Capital Flows, Cross-Border Banking and Global Liquidity

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Gross Capital Flows

- Capital flows driven by real (saving & investment) decisions?
- Gross versus net flows

"[L]arge gross financial flows entail potential stability risks that may be only distantly related, if related at all, to the global configuration of saving-investment discrepancies."

Maurice Obstfeld (2012 Ely Lecture)

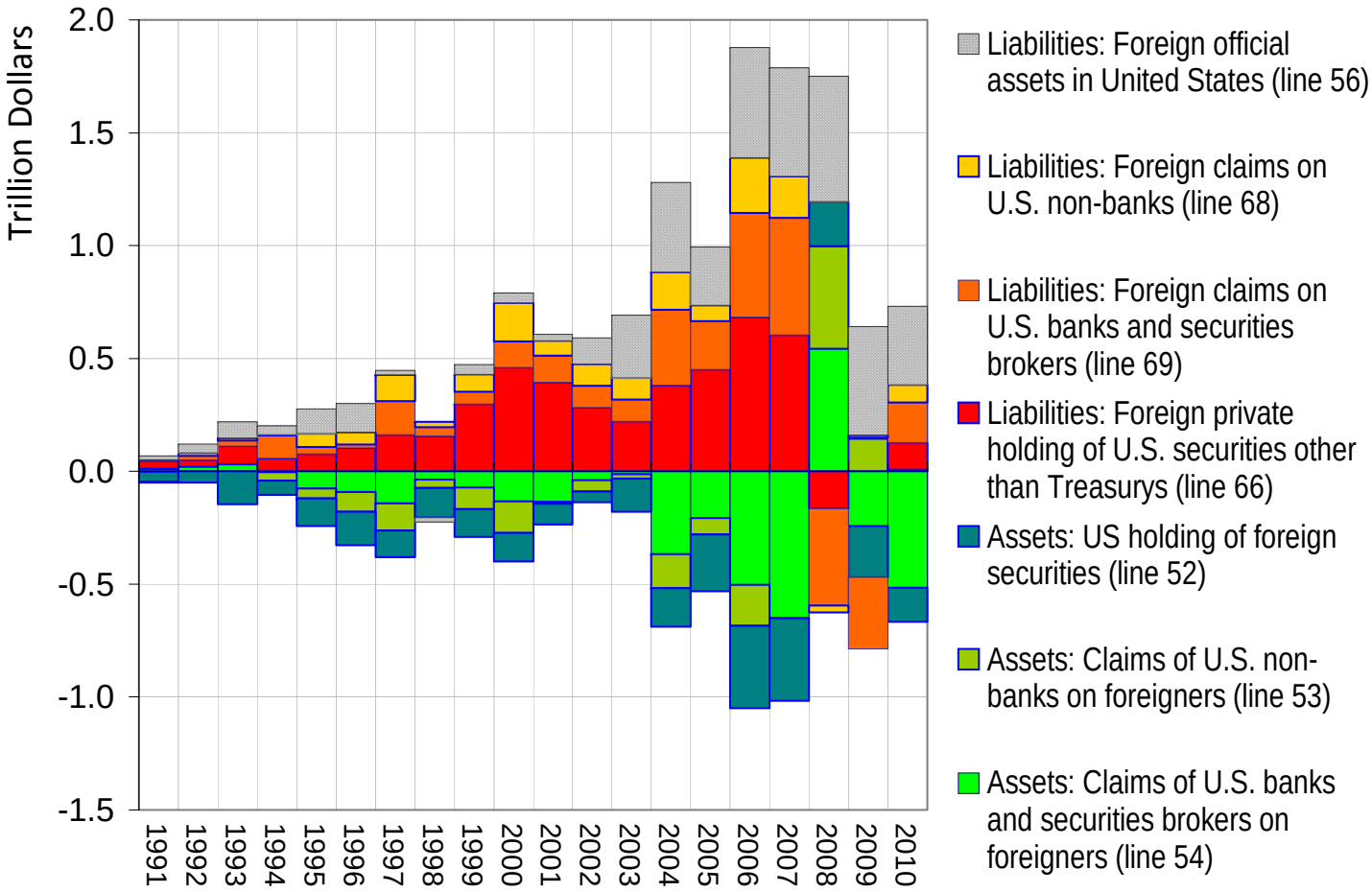


Figure 1. US gross capital flows by category (Source: US Bureau of Economic Analysis). Increase in US liability to foreigners is indicated by positive bar, increase in US claims on foreigners is indicated by negative bar.

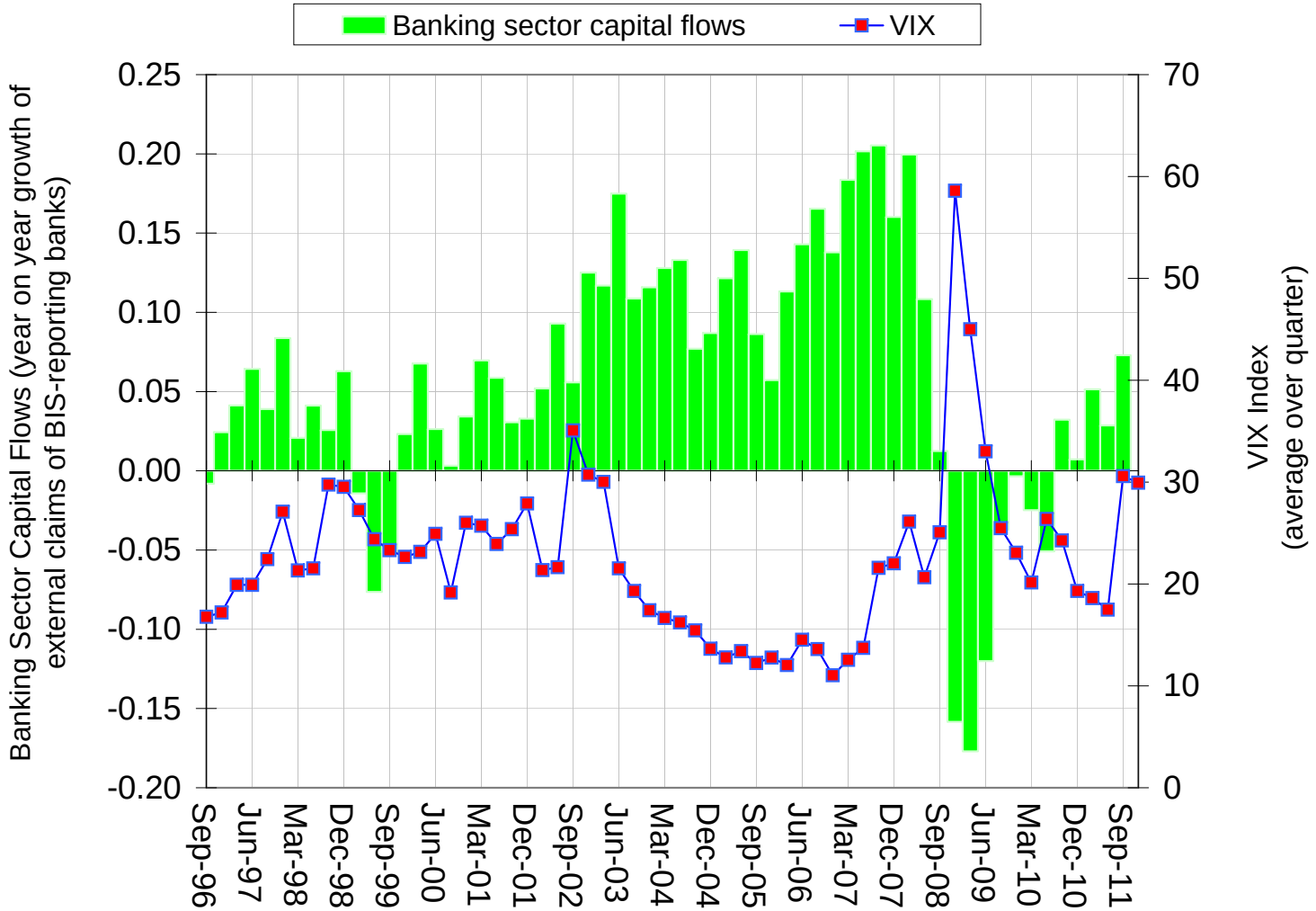


Figure 2. This figure plots cross-border banking sector capital flows as year-on-year growth in external claims of BIS-reporting banks (Table 7A). The VIX series is the quarterly average of CBOE VIX index.

Landscape of Global Banking

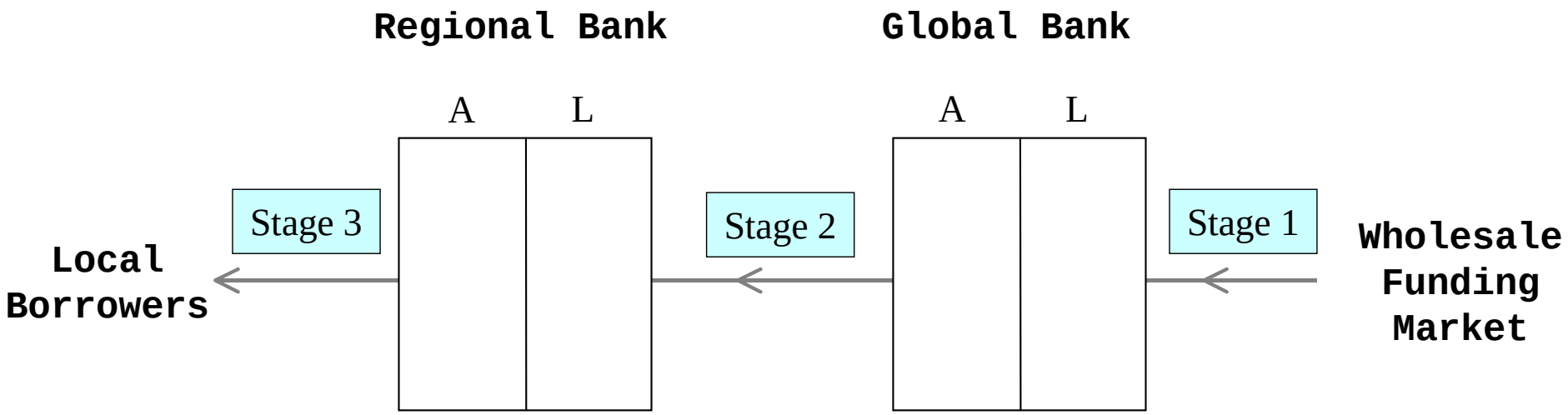


Figure 3. Three stages of cross-border banking sector flows.

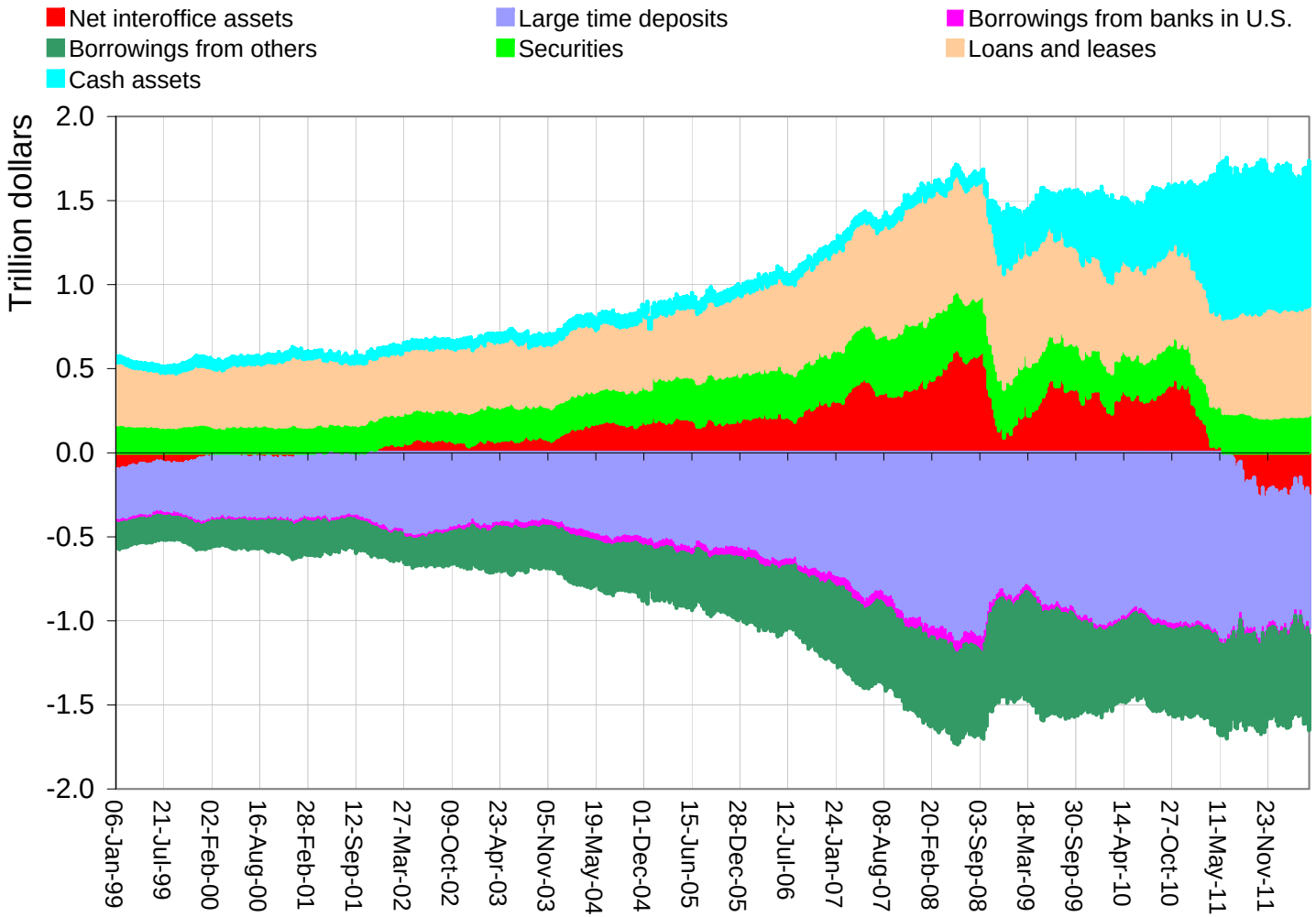


Figure 4. Assets and liabilities of foreign banks in the U.S. (Source: Federal Reserve H8 weekly series on assets and liabilities of foreign-related institutions)

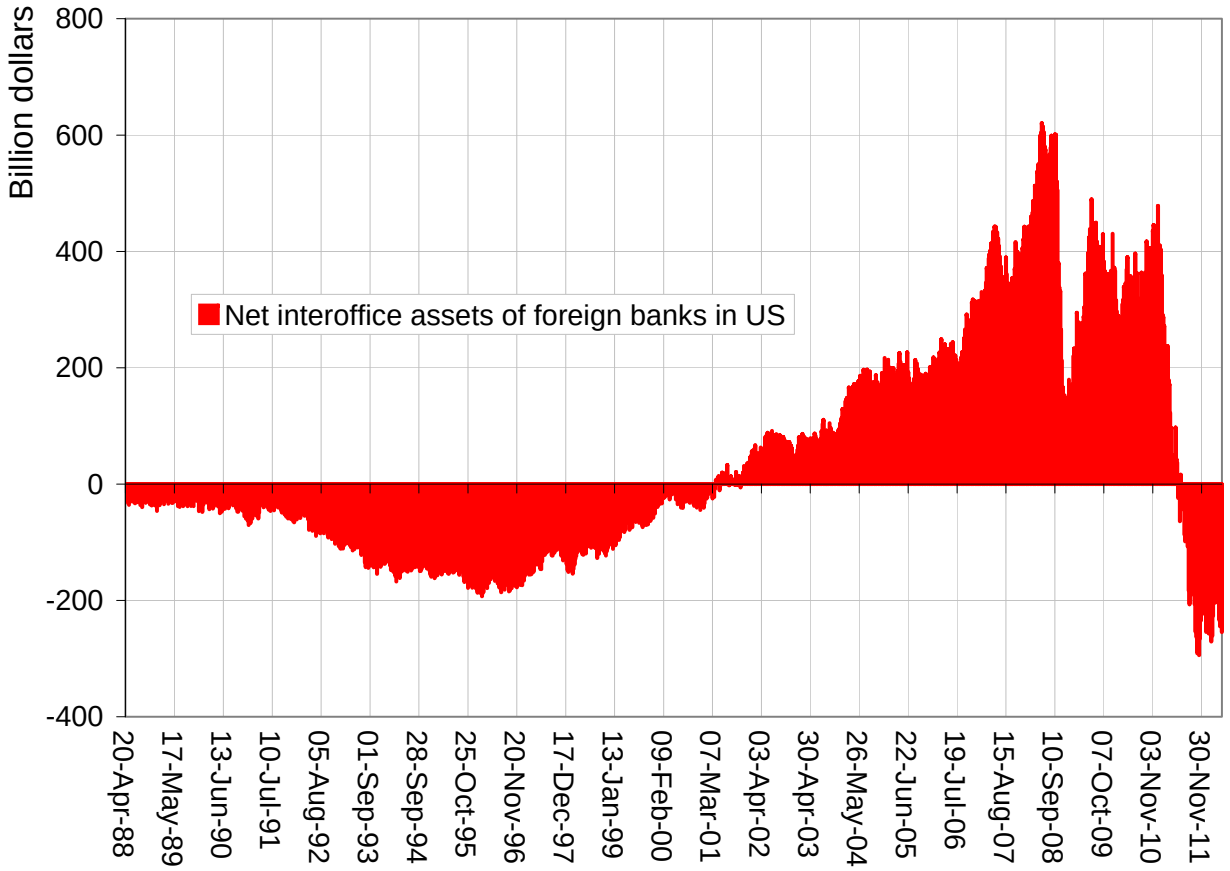


Figure 5. Net interoffice assets of foreign banks in U.S. given by negative of Federal Reserve weekly H8 series on "net due to related foreign offices of foreign-related institutions"

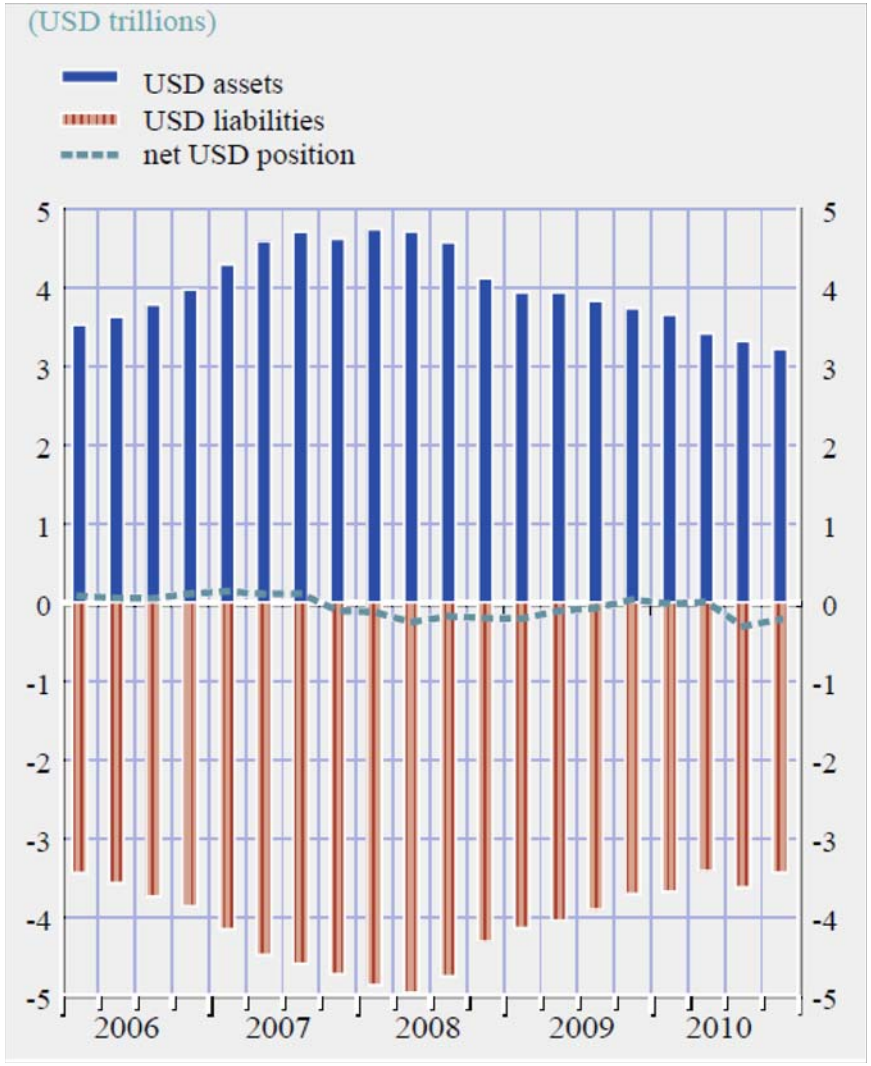


Figure 6. US Dollar-denominated assets and liabilities of euro area banks (Source: ECB Financial Stability Review, June 2011, p. 102)

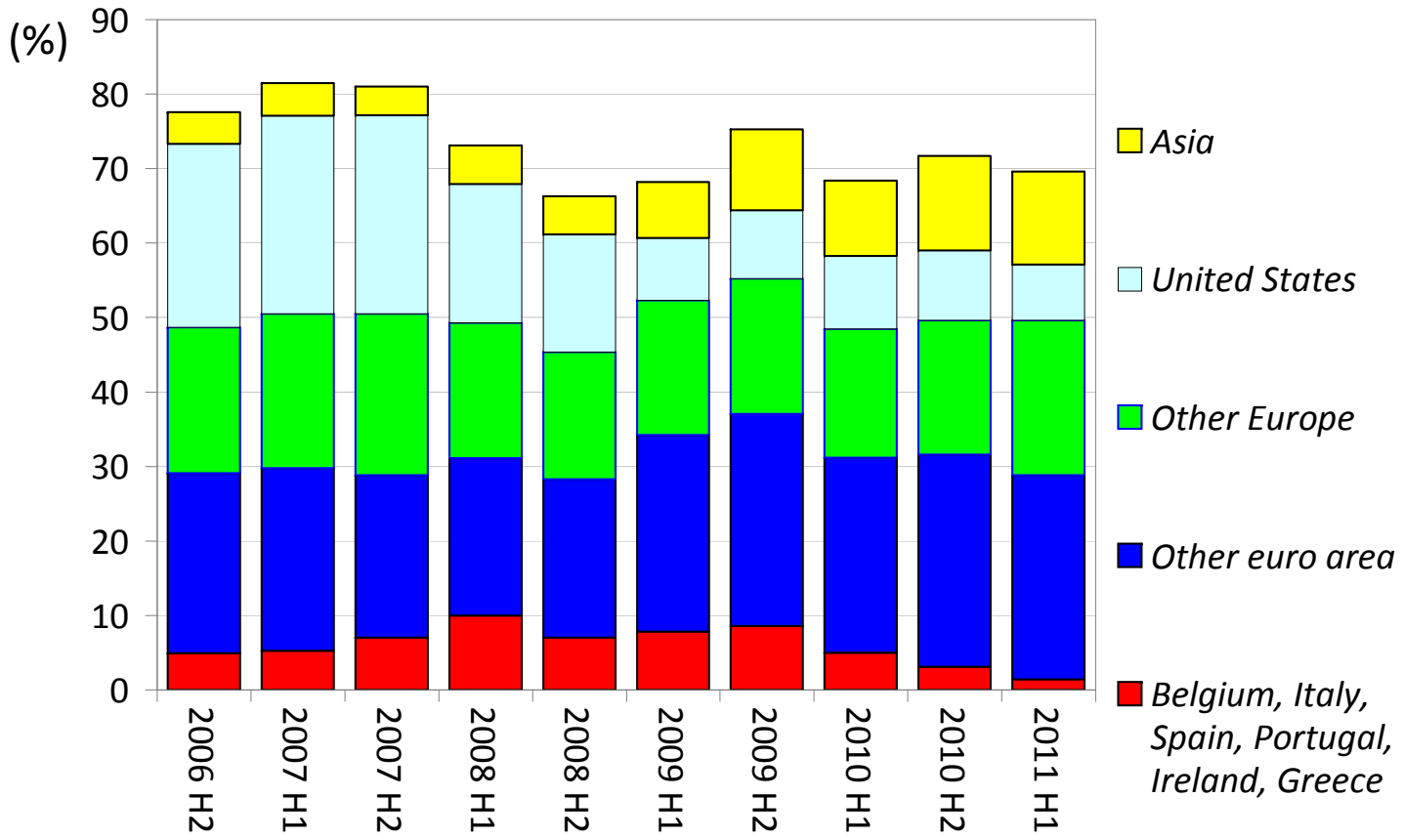


Figure 7. Amount owed by banks to US prime money market funds (% of total), based on top 10 prime MMFs, representing $755 bn of $1.66 trn total prime MMF assets (Source: IMF GFSR Sept 2011, data from Fitch).

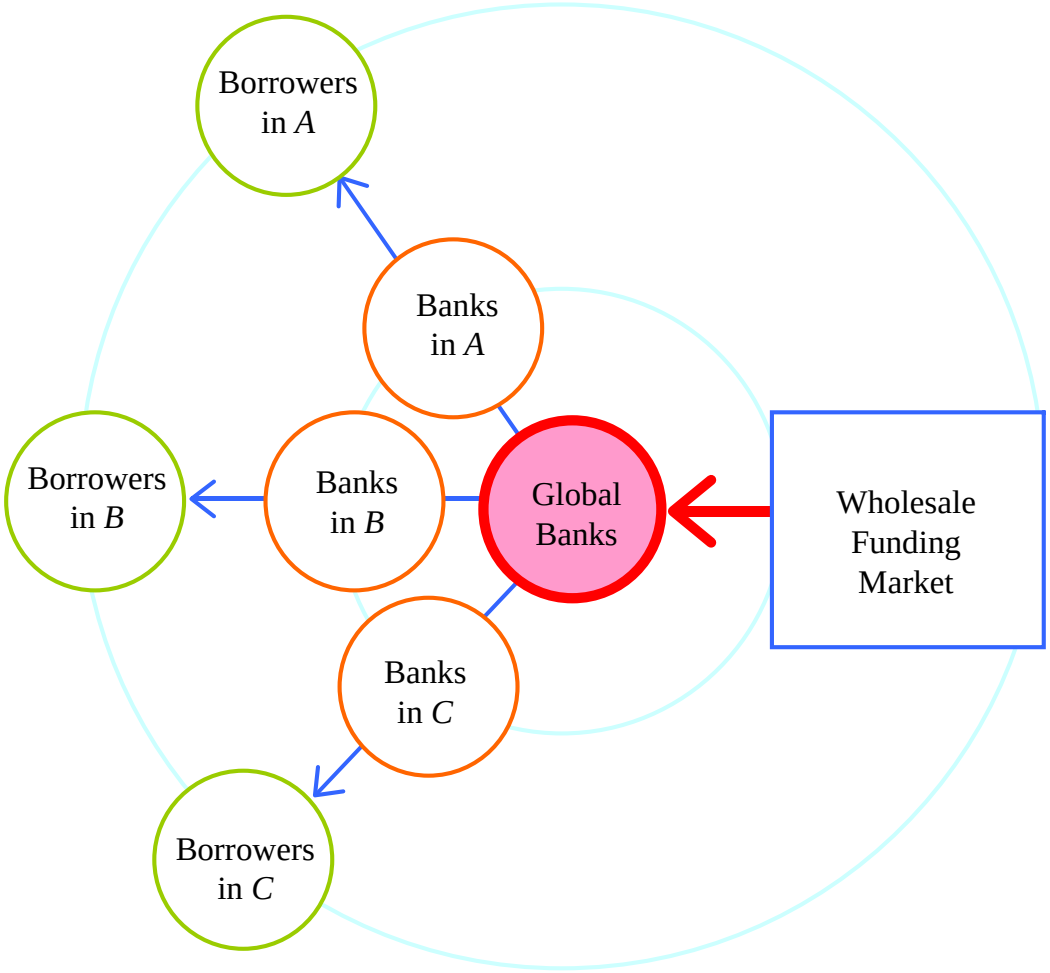


Figure 8. Topography of global liquidity

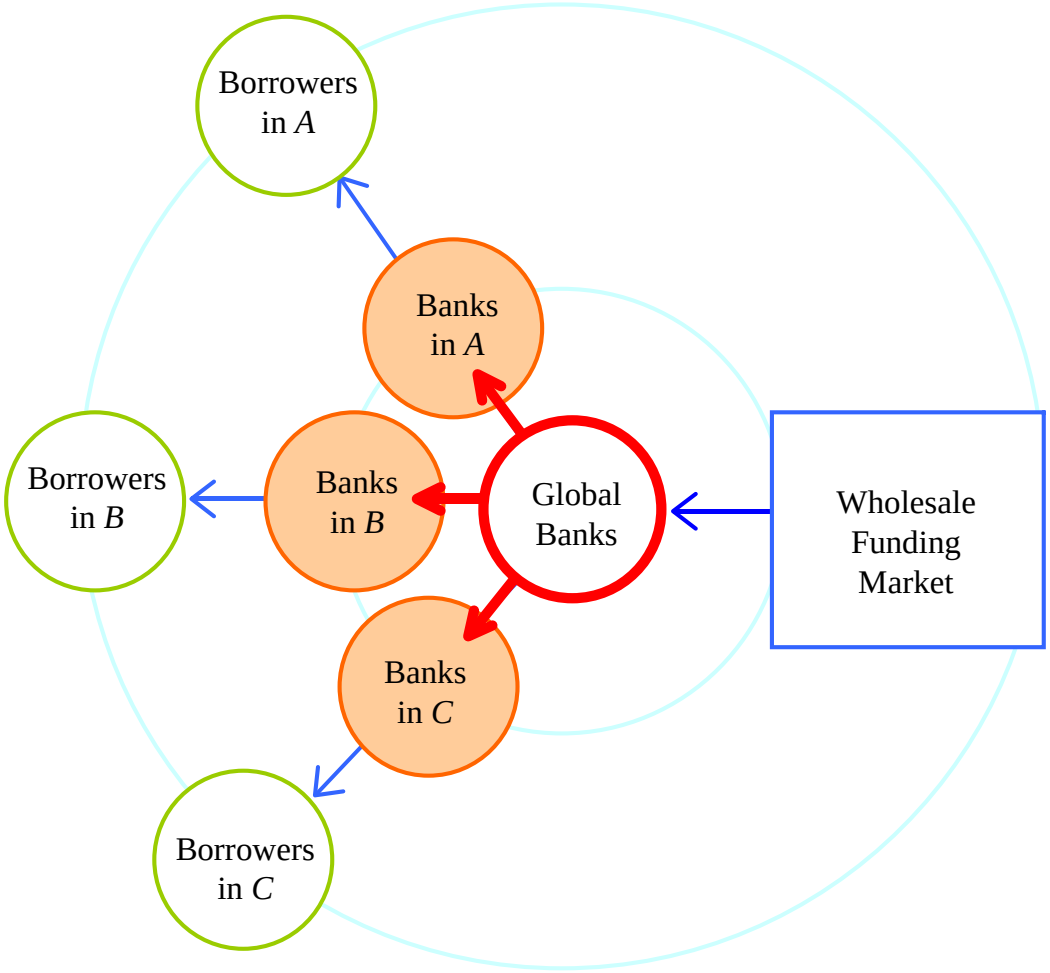


Figure 9. Topography of global liquidity

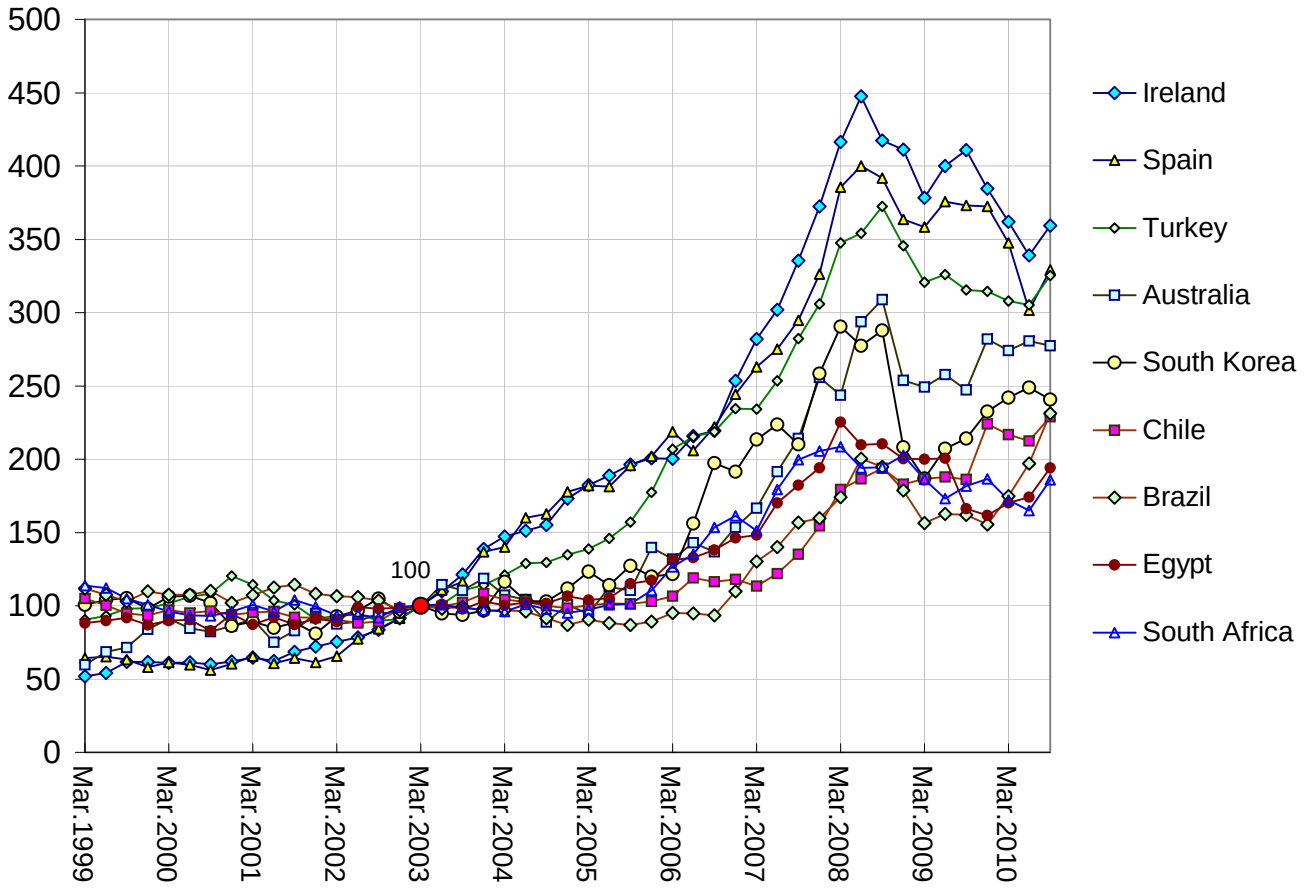


Figure 10. External claims (loans and deposits) of BIS reporting banks on counterparties listed on right (Source: BIS locational banking statistics Table 7A)

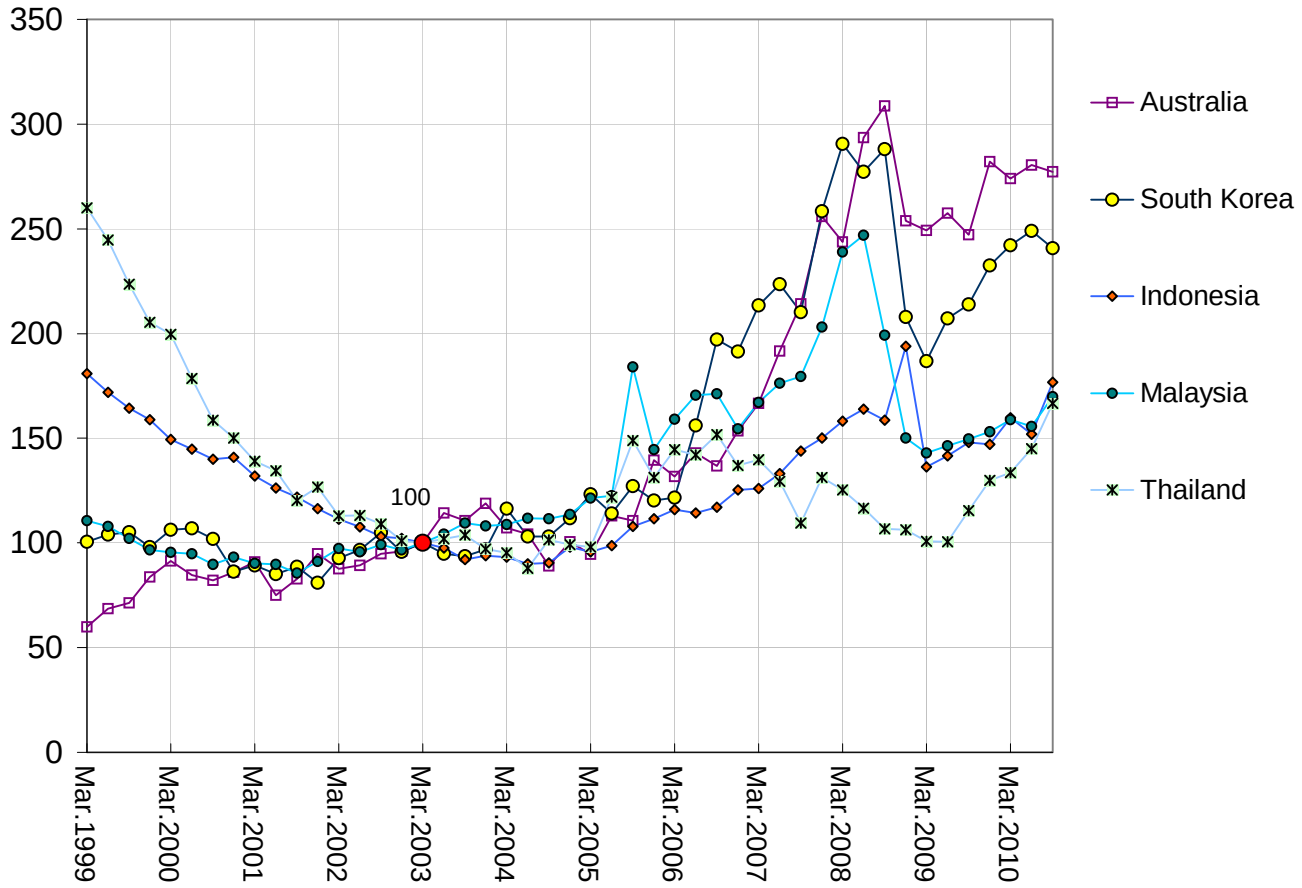


Figure 11. External claims (loans and deposits) of BIS reporting banks on counterparties listed on right (Source: BIS locational banking statistics Table 7A)

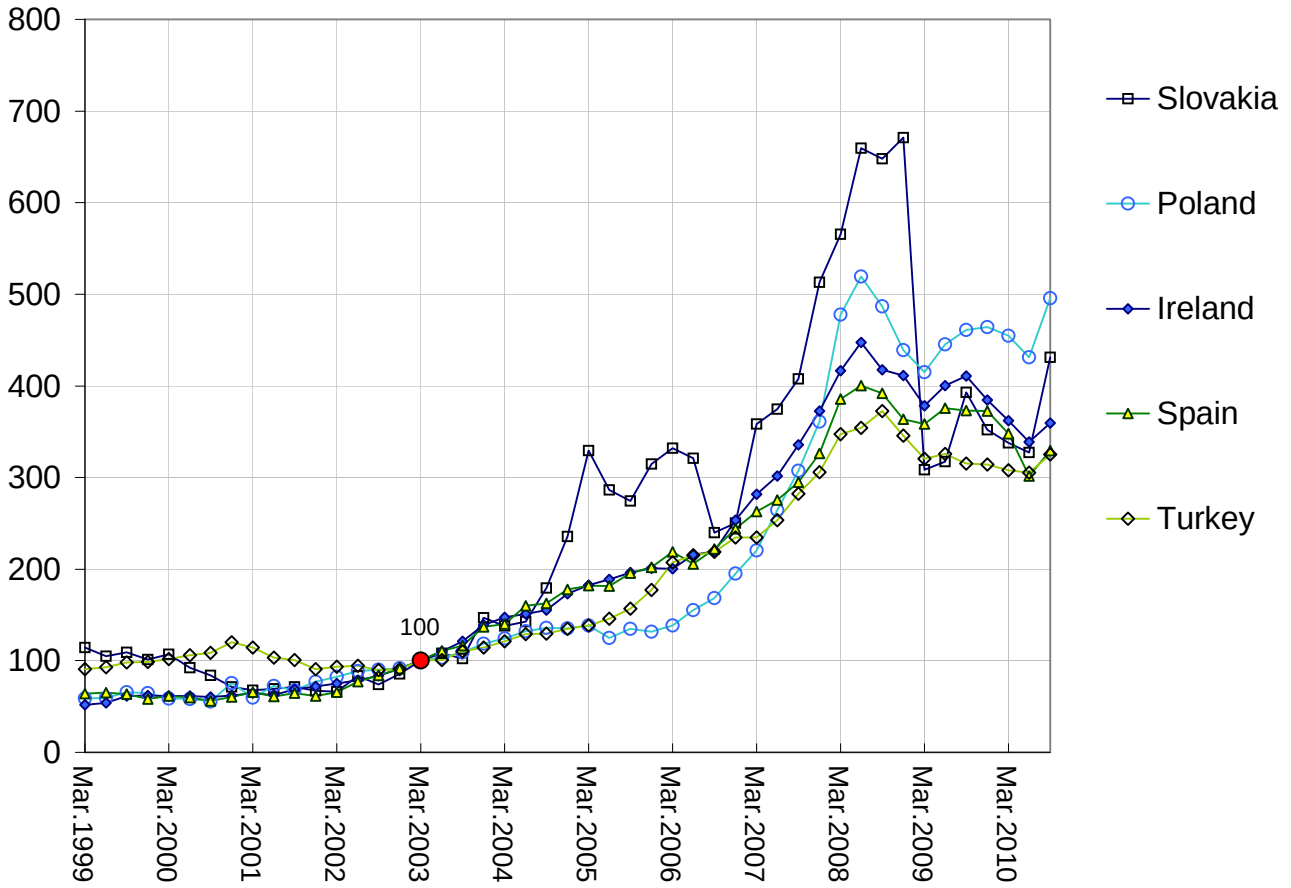


Figure 12. External claims (loans and deposits) of BIS reporting banks on counterparties listed on right (Source: BIS locational banking statistics Table 7A)

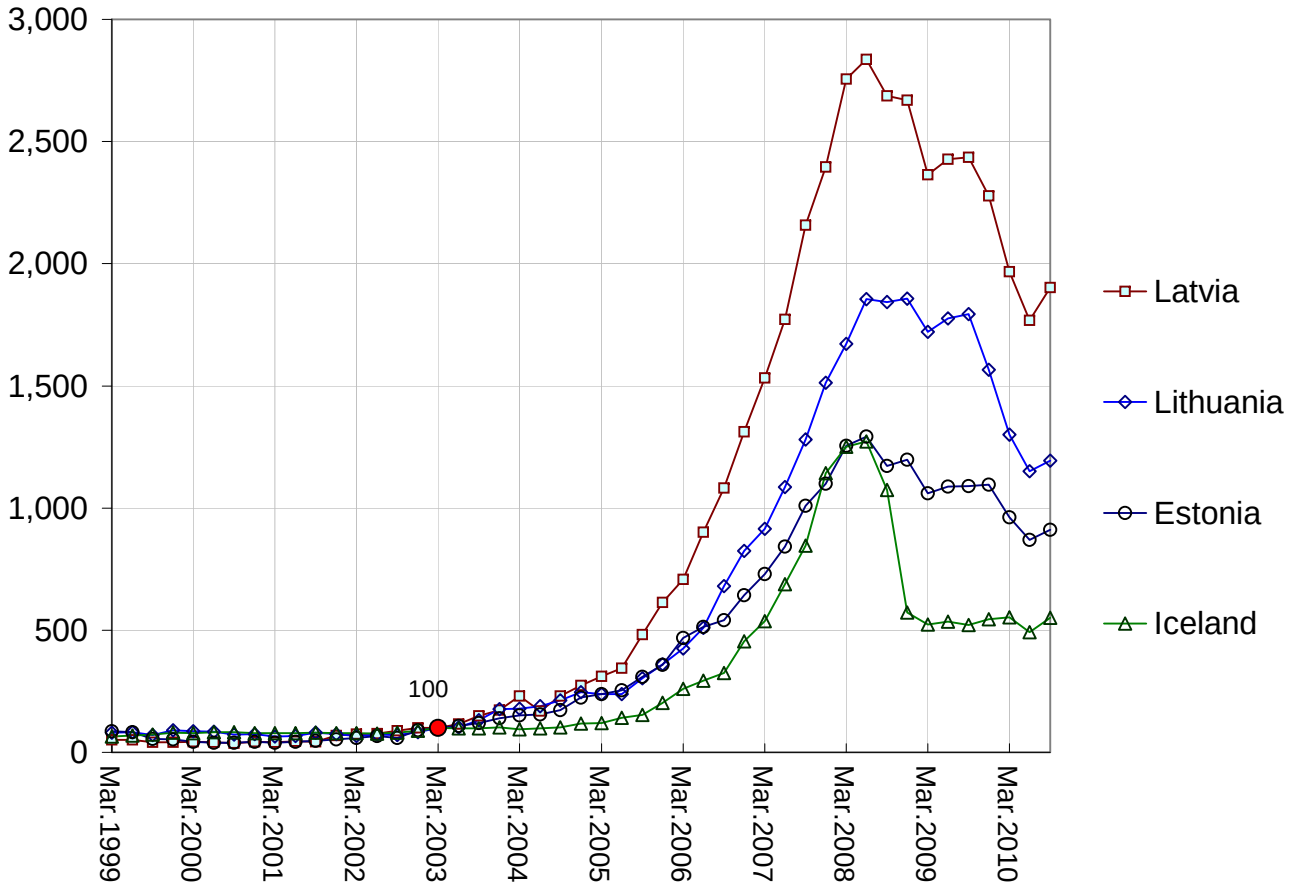
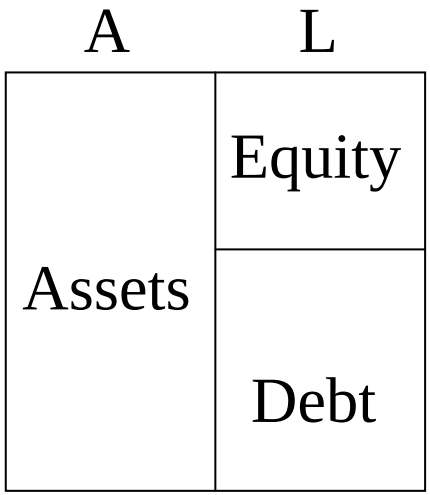


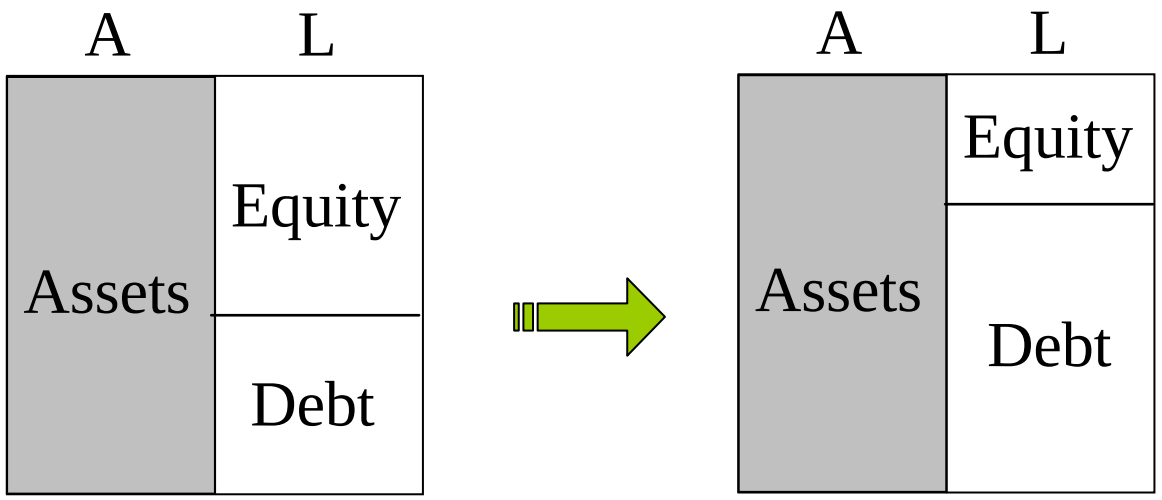
Figure 13. External claims (loans and deposits) of BIS reporting banks on counterparties listed on right (Source: BIS locational banking statistics Table 7A)

Themes

- "Double-decker" model of credit supply
  - Global banks and local banks
  - Capital flows through banking sector
- Bank credit supply
  - Leverage tied to risk measures (VIX, VaR, CDS)
  - Deviation from standard portfolio rules
- Empirical hypotheses and investigation

Corporate Finance of Banking




A
L
Assets
Equity
Debt
A
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Assets
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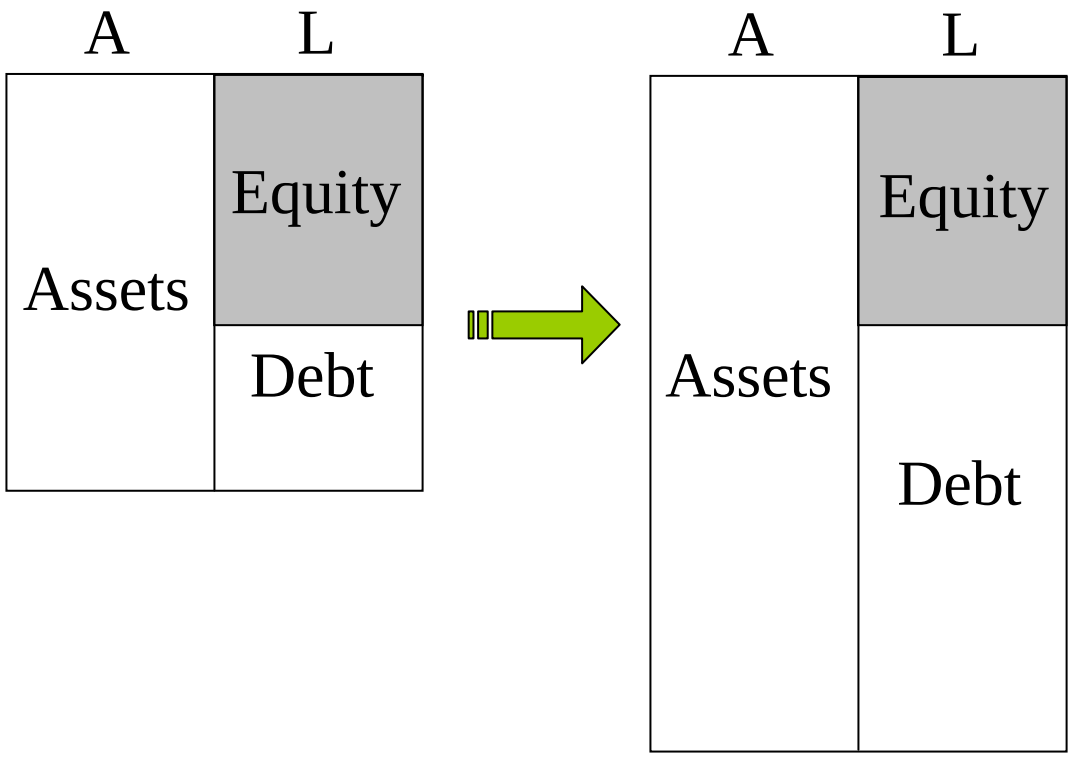
Debt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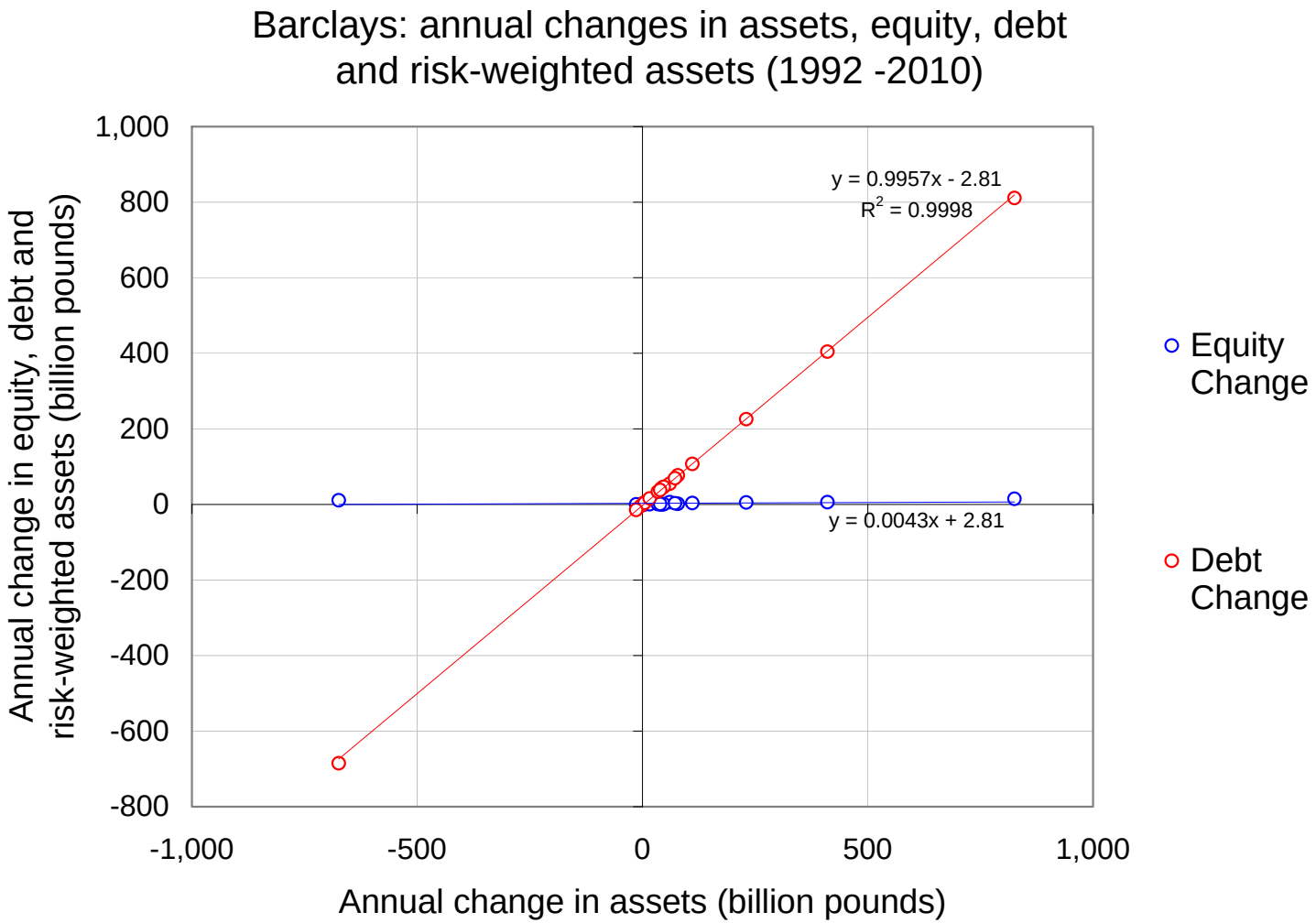


Figure 14. Barclays: annual change in assets, equity and debt (1992-2010) (Source: Bankscope)

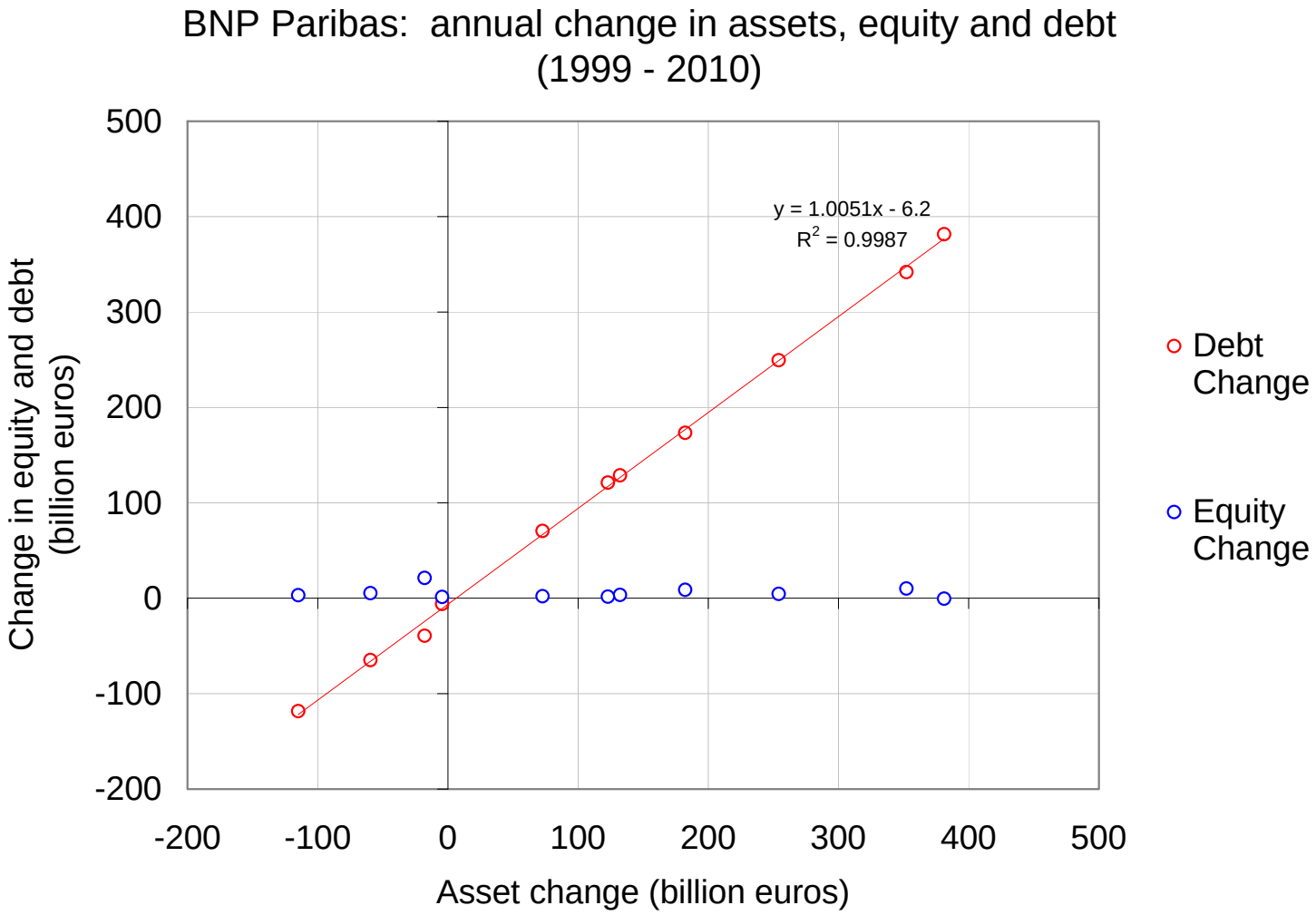


Figure 15. BNP Paribas: annual change in assets, equity and debt of (1999-2010) (Source: Bankscope)

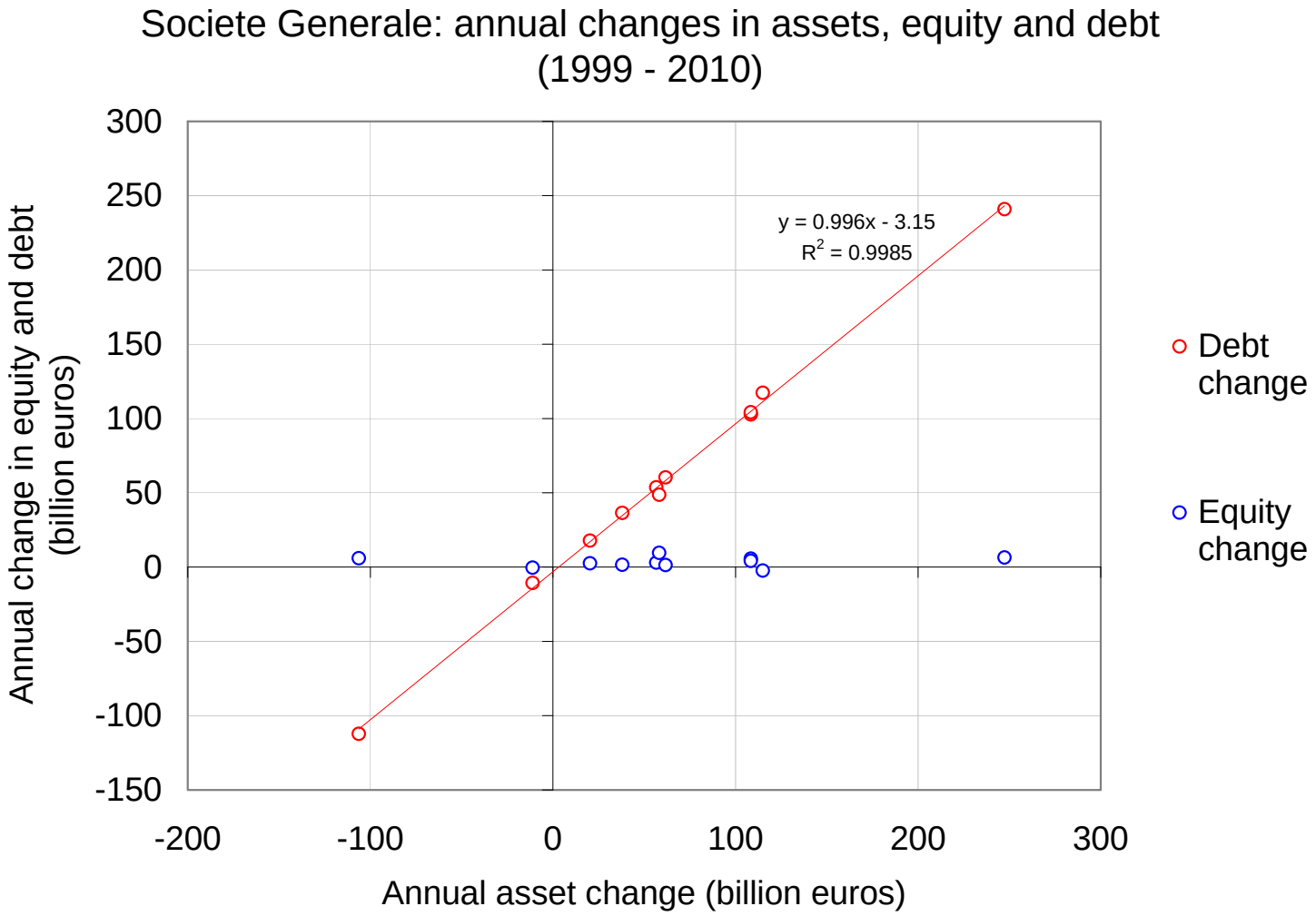


Figure 16. Societe Generale: annual change in assets, equity and debt of (1999-2010) (Source: Bankscope)

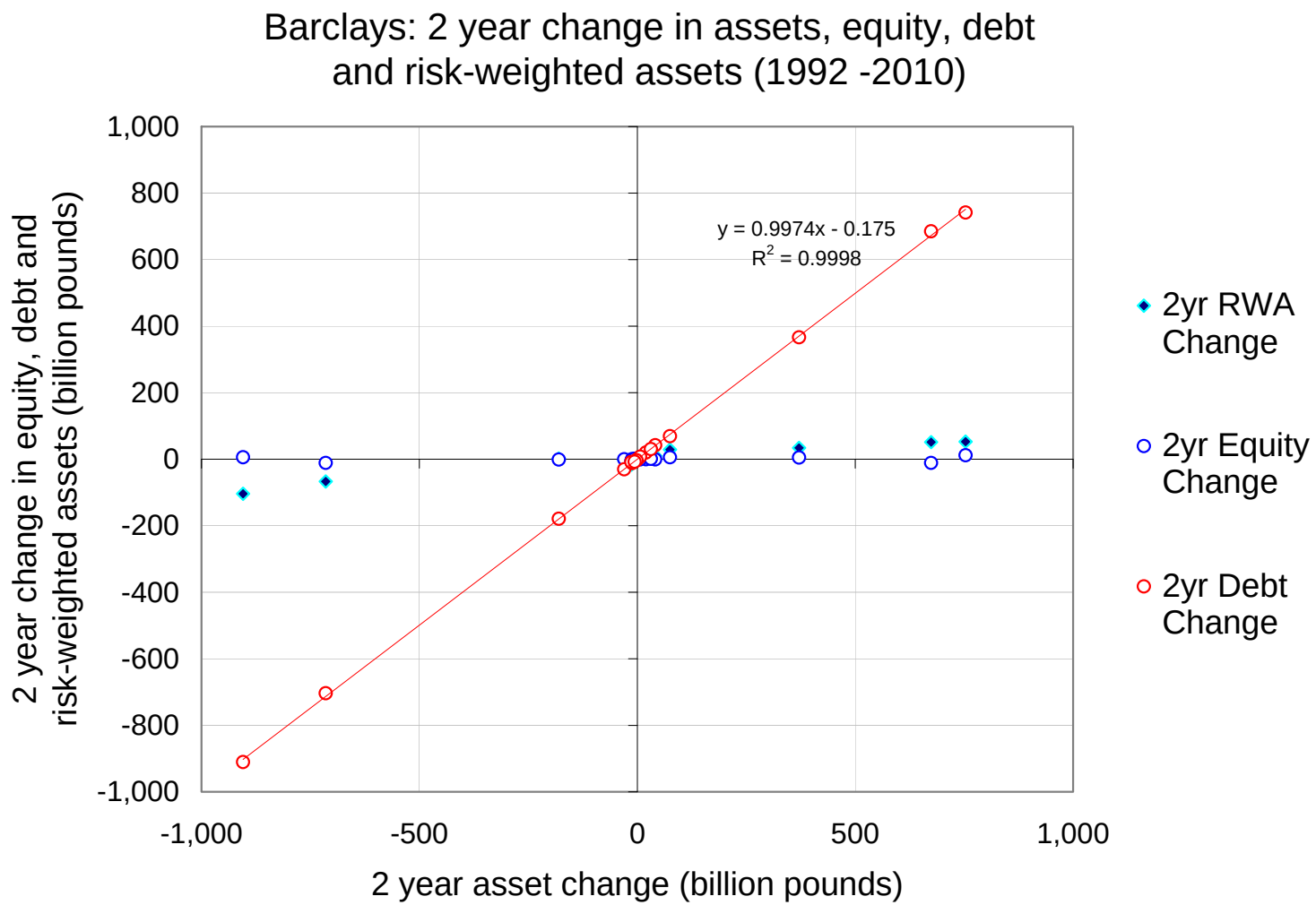


Figure 17. Barclays: 2 year change in assets, equity and debt (1992-2010) (Source: Bankscope)

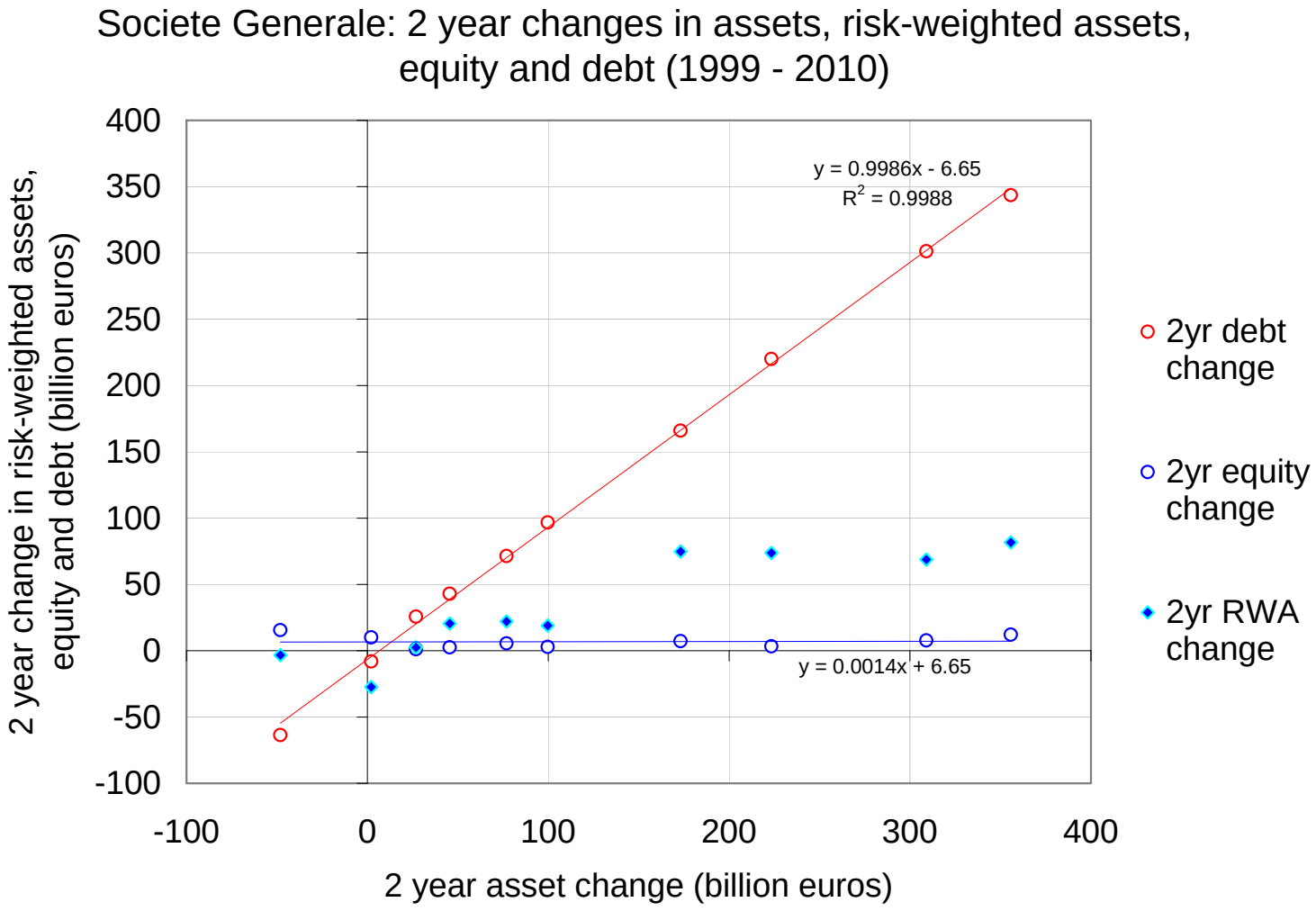


Figure 18. Societe Generale: 2 year change in assets, equity and debt of (1999-2010) (Source: Bankscope)

Why did European banks expand so much?

Two candidate hypotheses:

- Regulatory environment: circumvention of Basel I, impending Basel II and EU Capital Adequacy Directive (CAD)
- Advent of Euro opened up cross-border banking market within the eurozone

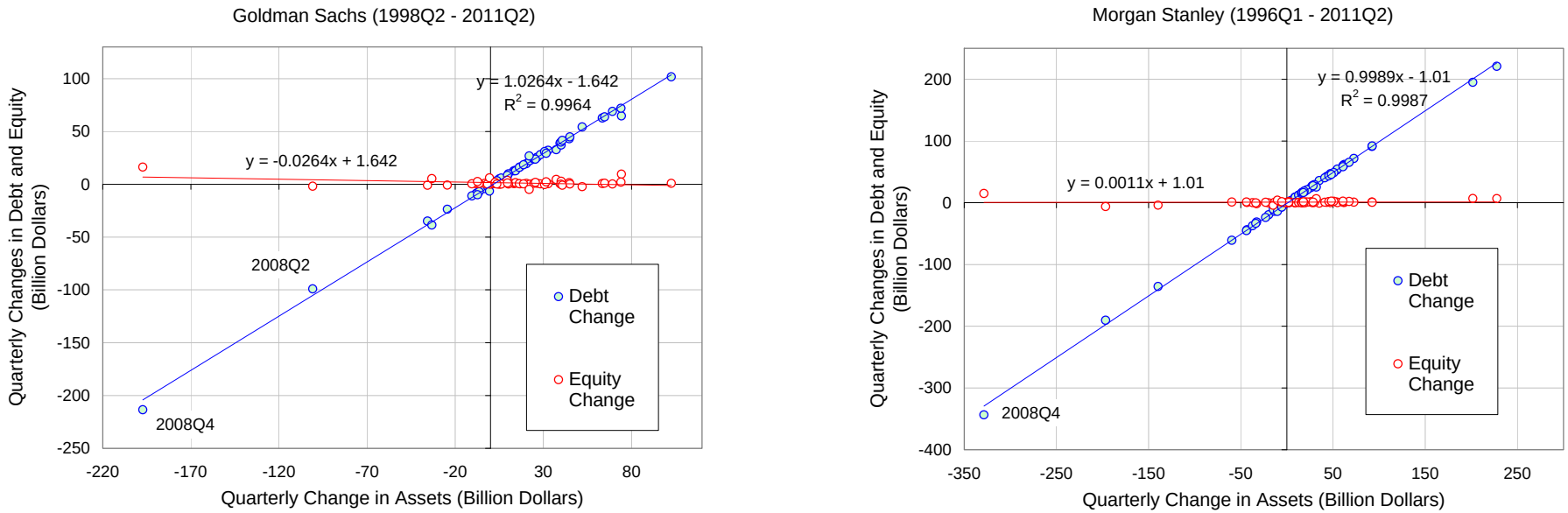


Figure 19. Scatter chart of quarterly changes in assets, equity and debt of Goldman Sachs and Morgan Stanley (Source: SEC 10Q filings)

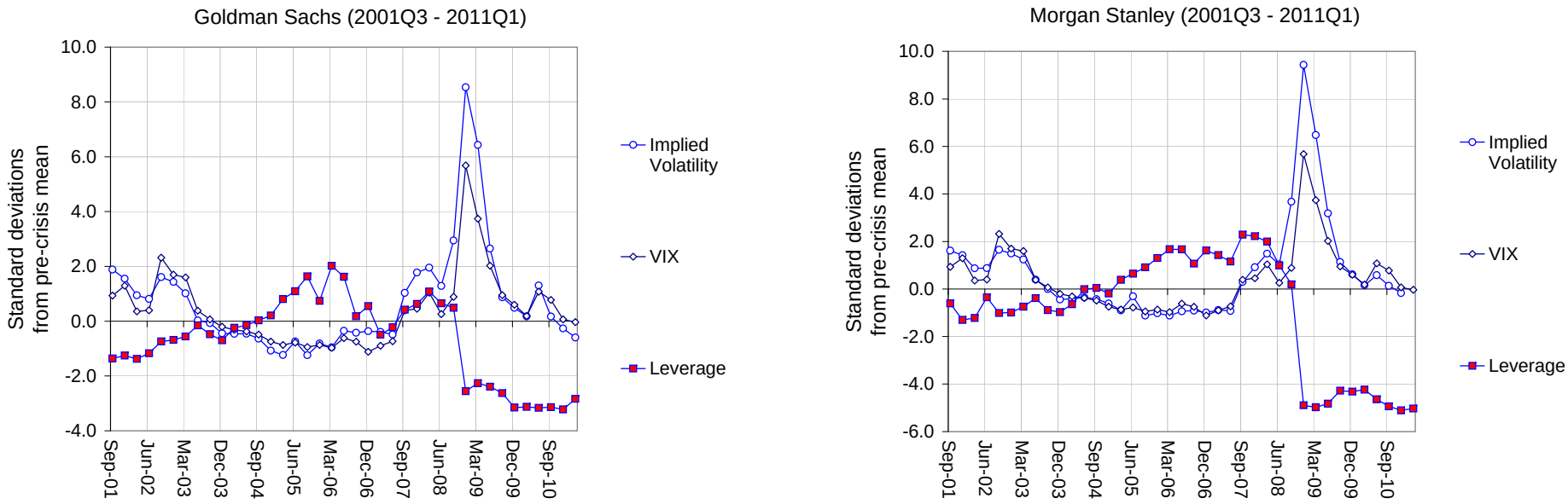


Figure 20. Plots of the VIX index, leverage of Goldman Sachs and Morgan Stanley and the implied volatility of their equity options. All series are measured as standard deviations from the mean during 2001Q3 - 2006Q4. (Source: SEC 10Q and CBOE)

Explaining Deleveraging

Value at risk (VaR) at confidence level c relative to some base level A_0 is smallest non-negative number V such that

$$\text{Prob}\left(A < A_0 - V\right) \leq 1 - c$$

Equity E meets total Value-at-Risk (Adrian and Shin (2012))

$$E = V = v \times A$$

v is Unit VaR (Value-at-Risk per dollar of assets). Leverage L satisfies

$$L \equiv \frac{A}{E} = \frac{1}{v}$$

Empirical implication:

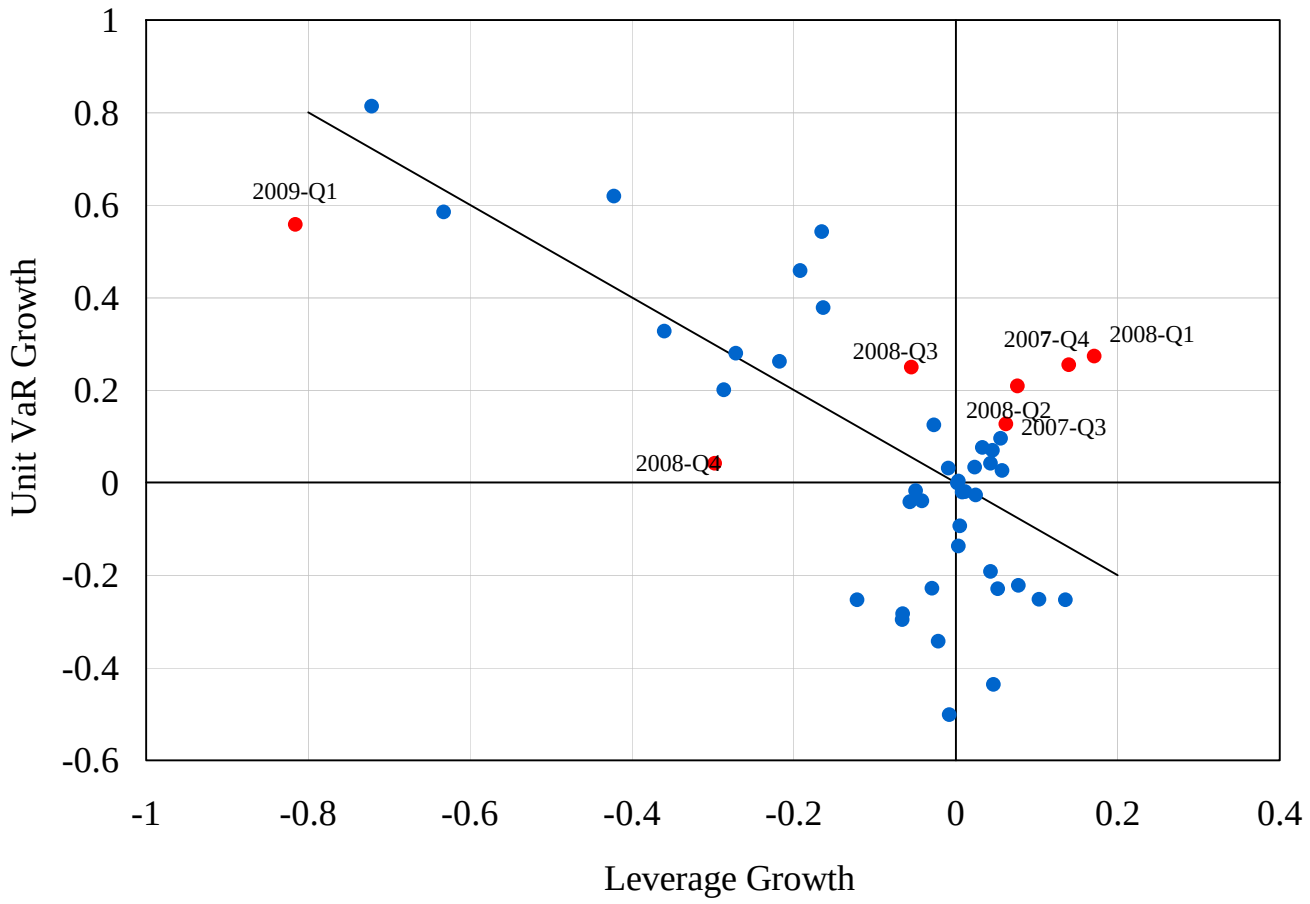
$$\ln L = -\ln v$$

so that

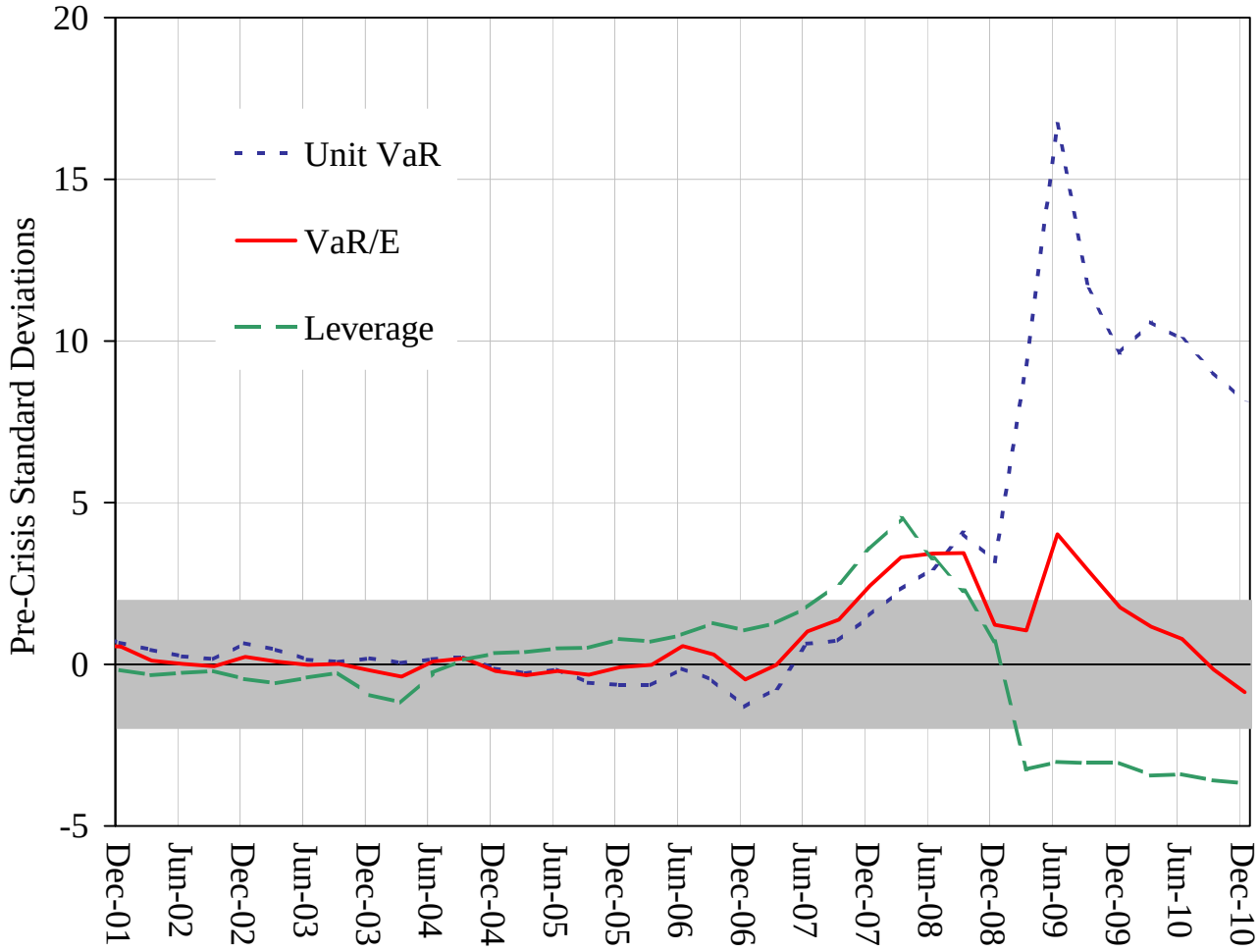
$$\ln L_t - \ln L_{t-1} = -\left(\ln v_t - \ln v_{t-1}\right) \qquad (*)$$

Scatter chart of leverage changes against unit VaR changes should have slope -1.

Evidence?



Five (then four, three, then two) Wall Street banks, Adrian and Shin (2011)


Pre-Crisis Standard Deviations
20
15
10
5
0
-5
Unit VaR
VaR/E
Leverage
Dec-01
Jun-02
Dec-02
Jun-03
Dec-03
Jun-04
Dec-04
Jun-05
Dec-05
Jun-06
Dec-06
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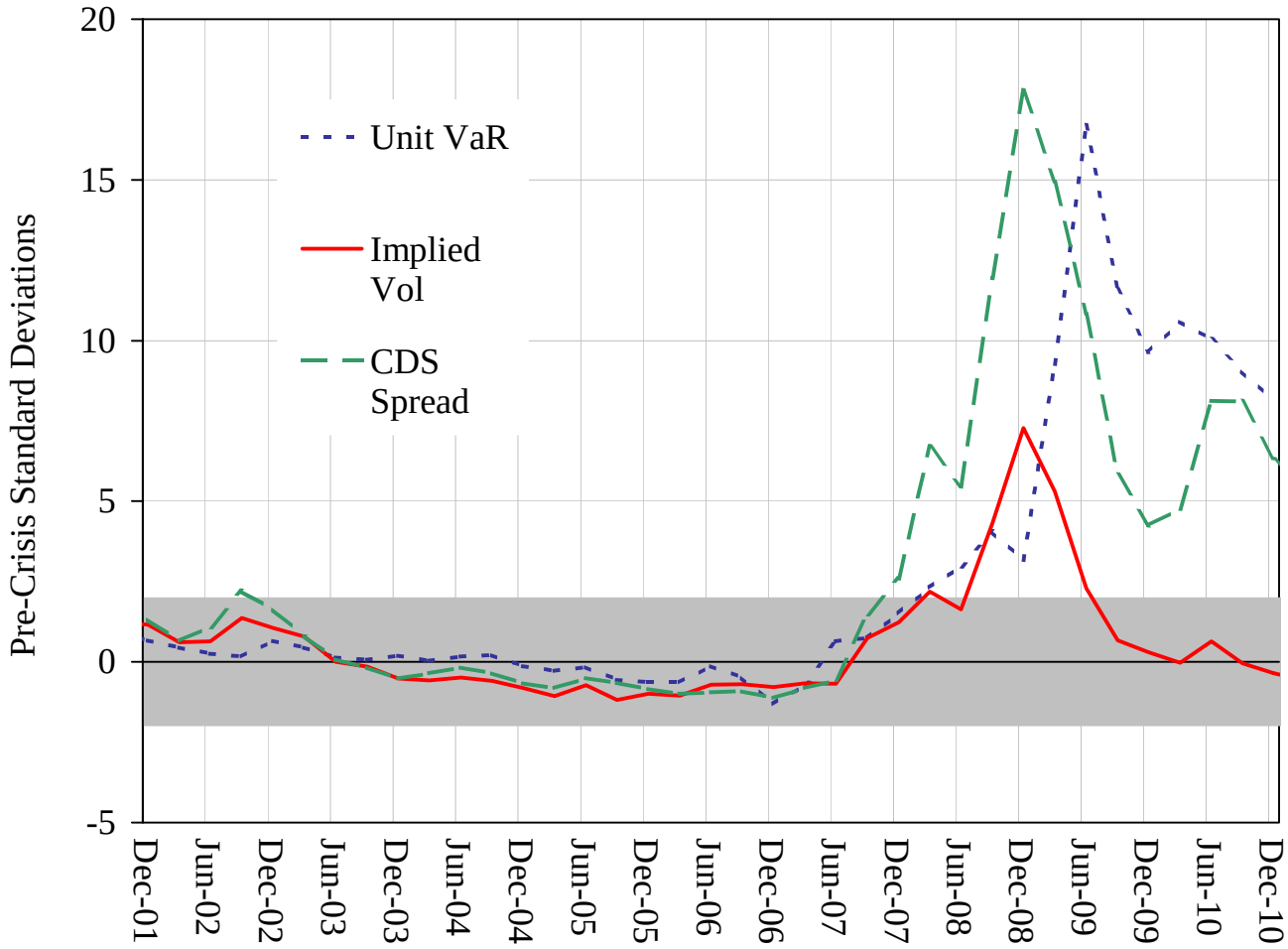
Dec-08
Jun-09
Dec-09
Jun-10
Dec-10


Pre-Crisis Standard Deviations
20
15
10
5
0
-5
Unit VaR
Implied Vol
CDS Spread
Dec-01
Jun-02
Dec-02
Jun-03
Dec-03
Jun-04
Dec-04
Jun-05
Dec-05
Jun-06
Dec-06
Jun-07
Dec-07
Jun-08
Dec-08
Jun-09
Dec-09
Jun-10
Dec-10

Turning Credit Risk Model on Its Head

- Vasicek one factor credit risk model (backbone of Basel)
- Turn Vasicek model on its head as credit supply model
  - Fix E. Determine credit supply S

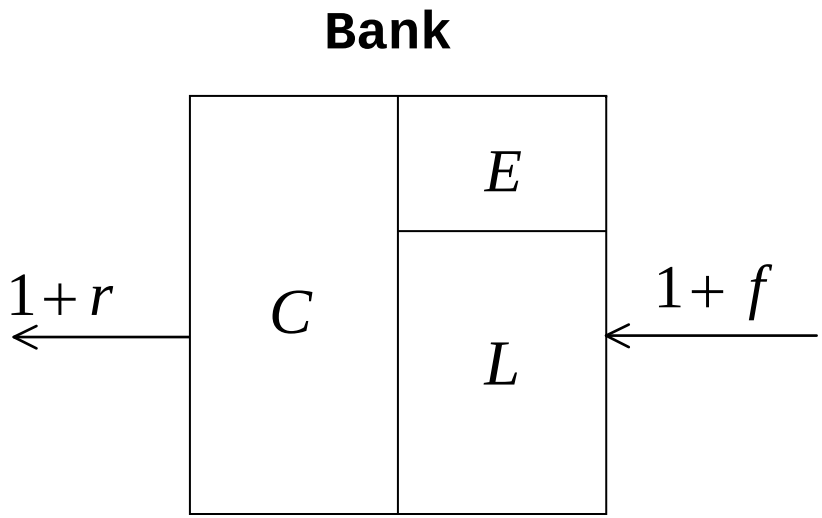
$$S = \frac{E}{1 - \frac{1+r}{1+f}\varphi\left(\rho, \alpha, \varepsilon\right)}, \qquad \varphi \in (0,1)$$

φ is ratio of **notional assets** to **notional debt**

[φ is normalized leverage measure, with $\varphi \in (0,1)$]

Credit Supply

Notation for balance sheet of bank



Borrower j repays the loan when $Z_j > 0$

$$Z_j = -\Phi^{-1}(\varepsilon) + \sqrt{\rho}Y + \sqrt{1-\rho}X_j$$

where $Y, \{X_j\}$ independent standard normal

$$\begin{aligned} \Pr(Z_j < 0) &= \Pr\left(\sqrt{\rho}Y + \sqrt{1-\rho}X_j < \Phi^{-1}(\varepsilon)\right) \\ &= \Phi\left(\Phi^{-1}(\varepsilon)\right) = \varepsilon \end{aligned}$$

Realized value of assets at date 1

$$\begin{aligned} w(Y) &\equiv (1+r)\,C \cdot \Pr(Z_j \geq 0|Y) \\ &= (1+r)\,C \cdot \Pr\left(\sqrt{\rho}Y + \sqrt{1-\rho}X_j \geq \Phi^{-1}(\varepsilon)\,|Y\right) \\ &= (1+r)\,C \cdot \Phi\left(\frac{Y\sqrt{\rho} - \Phi^{-1}(\varepsilon)}{\sqrt{1-\rho}}\right) \end{aligned}$$

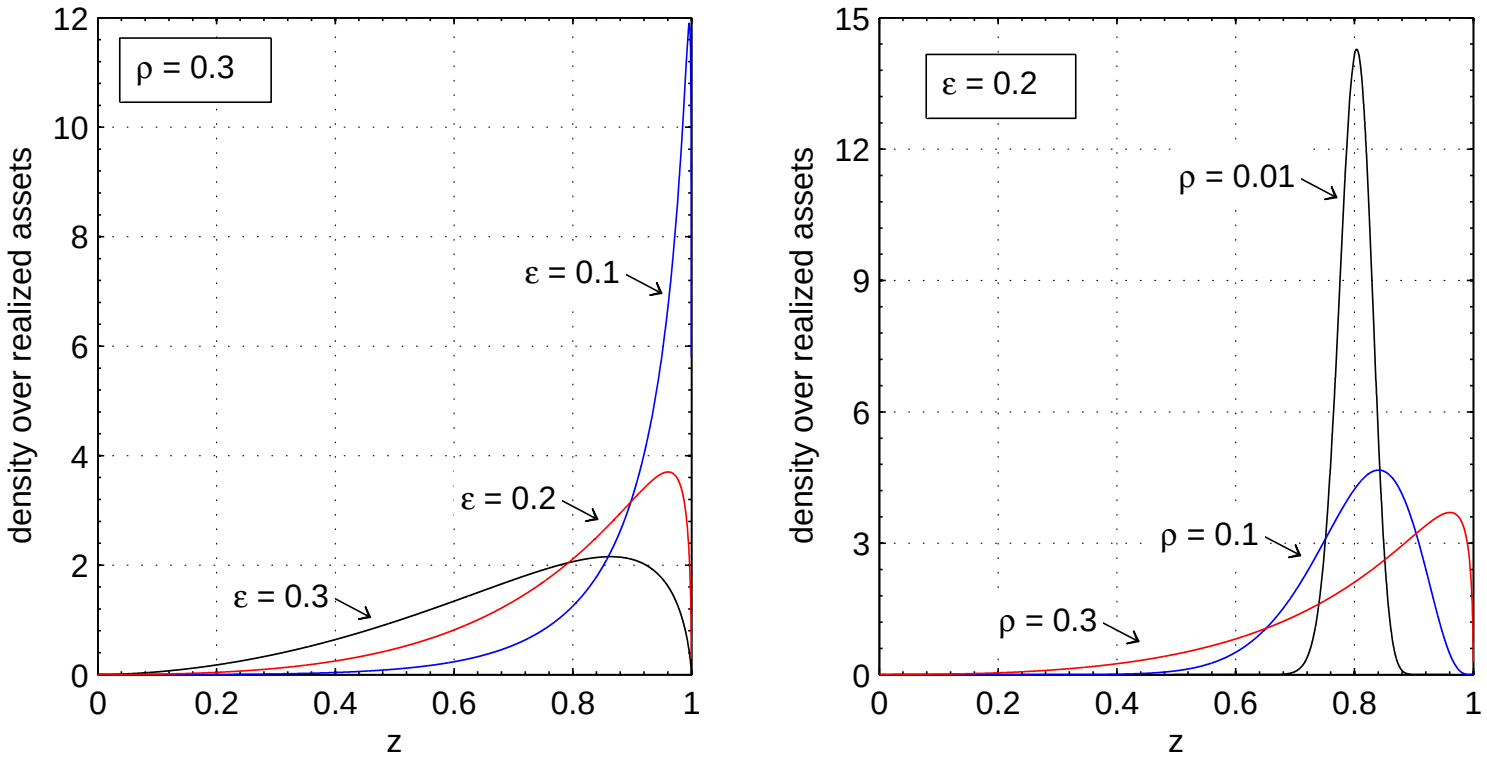


Figure 21. The two charts plot the densities over realized assets when $C\,(1+r)=1$. The left hand charts plots the density over asset realizations of the bank when $\rho=0.1$ and ε is varied from 0.1 to 0.3. The right hand chart plots the asset realization density when $\varepsilon=0.2$ and ρ varies from 0.01 to 0.3.

c.d.f. of w

$$\begin{aligned} F(z) &= \Pr(w \leq z) \\ &= \Pr\left(Y \leq w^{-1}(z)\right) \\ &= \Phi\left(w^{-1}(z)\right) \\ &= \Phi\left(\frac{1}{\sqrt{\rho}}\left(\Phi^{-1}(\varepsilon) + \sqrt{1-\rho}\Phi^{-1}\left(\frac{z}{(1+r)C}\right)\right)\right) \end{aligned}$$

Value-at-Risk (VaR) rule with insolvency probability to $\alpha > 0$ when notional liability is $(1+f)L$.

Private credit C determined from

$$\Pr(w < (1+f)L) = \Phi\left(\frac{\Phi^{-1}(\varepsilon) + \sqrt{1-\rho}\Phi^{-1}\left(\frac{(1+f)L}{(1+r)C}\right)}{\sqrt{\rho}}\right) = \alpha$$

$$\frac{\text{Notional liabilities}}{\text{Notional assets}} = \frac{(1+f)\,L}{(1+r)\,C} = \Phi\left(\frac{\sqrt{\rho}\Phi^{-1}(\alpha) - \Phi^{-1}(\varepsilon)}{\sqrt{1-\rho}}\right) \qquad (1)$$

where

$$\varphi(\alpha, \varepsilon, \rho) \equiv \Phi\left(\frac{\sqrt{\rho}\Phi^{-1}(\alpha) - \Phi^{-1}(\varepsilon)}{\sqrt{1-\rho}}\right)$$

Supply of Credit

Credit supply C and demand for funding L is obtained from (1) and balance sheet identity $C = E + L$

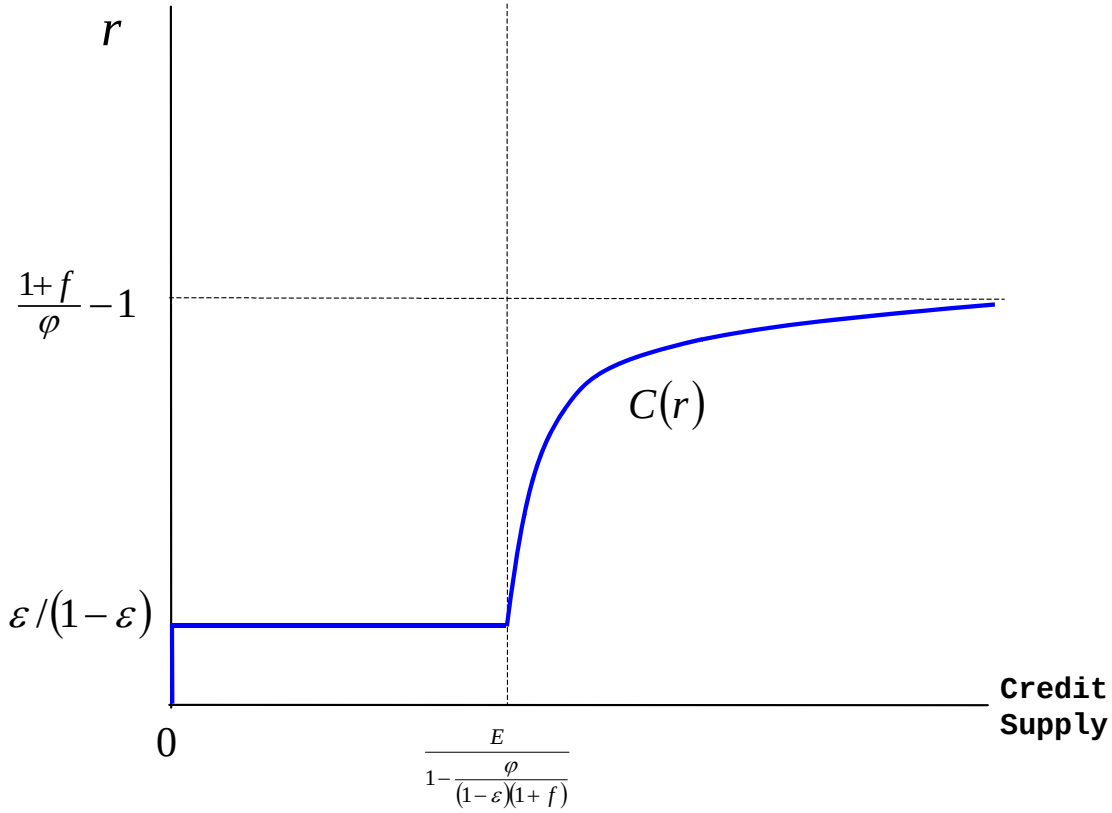
$$C = \frac{E}{1 - \frac{1+r}{1+f} \cdot \varphi}, \qquad L = \frac{E}{\frac{1+f}{1+r} \cdot \frac{1}{\varphi} - 1}$$

Aggregation holds due to proportionality

$$\text{Leverage} = \frac{1}{1 - \frac{1+r}{1+f} \cdot \varphi}$$

Risk premium is well-defined

$$\text{Risk premium} = (1 - \varepsilon)(1 + r) - 1$$



Supply of credit

Double-decker model of Global Liquidity

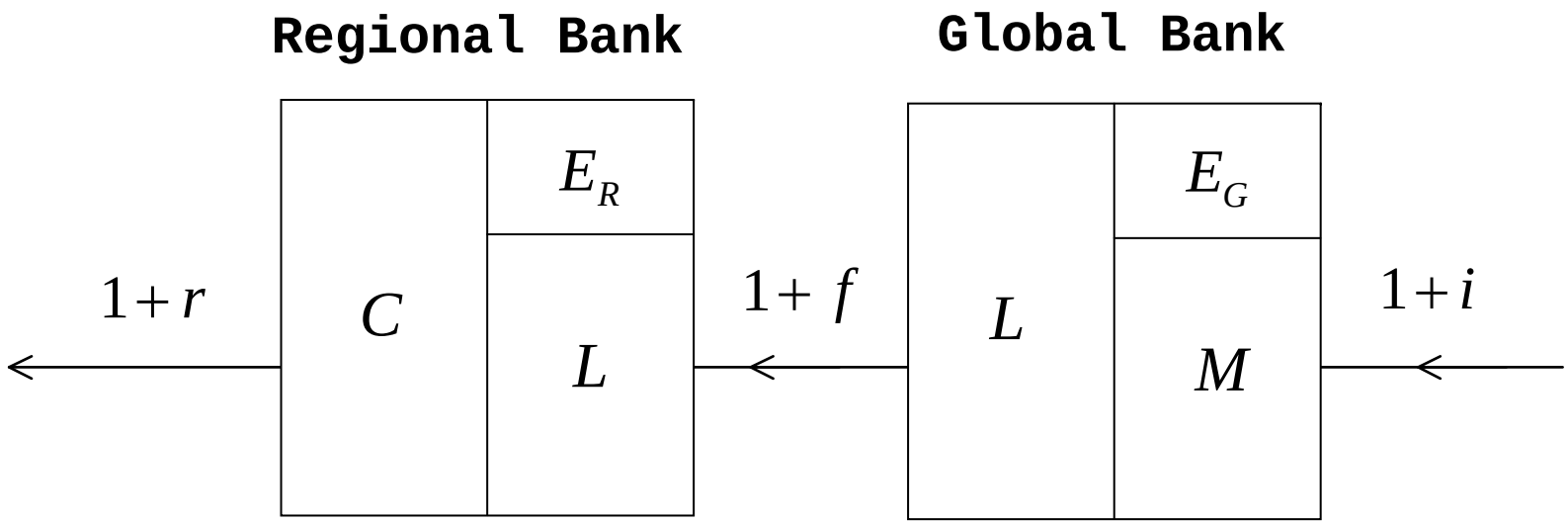


Figure 22. Regional and global bank balance sheets

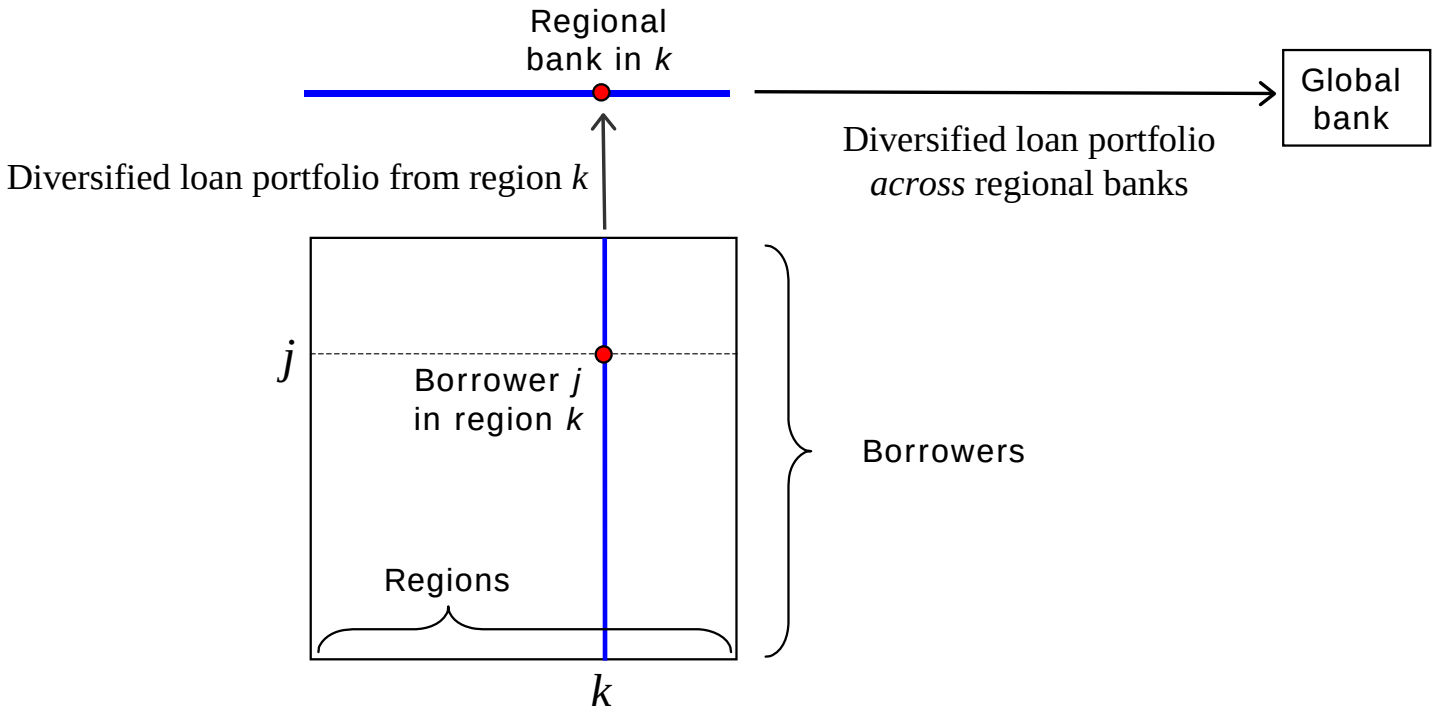


Figure 23. Global and regional banks

Global, Regional and Idiosyncratic Risk Factors

$$Z_{kj} \equiv -\Phi^{-1}(\varepsilon) + \sqrt{\rho} Y_k + \sqrt{1-\rho} X_{kj}$$

$$Y_k = \sqrt{\beta} G + \sqrt{1-\beta} R_k$$

Regional bank k defaults when

$$Y_k < w^{-1}((1+f)L) = \frac{1}{\sqrt{\rho}} \left(\Phi^{-1}(\varepsilon) + \sqrt{1-\rho} \Phi^{-1}(\varphi) \right)$$

Or when $\xi_k < 0$

$$\begin{aligned} \xi_k &\equiv \sqrt{\rho} Y_k - \Phi^{-1}(\varepsilon) - \sqrt{1-\rho} \Phi^{-1}(\varphi) \\ &= \sqrt{\rho\beta} G + \sqrt{\rho(1-\beta)} R_k - \Phi^{-1}(\varepsilon) - \sqrt{1-\rho} \Phi^{-1}(\varphi) \end{aligned}$$

Asset realization is deterministic function of global risk factor G

$$\begin{aligned} w(G) &= (1+f)\,L \cdot \Pr\left(\xi_k \geq 0 | G\right) \\ &= (1+f)\,L \cdot \Pr\left(R_k \geq \frac{\Phi^{-1}(\varepsilon)+\sqrt{1-\rho}\Phi^{-1}(\varphi)}{\sqrt{\rho(1-\beta)}} - \sqrt{\frac{\beta}{1-\beta}}G \middle| G\right) \\ &= (1+f)\,L \cdot \Phi\left(\sqrt{\frac{\beta}{1-\beta}}G - \frac{\Phi^{-1}(\varepsilon)+\sqrt{1-\rho}\Phi^{-1}(\varphi)}{\sqrt{\rho(1-\beta)}}\right) \end{aligned}$$

Quantiles follow from the c.d.f. of $w(G)$.

$$\begin{aligned} F(z) &= \Pr\left(w(G) \leq z\right) \\ &= \Pr\left(G \leq w^{-1}(z)\right) \\ &= \Phi\left(w^{-1}(z)\right) \end{aligned}$$

where

$$w^{-1}(z) = \sqrt{\frac{1-\beta}{\beta}}\left[\Phi^{-1}\left(\frac{z}{(1+f)L}\right) + \frac{\Phi^{-1}(\varepsilon)+\sqrt{1-\rho}\Phi^{-1}(\varphi)}{\sqrt{\rho(1-\beta)}}\right]$$

Global bank Value-at-Risk (VaR) rule with insolvency probability $\gamma > 0$. Notional liability of the global bank is $(1+i)M$.

$$\begin{aligned}\gamma &= \Pr\left(w(G) < (1+i)M\right) \\ &= \Phi\left(\sqrt{\frac{1-\beta}{\beta}}\left[\Phi^{-1}\left(\frac{(1+i)M}{(1+f)L}\right) + \frac{\Phi^{-1}(\varepsilon)+\sqrt{1-\rho}\Phi^{-1}(\varphi)}{\sqrt{\rho(1-\beta)}}\right]\right)\end{aligned}$$

$$\begin{aligned}\frac{\text{Notional liabilities}}{\text{Notional assets}} &= \frac{(1+i)\,M}{(1+f)\,L} \\ &= \Phi\left(\frac{\sqrt{\rho\beta}\Phi^{-1}(\gamma)-\Phi^{-1}(\varepsilon)-\sqrt{1-\rho}\Phi^{-1}(\varphi)}{\sqrt{\rho(1-\beta)}}\right) \\ &\equiv \psi\left(\gamma,\alpha,\beta,\varepsilon,\rho\right)\end{aligned}$$

Cross-border loan supply

$$L = \frac{E_G}{1-\frac{1+f}{1+i}\psi}$$

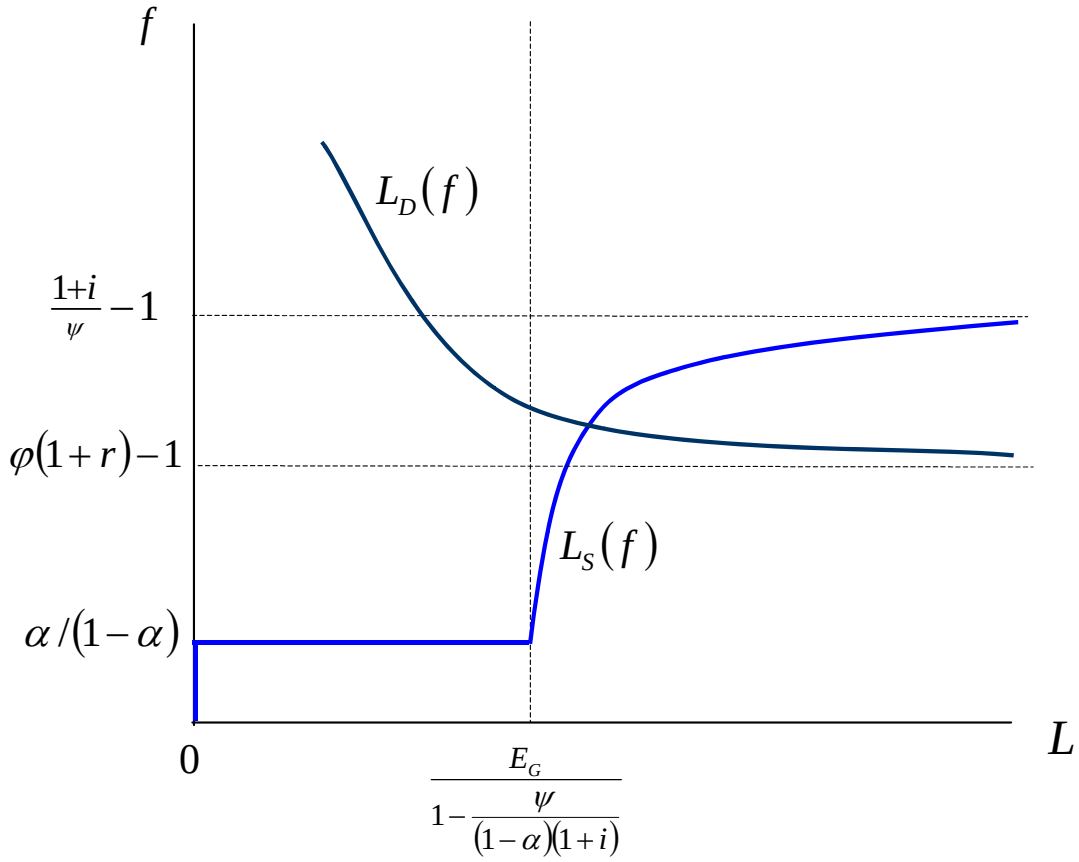


Figure 24. Equilibrium cross-border lending L

Capital Flows and Domestic Credit

Market clearing for L

$$\frac{E_R}{\frac{1+f}{1+r}\cdot\frac{1}{\varphi}-1}=\frac{E_G}{1-\frac{1+f}{1+i}\psi}$$

Private credit

$$C=\frac{E_G+E_R}{1-\frac{1+r}{1+i}\varphi\psi}$$

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

Risk premium in recipient economy

$$\pi \equiv (1-\varepsilon)(1+r) - 1$$

Equilibrium stock of cross-border lending L

$$L = \frac{E_G + E_R \cdot \frac{1+r}{1+i}\varphi\psi}{1 - \frac{1+r}{1+i}\varphi\psi}$$

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

Comparative Statics

Effect on capital flow of shifts in E_R (demand pull) and ψ (supply push)

$$\begin{aligned}
\Delta L &\simeq \frac{\partial L}{\partial E_R}\Delta E_R + \frac{\partial L}{\partial \psi}\Delta\psi \\
&= \frac{\varphi\psi}{1-\varphi\psi}\Delta E_R + \left(\frac{(1-\varphi\psi)\,E_R\varphi - (E_G + E_R\varphi\psi)\,(-\varphi)}{(1-\varphi\psi)^2}\right)\Delta\psi \\
&= \frac{\varphi\psi}{1-\varphi\psi}\Delta E_R + C\frac{\varphi}{1-\varphi\psi}\Delta\psi
\end{aligned}$$

Banking sector capital flows (i) increase with ΔE_R (bank ROE) (ii) increase with bank leverage (fall with VIX) (iii) increase in *change* in bank leverage (fall with ΔVIX) (iv) fall with *interaction* between ROE and VIX

Sample

Sample of 47 countries with largest foreign bank penetration (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, Lebanon, Lithuania, Malaysia, Malta, Mexico, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, United Kingdom and Uruguay.

Variable	Frequency	Obs	Mean	Std. Dev.	Min	Max
External Loans Growth	quarter	2572	0.030	0.102	-0.777	0.655
VIX	quarter	56	22.135	8.310	11.035	58.596
ΔVIX	quarter	56	0.010	0.207	-0.332	0.849
Interoffice Assets Growth	quarter	56	0.038	0.095	-0.274	0.211
Interest Spread	quarter	56	-0.356	1.487	-2.833	2.417
Private Credit Growth	year	636	0.148	0.183	-0.685	1.774
VIX	year	14	22.137	6.378	12.807	32.693
Interoffice Assets Growth	year	14	0.148	0.130	-0.060	0.373
Interest Spread	year	14	-0.356	1.482	-2.521	1.979
ΔMoney Stock	year	14	0.056	0.053	-0.023	0.138
Global Growth	year	14	3.376	1.651	-1.111	4.998
ROE	year	636	0.087	0.146	-0.768	0.500
Openness	year	636	1.362	1.383	-1.844	2.478
Bank Crisis	year	636	0.135	0.342	0.000	1.000
ΔInflation	year	609	0.062	0.136	-0.046	2.450
Creditor Rights	year	296	2.010	0.983	0.000	4.000

Three Stages Once Again

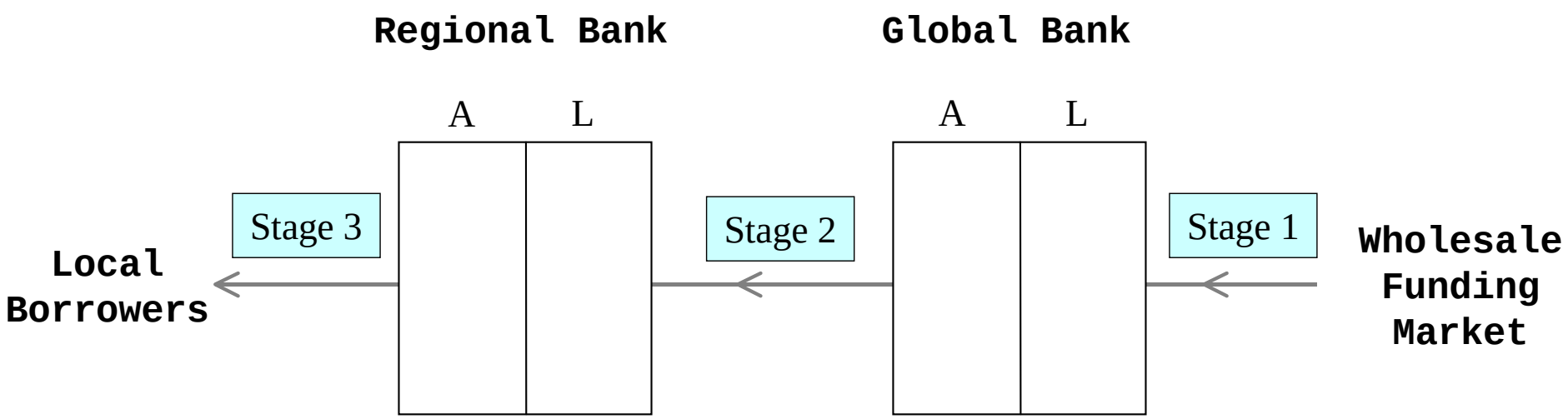


Figure 25. Three stages of cross-border banking sector flows.

Three Regressions

Funding of Global Banks (quarterly)

$$\Delta \text{Interoffice}_t = \alpha + \beta \text{VIX}_t + \gamma \text{Spread}_t + \delta \text{Controls} + \varepsilon_{i,t}$$

Capital Flows (fixed effects panel, quarterly)

$$\begin{aligned} \Delta L_{c,t} &= \beta_0 + \beta_1 \cdot \Delta \text{Interoffice}_t + \beta_2 \text{VIX}_{t-1} + \beta_3 \cdot \Delta \text{VIX}_{t-1} \\ &\quad + \beta_4 \text{ROE}_{c,t} + \beta_5 \text{VIX}_{t-1} * \text{ROE}_{c,t} + \text{controls}_{c,t} + e_{c,t} \end{aligned}$$

Domestic Private Credit (fixed effects panel, annual)

$$\begin{aligned} \Delta C_{c,t} &= \beta_0 + \beta_1 \cdot \Delta \text{Interoffice}_t + \beta_2 \text{VIX}_{t-1} + \beta_4 \text{ROE}_{c,t} \\ &\quad + \beta_5 \text{VIX}_{t-1} * \text{ROE}_{c,t} + \text{controls}_{c,t} + e_{c,t} \end{aligned}$$

Regression for ΔInteroffice

	1	2	3	4
VIX	-0.0043**		-0.0039*	-0.0049**
	[0.036]		[0.070]	[0.015]
Interest Spread		-0.0143	-0.0042	-0.0043
		[0.159]	[0.627]	[0.755]
ΔMoney stock				-0.0089
				[0.546]
Global Growth				-0.2358
				[0.411]
Constant	0.1326***	0.0327**	0.1236***	0.1882**
	[0.002]	[0.025]	[0.009]	[0.014]
Observations	56	56	56	56
R-squared	0.141	0.05	0.144	0.183

ΔL panel regression

	1	2	3	4	5	6	7
ΔInteroffice	0.1080***			0.0992***	0.1085***	0.1194***	0.1147***
	[0.000]			[0.000]	[0.000]	[0.000]	[0.000]
VIX		-0.0023***		-0.0023***	-0.0020***	-0.0018***	-0.0019***
		[0.000]		[0.000]	[0.000]	[0.001]	[0.000]
ΔVIX			-0.0281***	0.0074	0.0084	0.0131	0.0145
			[0.005]	[0.437]	[0.397]	[0.130]	[0.105]
ROE					0.1407***	0.1342***	0.1093**
					[0.001]	[0.002]	[0.011]
ROE*VIX					-0.0037***	-0.0037***	-0.0033**
					[0.003]	[0.004]	[0.014]
Interest spread					0.0021	-0.0017	-0.0025
					[0.241]	[0.434]	[0.231]

ΔL panel regression continued

	1	2	3	4	5	6	7
ΔMoney stock						0.1926***	0.2093***
						[0.000]	[0.000]
Global growth						-0.0015	-0.0046**
						[0.493]	[0.033]
Openness						0.0082**	0.0064
						[0.038]	[0.131]
Bank crisis							-0.0396***
							[0.000]
Observations	2,572	2,572	2,572	2,572	2,572	2,572	2,572
R-squared	0.01	0.037	0.003	0.045	0.052	0.065	0.079
Countries	47	47	47	47	47	47	47

ΔC panel regression

	1	2	3	4	5	6	7
ΔInteroffice	0.2728***		0.1739***	0.1495**	0.1520**	0.1389**	0.4773**
	[0.000]		[0.004]	[0.034]	[0.039]	[0.050]	[0.013]
VIX		-0.0058***	-0.0039***	-0.0043**	-0.0050**	-0.0035**	-0.0193**
		[0.000]	[0.001]	[0.014]	[0.016]	[0.027]	[0.049]
ROE				-0.1185	-0.1133	0.0275	-0.0384
				[0.607]	[0.628]	[0.901]	[0.944]
ROE*VIX				0.0042	0.0042	-0.0009	0.004
				[0.621]	[0.631]	[0.916]	[0.867]
Interest Spread				-0.0035	-0.003	-0.006	-0.0334**
				[0.599]	[0.654]	[0.351]	[0.034]
ΔMoney stock					0.0115	0.1643	3.0882**
					[0.931]	[0.198]	[0.041]

(ΔC panel regression continued)

	1	2	3	4	5	6	7
Global growth					-0.0035	-0.0093*	0.016
					[0.443]	[0.086]	[0.218]
Openness					-0.0135	-0.0038	0.0054
					[0.188]	[0.480]	[0.808]
Inflation						0.5235***	0.5533***
						[0.000]	[0.000]
Bank crisis						-0.0906***	
						[0.005]	
Creditor Rights							0.1651***
							[0.002]
Observations	636	636	636	636	636	609	282
R-squared	0.057	0.06	0.076	0.078	0.083	0.254	0.269
Countries	47	47	47	47	47	46	41

Individual Country Effects

Separate panel regressions for each country:

$$\begin{aligned}\Delta L_{c,t} &= \beta_{c,0} + \beta_{c,1}\text{VIX}_{t-1} + \beta_{c,2}\text{VIX}_{t-1} * \text{Country}_c \\ &\quad + \beta_{c,3}\Delta\text{Interoffice}_t + \text{controls}_{c,t} + e_{c,t}\end{aligned}$$

$$\begin{aligned}\Delta L_{c,t} &= \beta_{c,0} + \beta_{c,1}\Delta\text{Interoffice}_t + \beta_{c,2}\Delta\text{Interoffice}_t * \text{Country}_c \\ &\quad + \beta_{c,3}\text{VIX}_{t-1} + \text{controls}_{c,t} + e_{c,t}\end{aligned}$$

Sum $\beta_{c,1} + \beta_{c,2}$ measures the total effect on country c. $\beta_{c,2}$ measures incremental country-specific effect.

			sum=0			sum=0
$\beta_{c,2}$	VIX*Estonia	-0.0034***	Reject	ΔInteroffice*Estonia	0.4104***	Reject
		[0.000]			[0.000]	
$\beta_{c,2}$	VIX*Latvia	-0.0033***	Reject	ΔInteroffice*Latvia	0.4439***	Reject
		[0.000]			[0.000]	
$\beta_{c,2}$	VIX*Lithuania	-0.0025***	Reject	ΔInteroffice*Lithuania	0.2192***	Reject
		[0.000]			[0.000]	
$\beta_{c,2}$	VIX*Romania	-0.0030***	Reject	ΔInteroffice*Romania	0.0205	Reject
		[0.000]			[0.316]	
$\beta_{c,2}$	VIX*Turkey	-0.0013***	Reject	ΔInteroffice*Turkey	-0.0258	Reject
		[0.002]			[0.404]	
$\beta_{c,2}$	VIX*Brazil	-0.0012***	Reject	ΔInteroffice*Brazil	0.0792***	Reject
		[0.000]			[0.003]	
$\beta_{c,2}$	VIX*Chile	0.0022***	Not Reject	ΔInteroffice*Chile	-0.1263***	Not Reject
		[0.000]			[0.000]	
$\beta_{c,2}$	VIX*Spain	0.0013***	Reject	ΔInteroffice*Spain	0.0566**	Reject
		[0.000]			[0.027]	
$\beta_{c,2}$	VIX*Ireland	0.0012***	Reject	ΔInteroffice*Ireland	-0.0028	Reject
		[0.001]			[0.912]	

$\beta_{c,2}$	VIX*UK	-0.0001	Reject	ΔInteroffice*UK	0.0025	Reject
		[0.827]			[0.924]	
$\beta_{c,2}$	VIX*Germany	0.0020***	Not Reject	ΔInteroffice*Germany	-0.0636**	Reject
		[0.000]			[0.015]	
$\beta_{c,2}$	VIX*France	0.0004	Reject	ΔInteroffice*France	-0.0161	Reject
		[0.251]			[0.529]	
$\beta_{c,2}$	VIX*Italy	0.0014***	Reject	ΔInteroffice*Italy	-0.0085	Reject
		[0.000]			[0.739]	
$\beta_{c,2}$	VIX*Australia	0.0010***	Reject	ΔInteroffice*Australia	-0.0516**	Reject
		[0.001]			[0.019]	
	Constant	Y			Y	
	Controls	Y			Y	
	Observations	2572			2572	
	Number of countries	47			47	