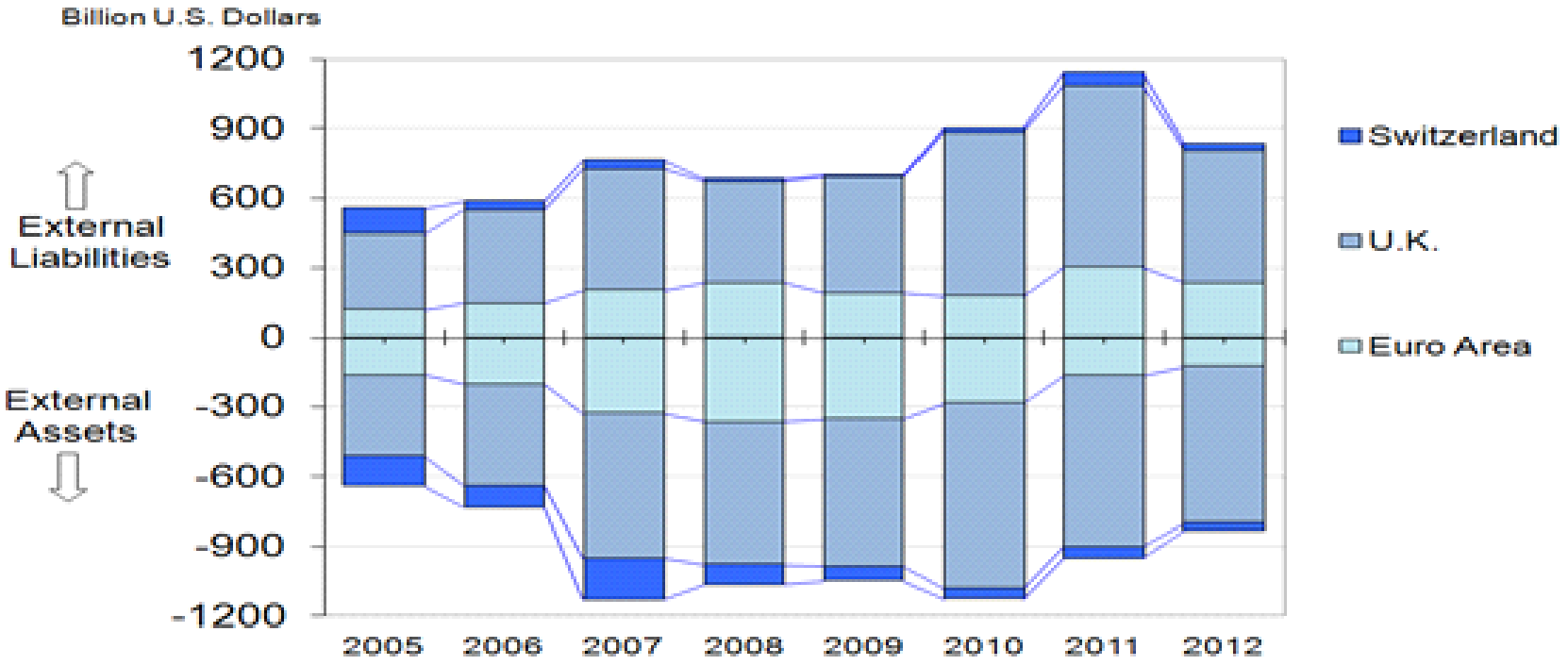


Figure 11. Counterparties by location of the "Currency and Deposits" component of the U.S. banking system (ODC sector) (Source: Errico et al. (2013))

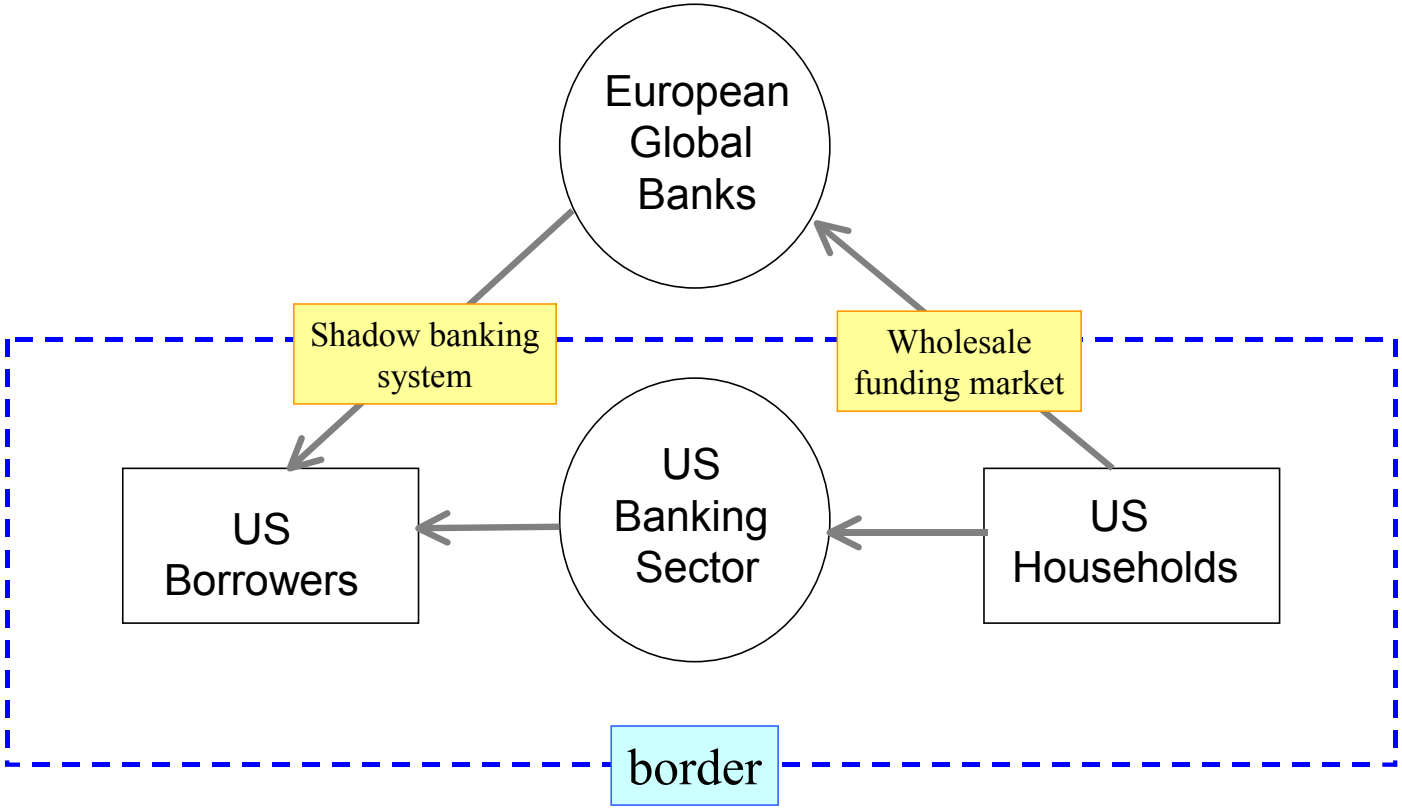


Figure 12. European global banks add intermediation capacity for connecting US savers and borrowers (Source: Shin (2012))

Example 2

Offshore issuance of corporate bonds by EM borrowers

(2010 -)

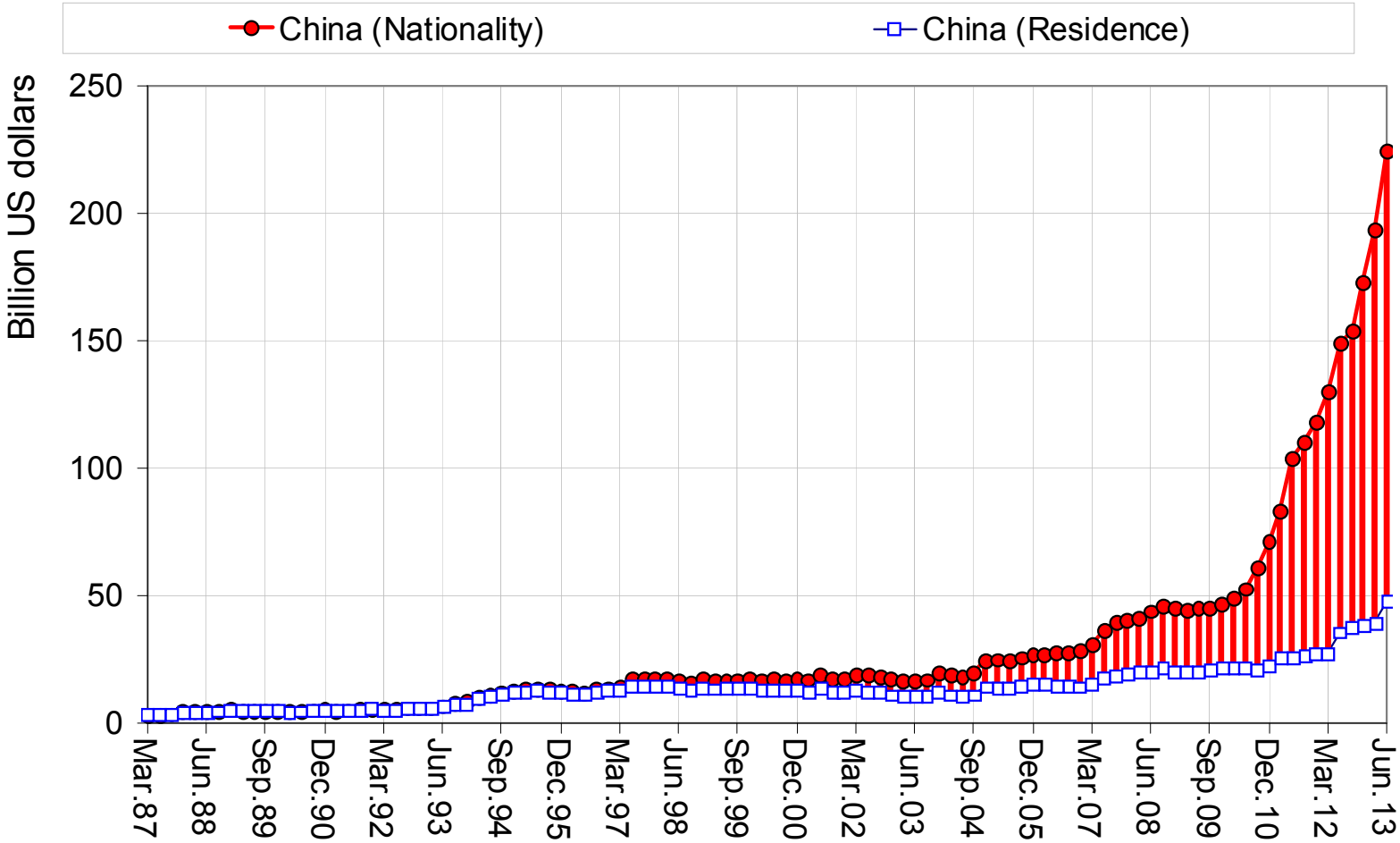


Figure 13. International debt securities outstanding (all borrowers) from China by nationality and by residence (Source: BIS Debt Securities Statistics, Table 11A and 12A)

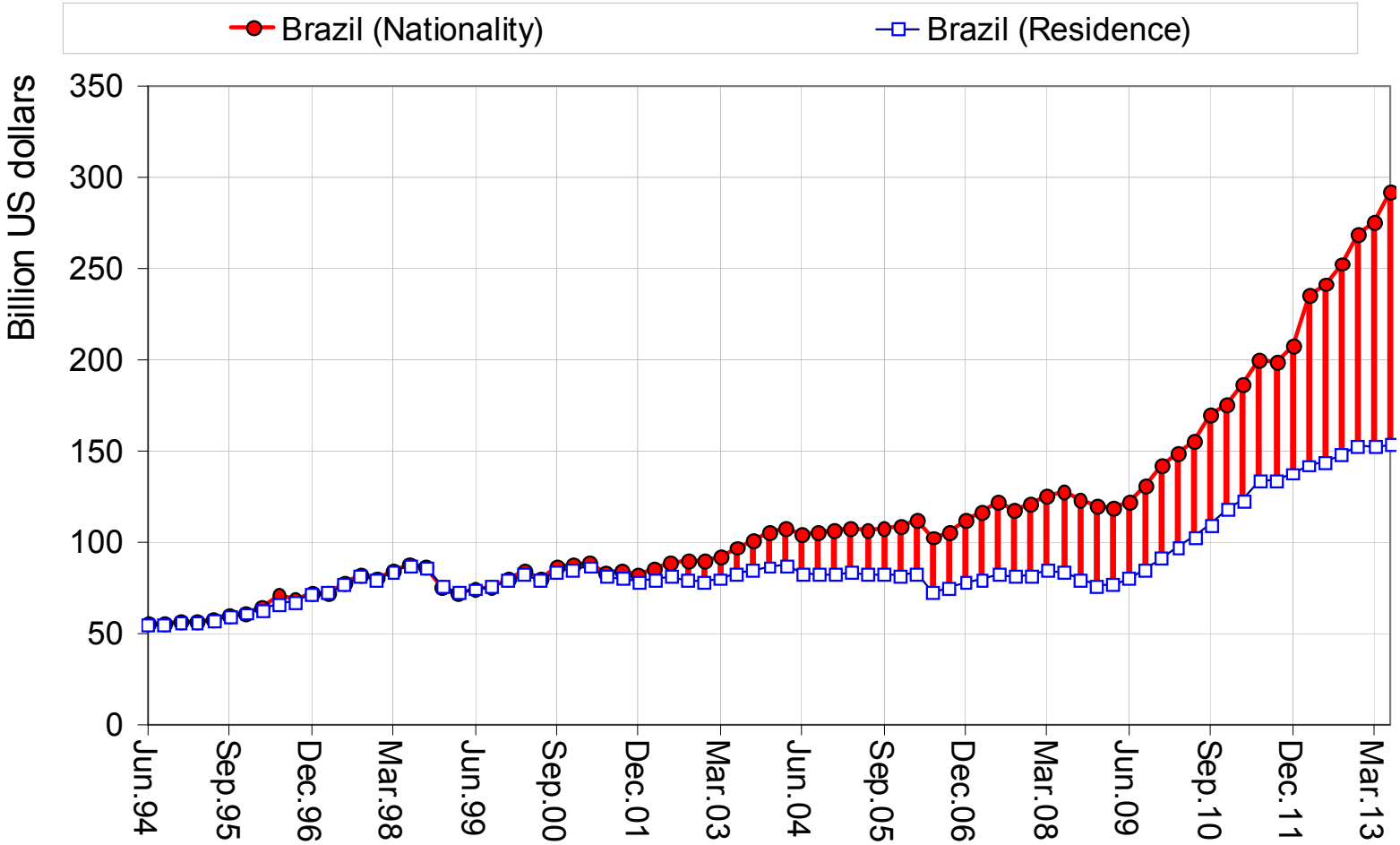


Figure 14. International debt securities outstanding (all borrowers) from Brazil by nationality and by residence (Source: BIS Debt Securities Statistics, Table 11A and 12A)

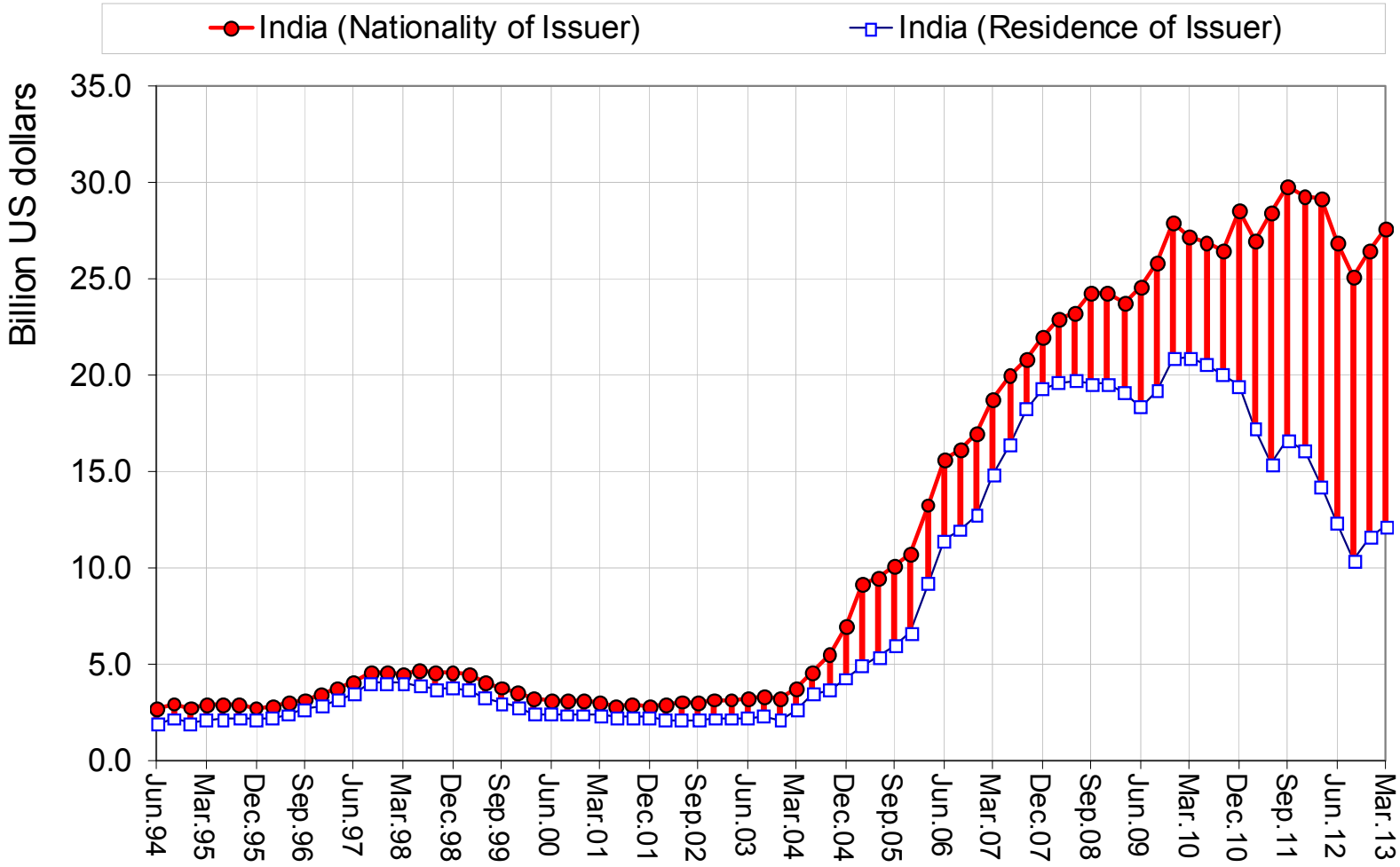


Figure 15. International debt securities outstanding for non-financial corporates from India by nationality and by residence (Source: BIS Debt Securities Statistics, Table 11D and 12D)

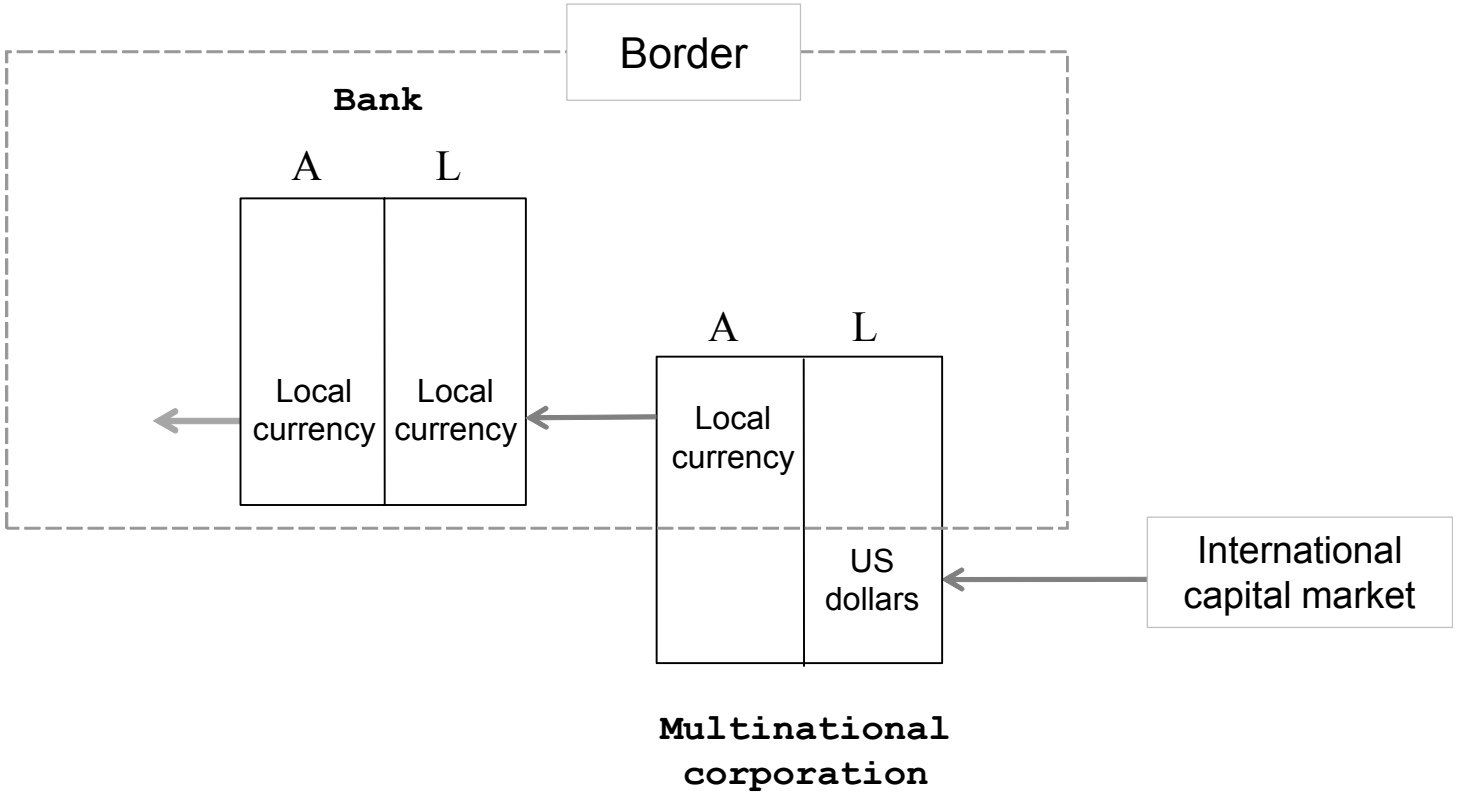


Figure 16. Offshore borrowing by multinational firm from emerging economy

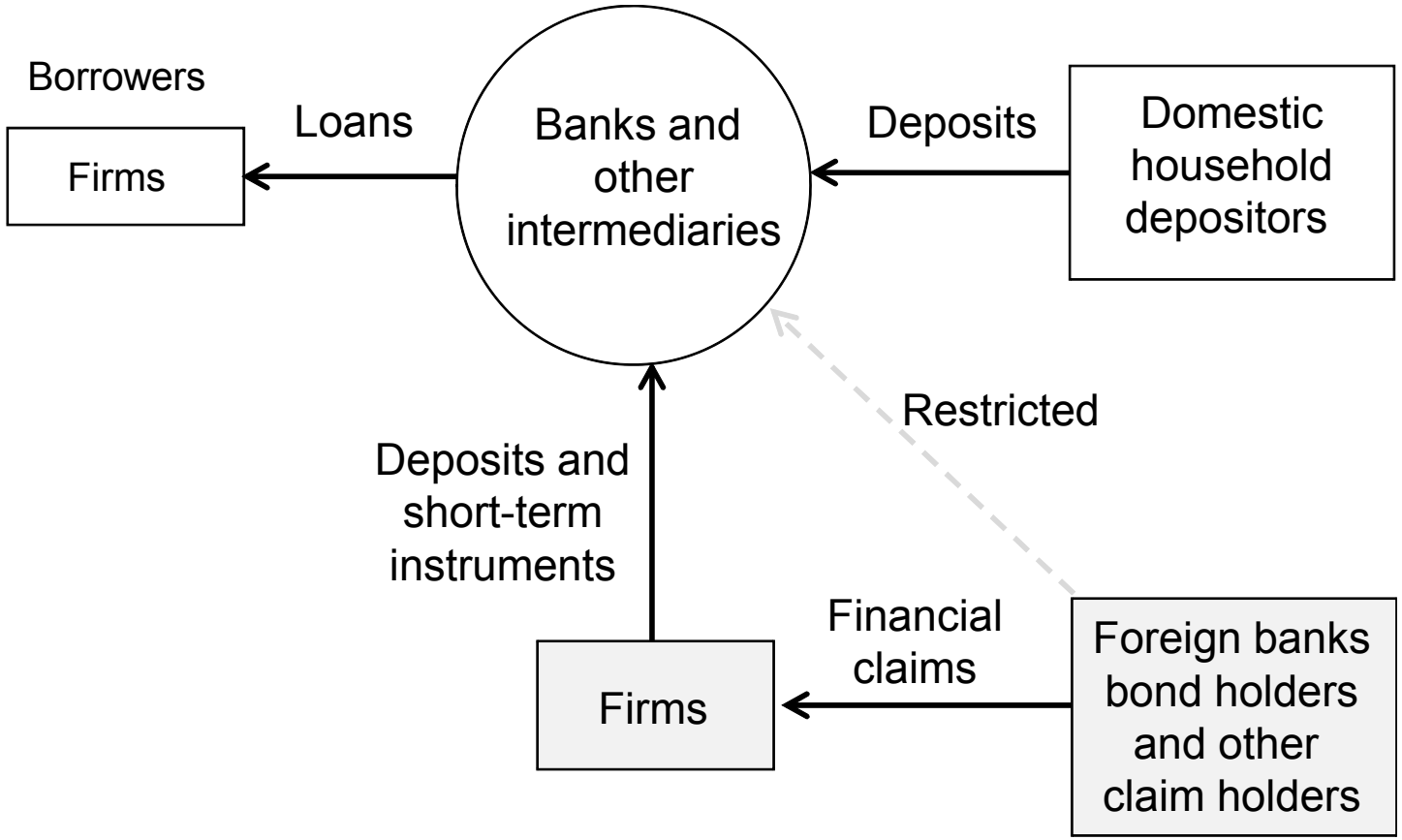
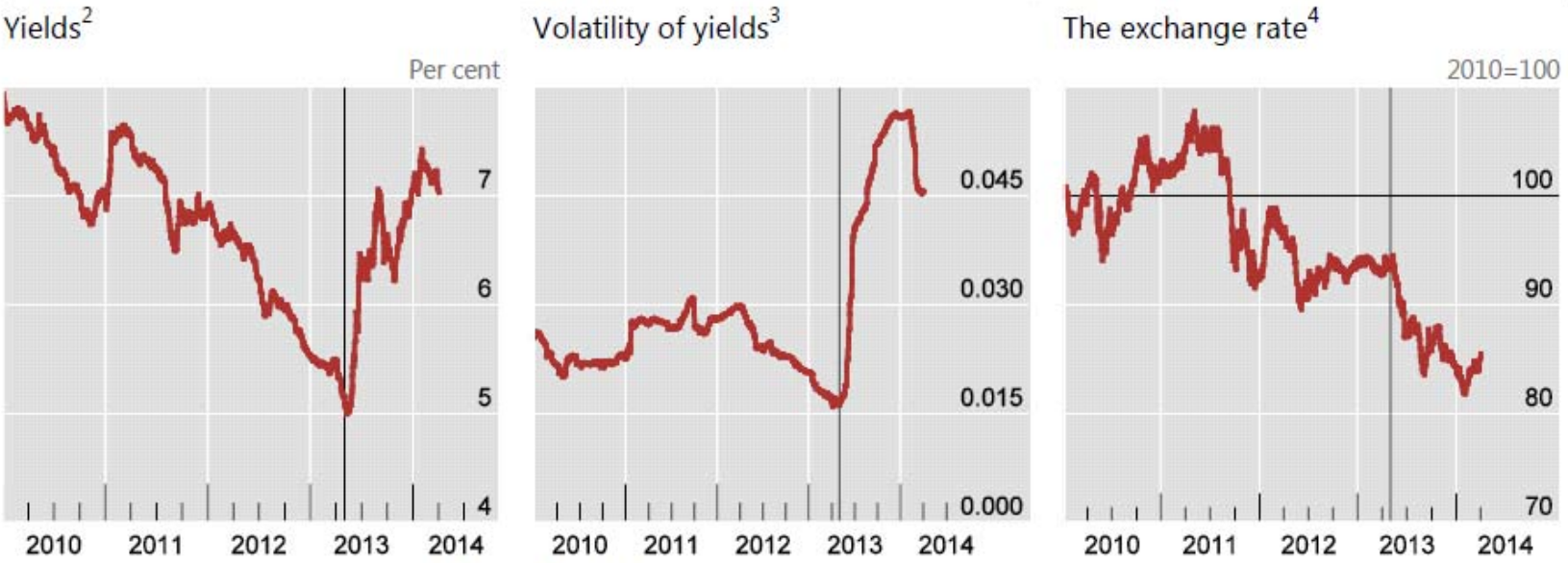


Figure 17. **Non-financial firms as intermediary.** In this diagram, firms with access to international capital markets act as an intermediary for outside funding when the banking sector has restricted access to international capital markets.

Yields of local EM government bonds and the exchange rates[1] Graph 2



The black vertical lines correspond to 1 May 2013 (FOMC statement changing the wording on asset purchases).

[1] All 3 graphs show the simple average of Brazil, India, Indonesia, Malaysia, Mexico, the Philippines, Poland, South Africa and Turkey. [2] Yields on 5-year local currency bonds. [3] 180-day moving standard deviation of daily changes in yields. [4] In dollars per unit of local currency.

Sources: Bloomberg; national data; BIS calculations.

Figure 18. Source: Philip Turner (2014) BIS working paper 441

Impact on Emerging Economies

- EME local currency bond yields
  - fell in tandem with advanced economy bond yields
  - began to move in lock-step with advanced economy bond yields
- Explosion of EME corporate bond issuance activity, especially offshore issuance
  - Implications for domestic monetary aggregates and potential for runs of wholesale deposits
  - Currency mismatch on consolidated corporate balance sheets
- Transmission channel is reinforced by exchange rate changes

Elements in Distress Loop

1. Steepening of local currency yield curve

2. Currency depreciation, corporate distress, freeze in corporate CAPEX, slowdown in growth

3. Runs of wholesale corporate deposits from domestic banking sector

4. Asset managers cut back positions in EME corporate bonds citing slower growth in EMEs

5. Back to Step 1, and repeat...

Unfamiliar Problems

- Asset managers (not banks) are at the heart of transmission mechanism in the Second Phase of Global Liquidity
- Textbooks say long-term investors are benign, not a force for destabilization
- How do we adjust to the new world?

Example 3

Cross-border banking and global liquidity (2003 - 2008)

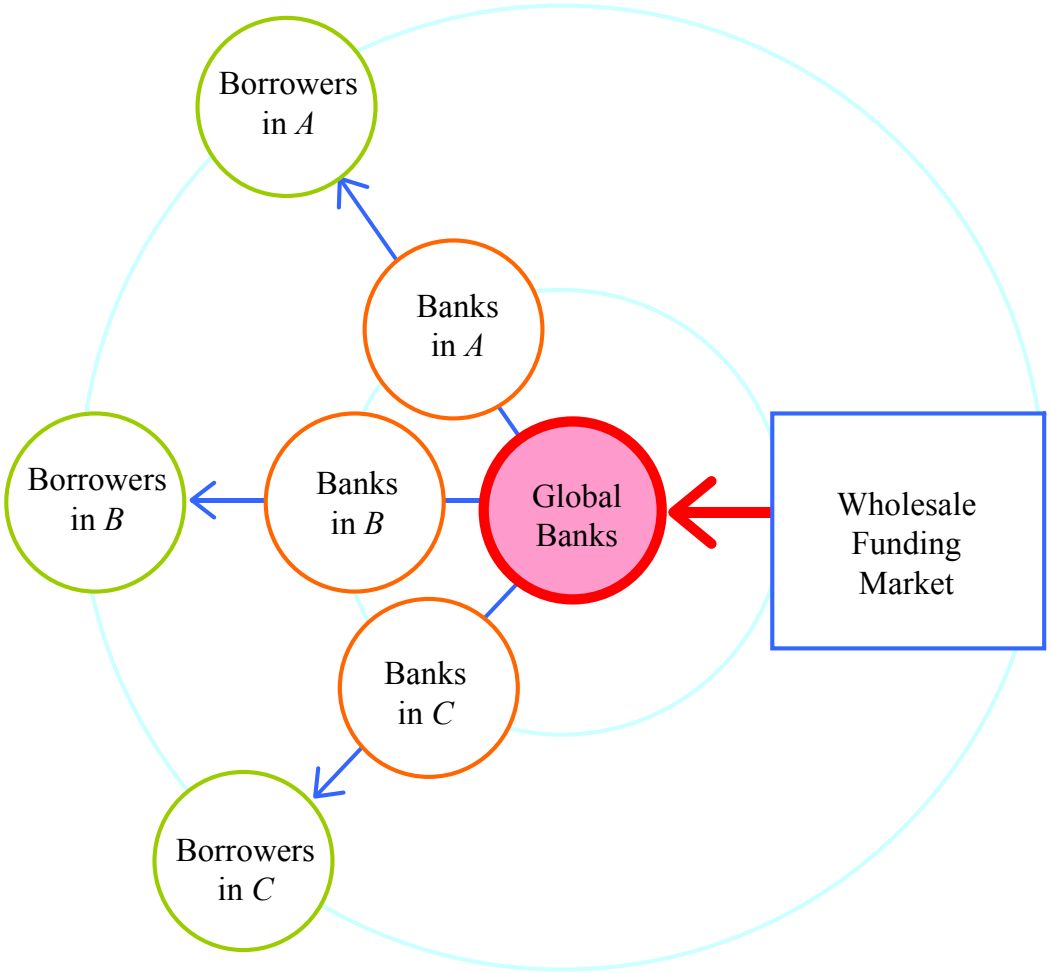


Figure 19. Topography of global liquidity

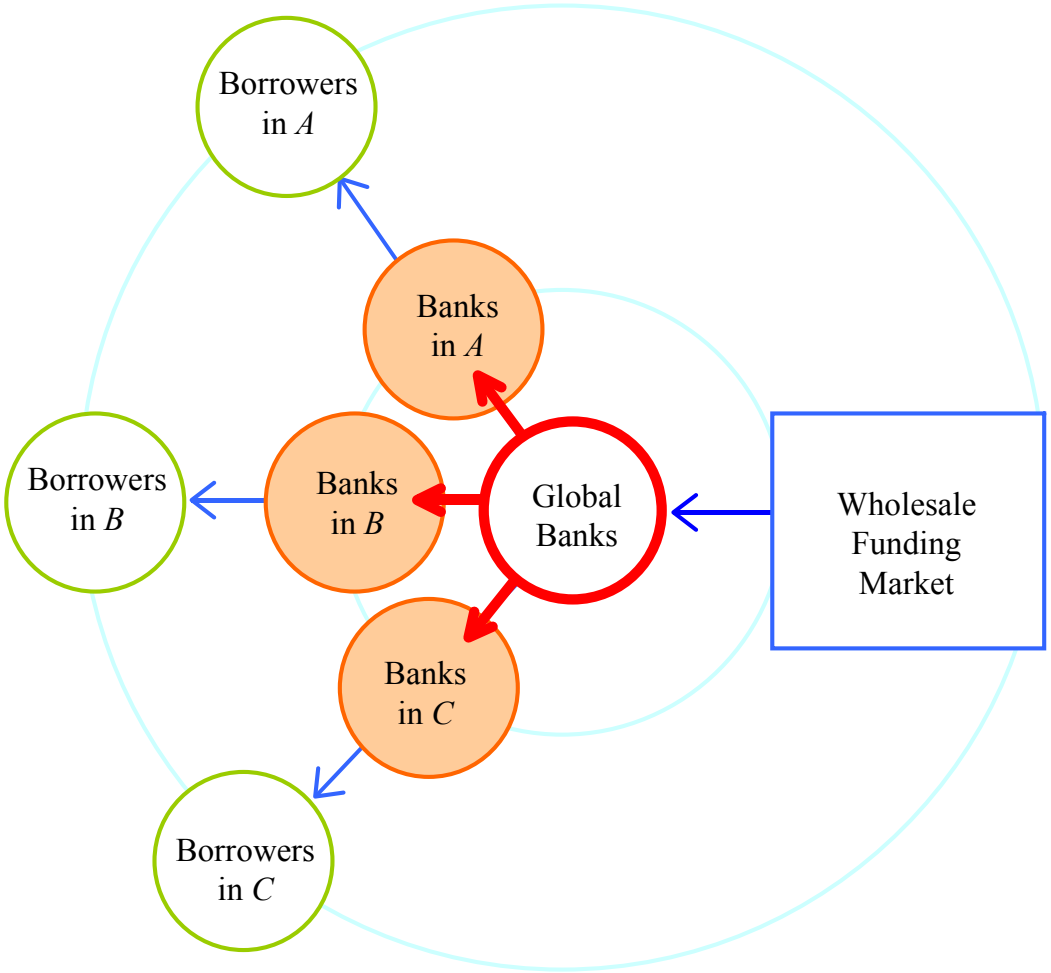


Figure 20. Topography of global liquidity

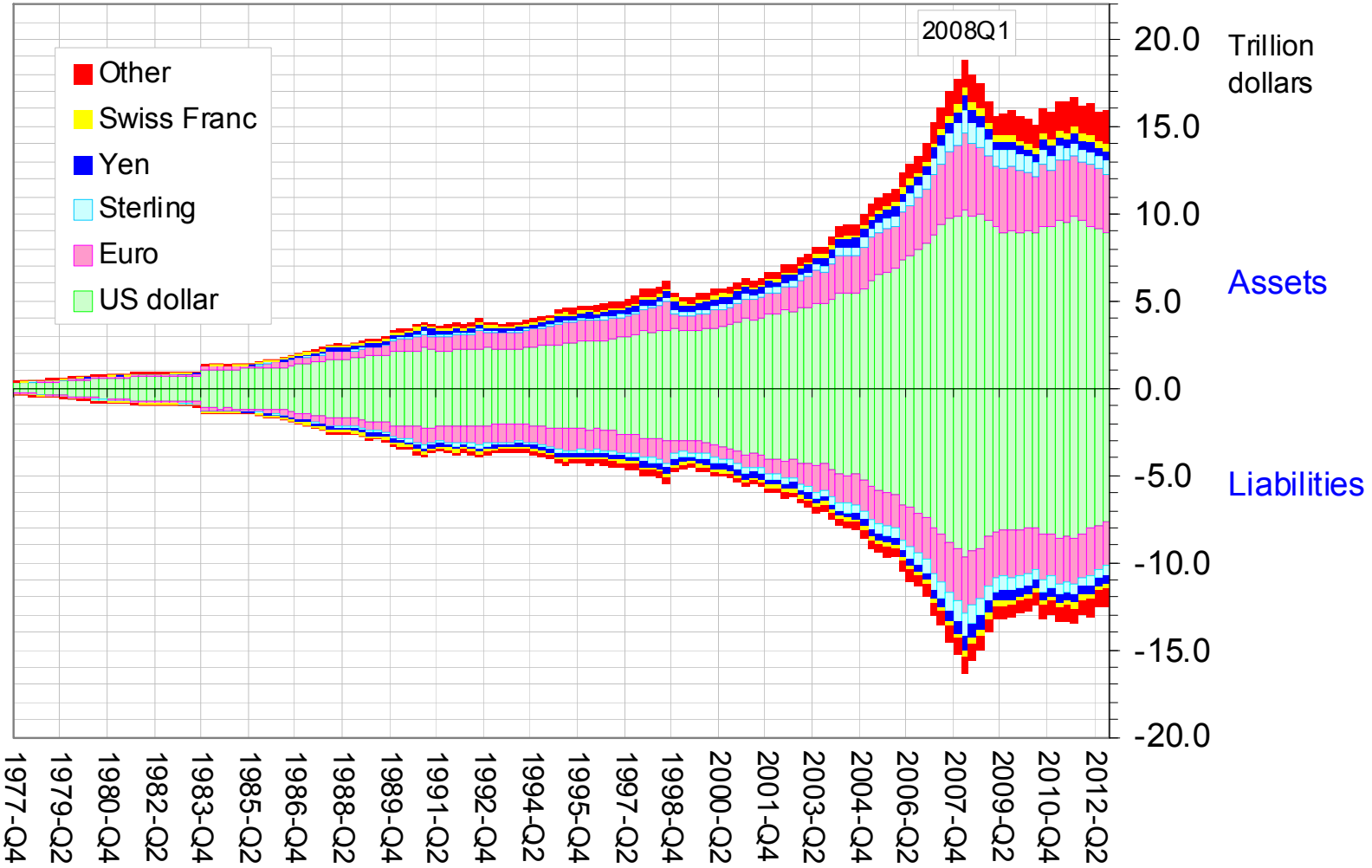


Figure 21. Foreign currency claims and liabilities of BIS reporting banks (Source: BIS Locational statistics 5A)

Three BIS working papers

- Borio, Claudio (2014) "The International Monetary and Financial System: Its Achilles Heel and What To Do About It" BIS Working Paper 456 http://www.bis.org/publ/work456.pdf

- Borio, Claudio, Harold James and Hyun Song Shin (2014) "The International Monetary and Financial System: A Capital Account Historical Perspective" BIS Working Paper 457 http://www.bis.org/publ/work457.pdf

- Bruno, Valentina and Hyun Song Shin (2014) "Cross-border Banking and Global Liquidity" BIS Working Paper 458 http://www.bis.org/publ/work458.pdf

Bruno and Shin (2014)

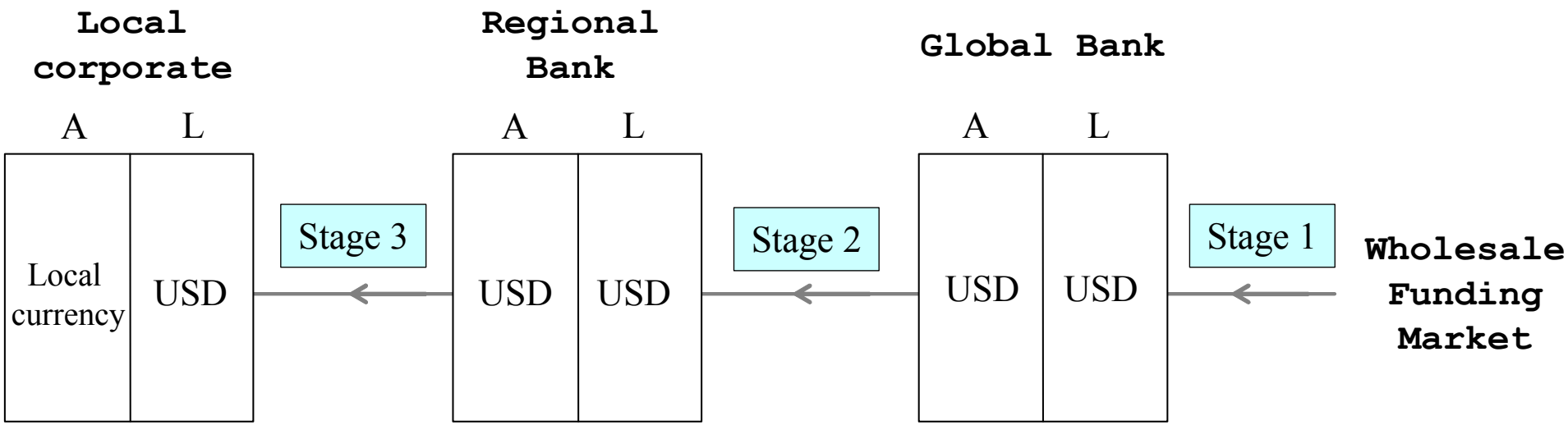


Figure 22. Cross-border bank lending in US Dollars

Where to draw the boundary?

The balance sheet chain is consistent with many variants with different placement of the border:

- The local bank can be within the border (say, branch of foreign-owned bank)
- The local bank can be in a neighbouring jurisdiction
- The asset side of the global bank could be in a regional financial centre (Hong Kong or Singapore, say)
- The liabilities side of the global bank could in the United States
- What of the European headquarters? Where does it fit in the picture?

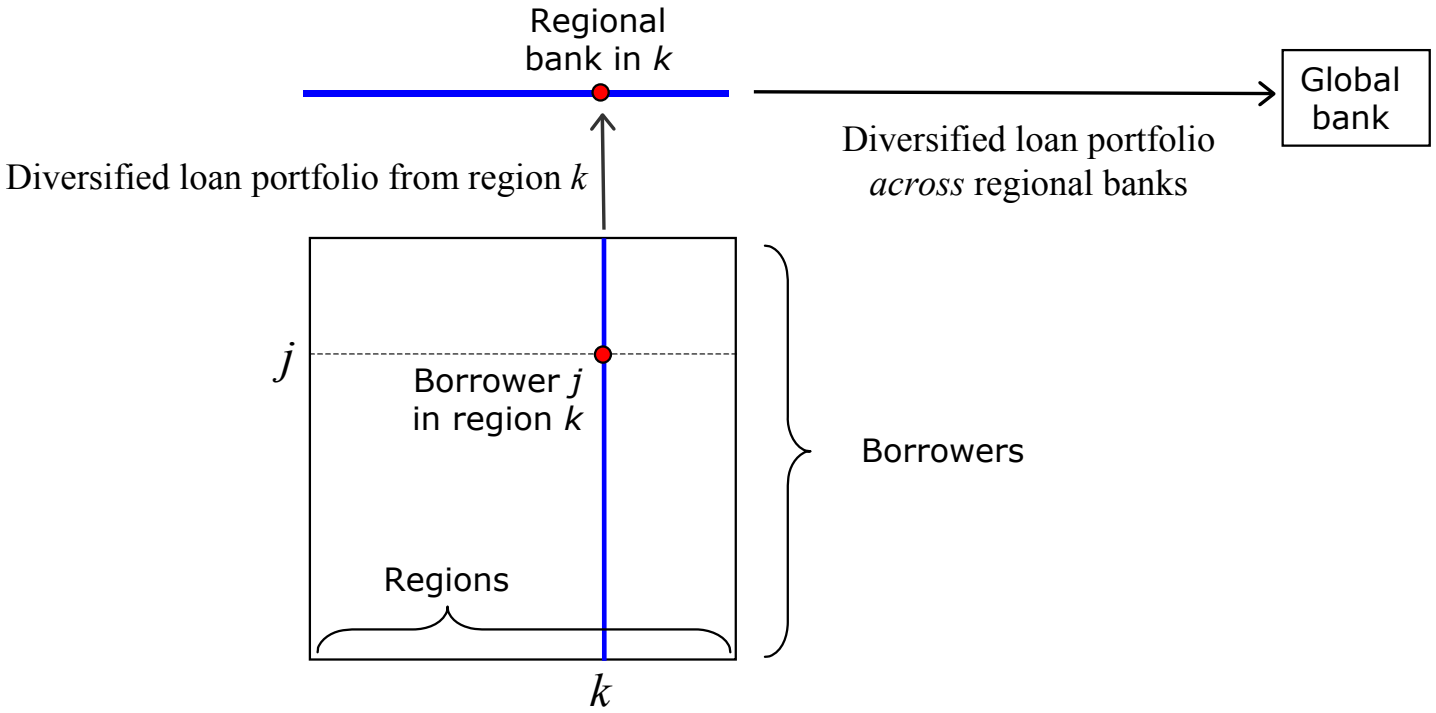


Figure 23. Global and regional banks

Bruno and Shin (2014)

- Demand for dollar credit in regions from corporate borrowers
- Credit risk follows Vasicek (2002), many-borrower extension of Merton (1974)
- Risk-neutral, price taking banks in each region; credit supply determined by regional bank leverage
- Risk-neutral, price taking global bank with access to US dollar money market funds

Closed Form Solution

$$\text{Total private credit} = \frac{\text{Aggregate bank capital (regional + global)}}{1 - \text{spread} \times \text{regional bank debt ratio} \times \text{global bank debt ratio}}$$

$$\text{Total cross-border lending} = \frac{\text{Global and weighted regional bank capital}}{1 - \text{spread} \times \text{regional bank debt ratio} \times \text{global bank debt ratio}}$$

Exchange rates and leverage

- Depreciation of US dollar constitutes a loosening of global financial conditions
  - US dollar depreciation strengthens local borrowers' balance sheets
  - Creates slack in lending capacity of local banks
  - Creates slack in global bank lending capacity
  - Expansion of lending; "excess elasticity" (Borio and Disyatat (2011))
- US monetary policy is global factor determining financial conditions worldwide

Empirical evidence in Gourinchas and Obstfeld (2012), Rey (2013), Miranda-Aggripino and Rey (2013)

Bruno, Kim and Shin (2014)

- Panel VAR exercise
  - 1995 - 2007
  - US GDP, Fed Funds rate, global bank leverage, VIX, bank capital flows, nominal exchange rate
  - US broker dealer sector leverage as proxy for global bank leverage

- Sample of 46 countries (Claessens, van Horen, Gurcanlar and Mercado (2008)): Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Malaysia, Malta, Mexico, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, United Kingdom and Uruguay.

Empirical Counterparts

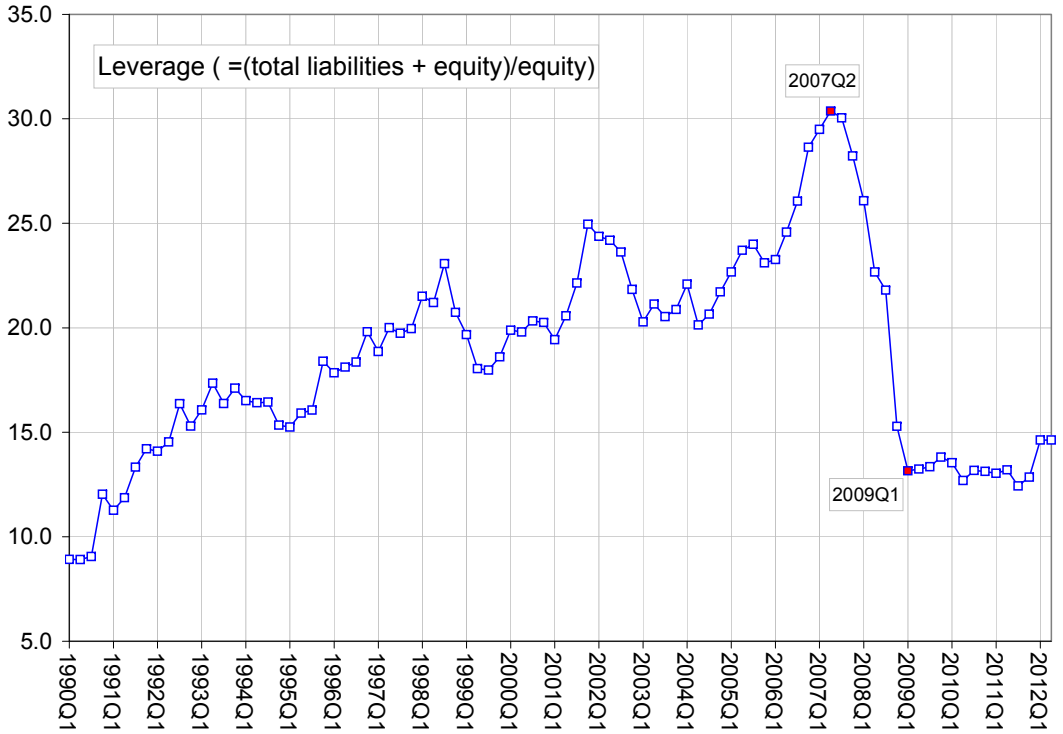


Figure 24. Leverage of US Securities broker dealer sector (Source: Federal Reserve Flow of Funds)

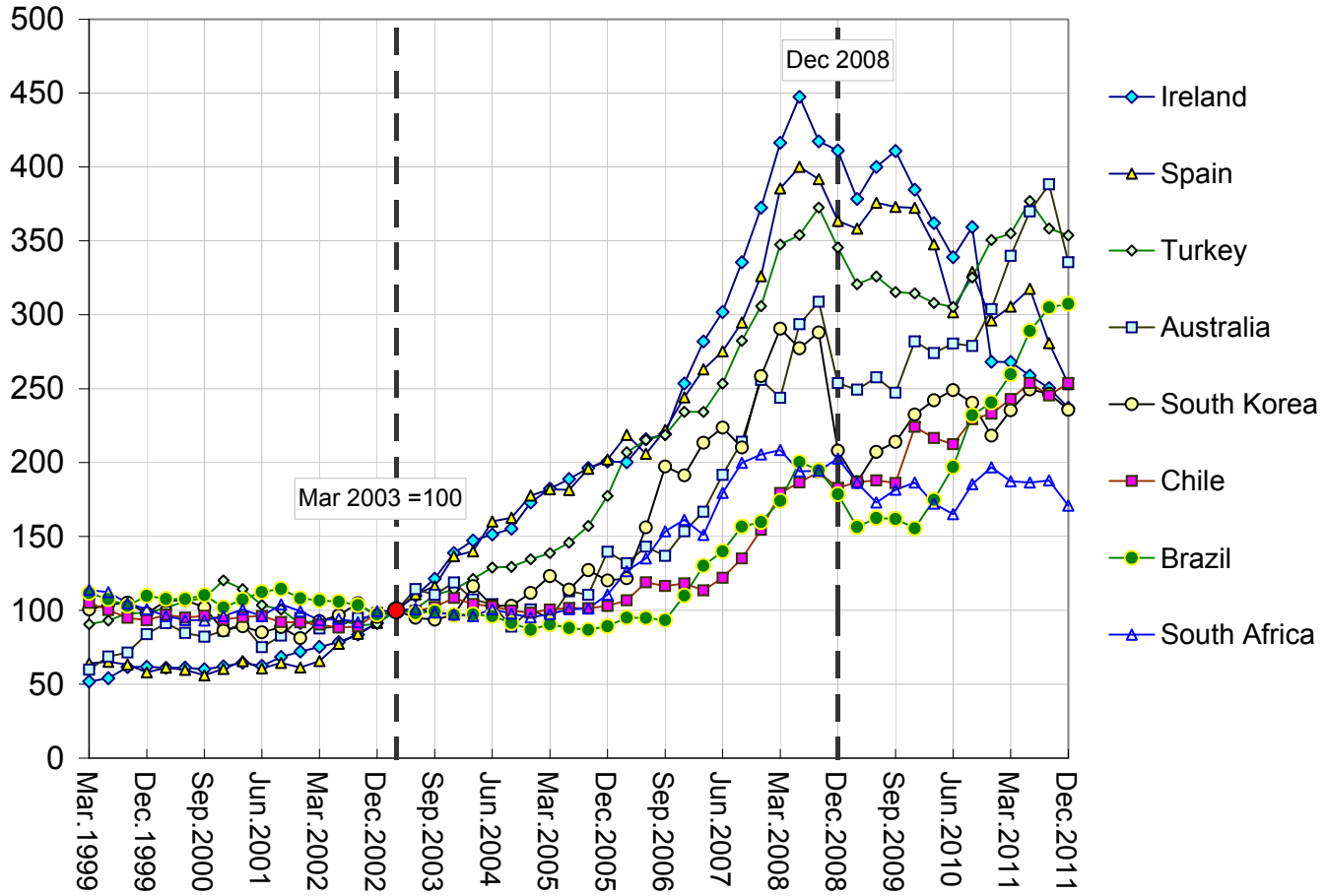
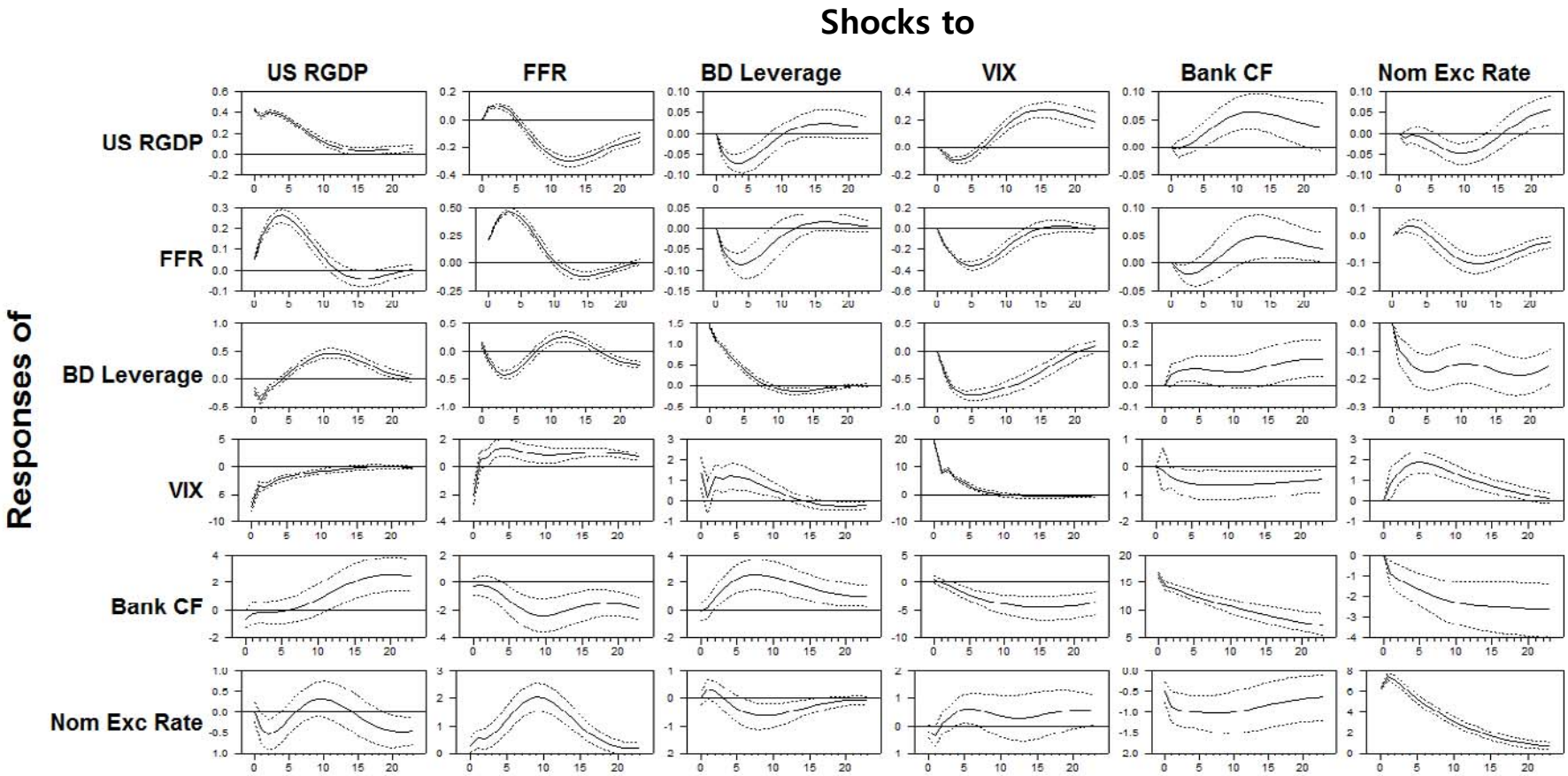


Figure 25. Cross-border claims (loans and deposits) of BIS reporting banks on counterparties listed on right (Source: BIS locational banking statistics Table 7A)


Shocks to
US RGDP
FFR
BD Leverage
VIX
Bank CF
Nom Exc Rate
Responses of
US RGDP
FFR
BD Leverage
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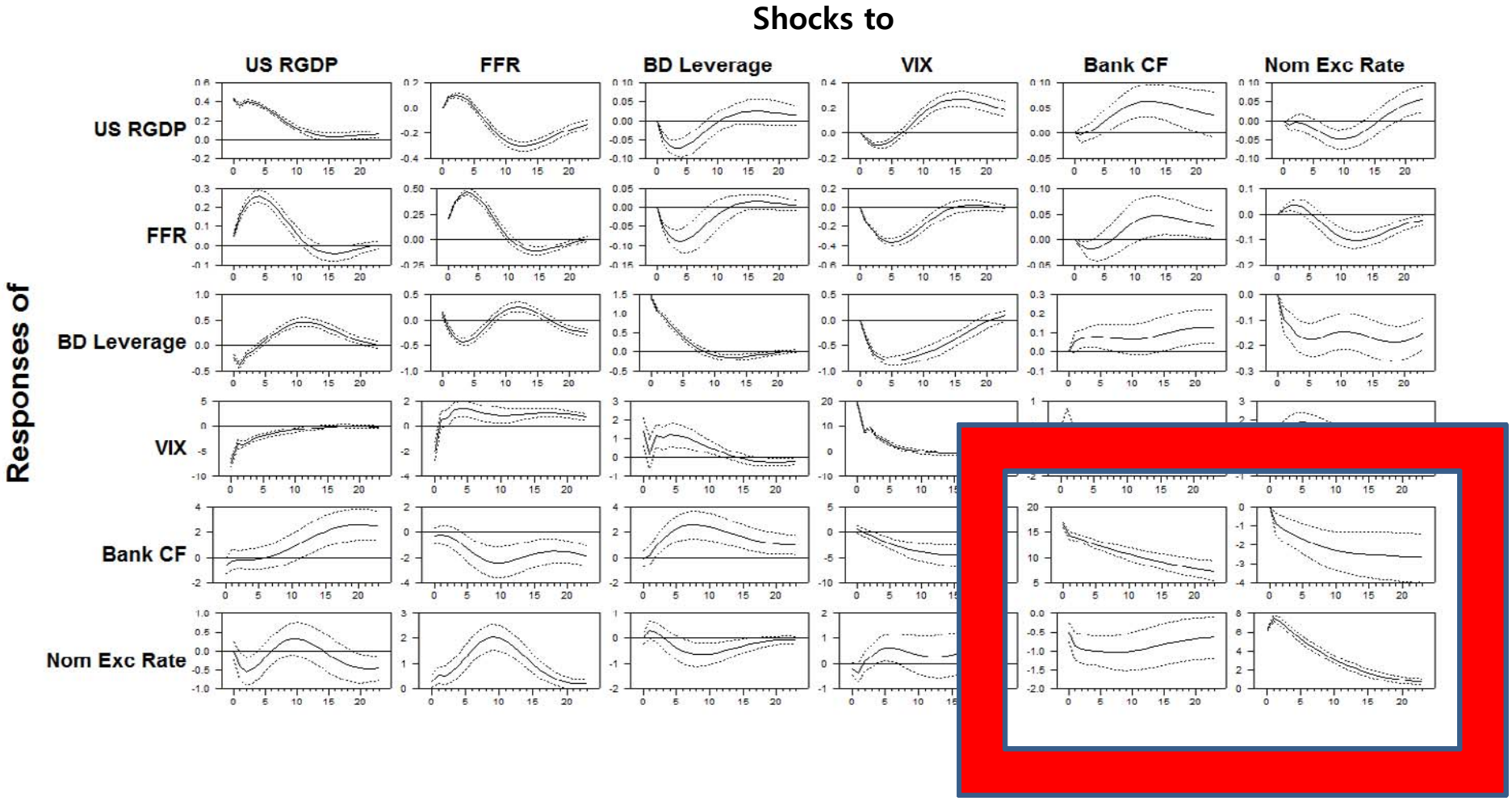
Bank CF
Nom Exc Rate

Figure 26


Shocks to
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Responses of
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Figure 27

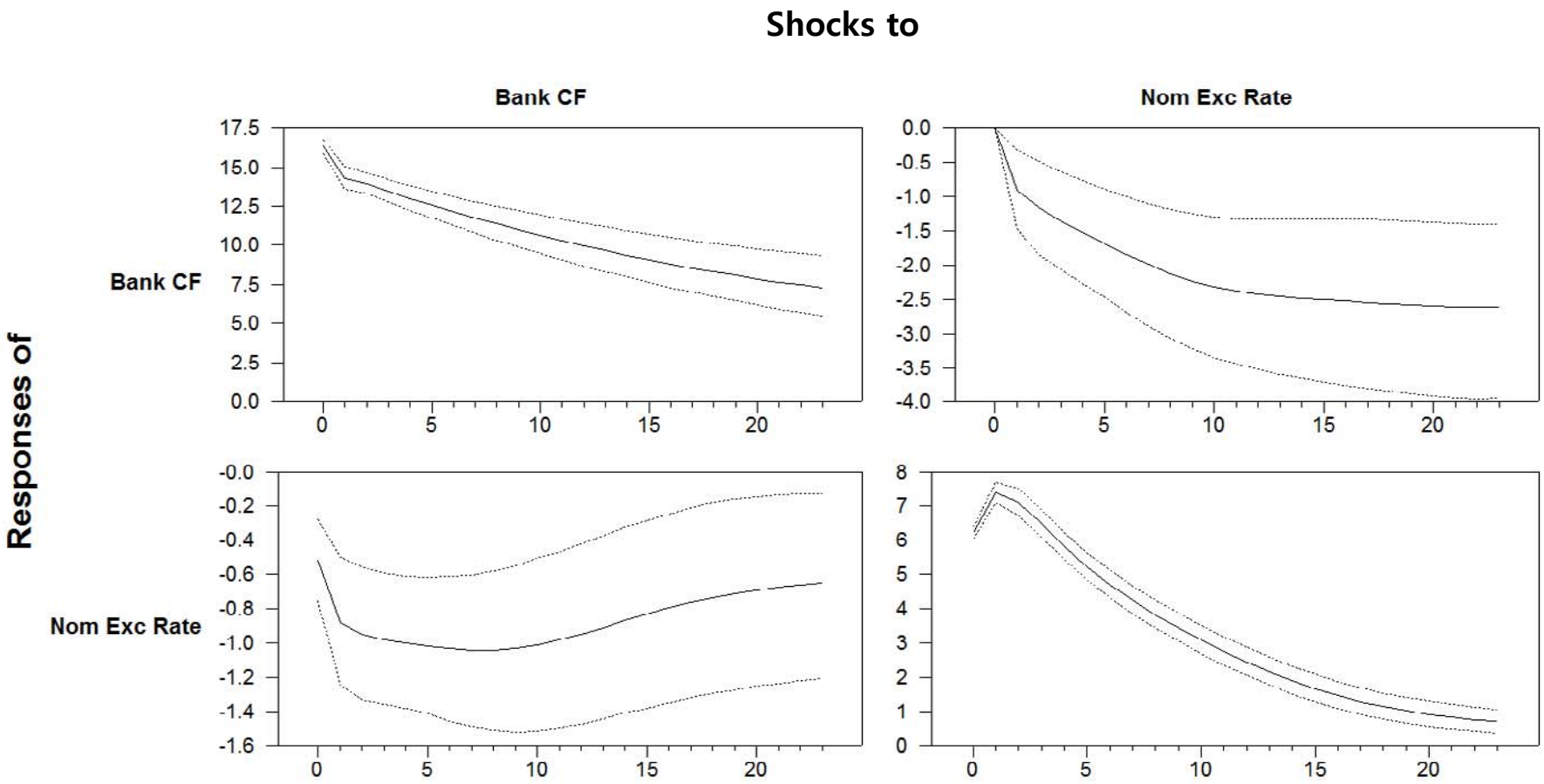
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Figure 28

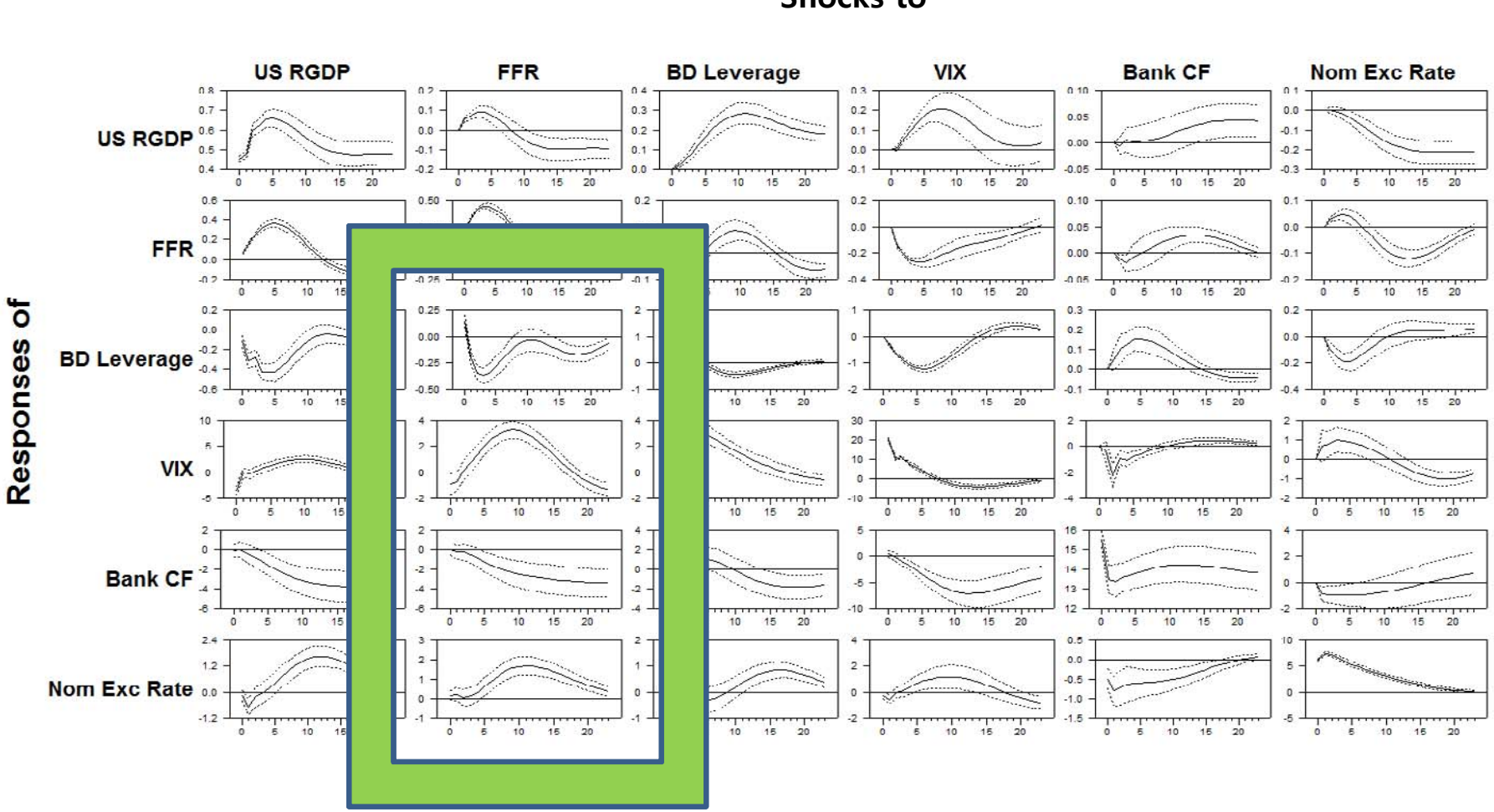
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Figure 29

Impulse Responses to FFR Shocks

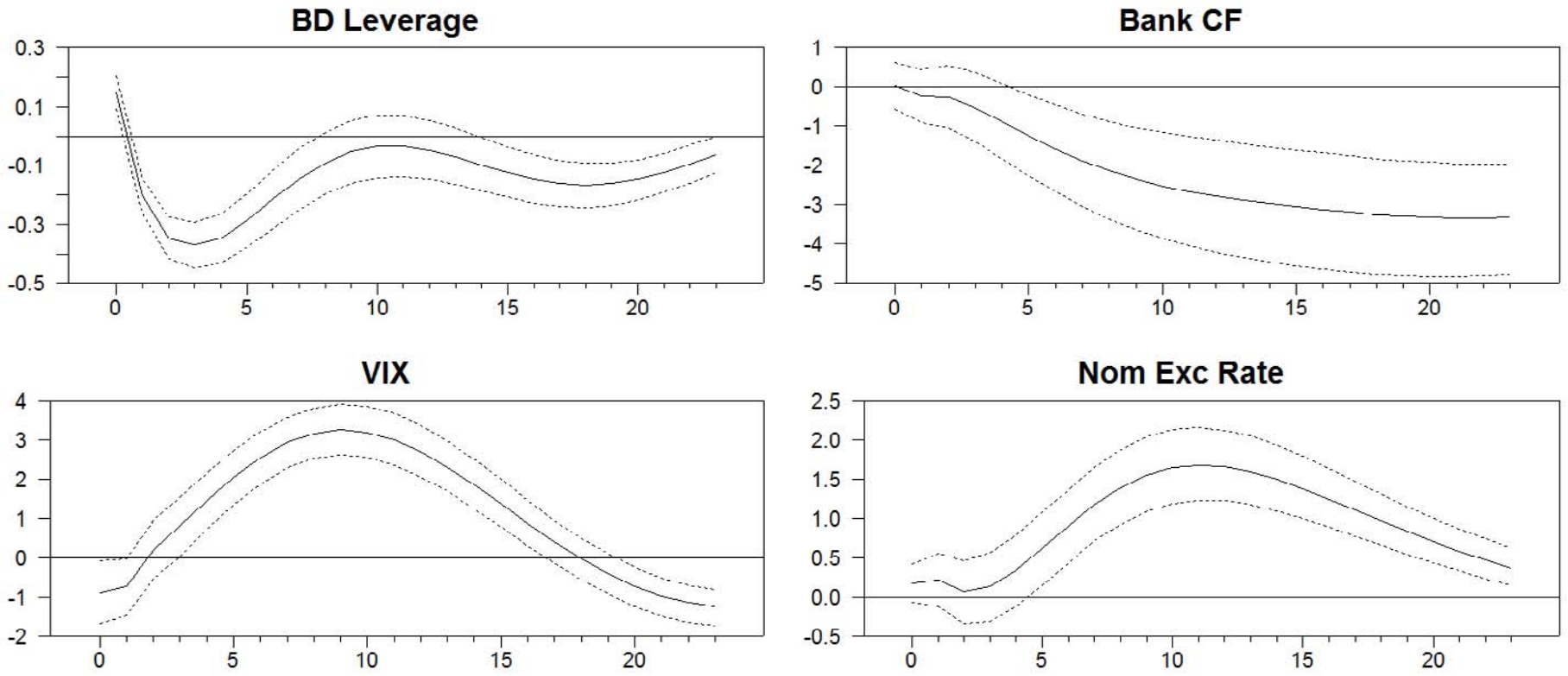

Figure 30

Breaking free from Triple Coincidence

- BIS tradition of consolidated statistics
  - Identifying the decision maker
  - Modified suitably; ownership not always same as decision making boundary (e.g. Santander)
- Balance of payments statistics under the microscope
  - When is the national income boundary the right one for analysis?
- Global financial system needs new boundaries of analysis