March 2013
IMF Country Report No. 13/71

European Union: Publication of Financial Sector Assessment Program Documentation—Technical Note on Financial Integration and Fragmentation in the European Union

This financial sector stability assessment on the European Union was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on February 22, 2013. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the members of the European Union or the Executive Board of the IMF.

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International Monetary Fund
Washington, D.C.

FINANCIAL SECTOR ASSESSMENT PROGRAM

EUROPEAN UNION

FINANCIAL INTEGRATION AND FRAGMENTATION IN THE EUROPEAN UNION

TECHNICAL NOTE

MARCH 2013

INTERNATIONAL MONETARY FUND
MONETARY AND CAPITAL MARKETS DEPARTMENT

Contents Page

GLOSSARY

CDS	Credit Default Swap
CRD	Capital Requirements Directive
EA	Euro Area
ECB	European Central Bank
ESRB	European Systemic Risk Board
EU	European Union
GFSR	Global Financial Stability Report
LTRO	Long Term Refinancing Operation
MMF	Money Market Fund
MFI	Monetary Financial Institution
OMT	Outright Monetary Transactions
GIIPS	Greece, Ireland, Italy, Portugal, and Spain
TBTF	Too Big To Fail

EXECUTIVE SUMMARY

During the past decades, financial markets in the EU integrated at a rapid pace. The integration of financial systems was facilitated by far-reaching political measures by the EU to reduce regulatory obstacles to cross-border activity, promoting a single market in financial services, including by the creation of the euro. Large banks and insurance companies from advanced Europe established strong local presence in the newly opened markets of emerging Europe. In Western Europe, the creation of the euro and expectations of convergence resulted in a surge in capital inflows from Western to emerging Europe. The process of financial market integration was strong (as also evidenced by the convergence of interest rates) but uneven across countries and markets and macro-financial (notably sovereign) risks were mispriced. Integration in the euro area (EA) went farther in wholesale funding markets and bond markets while retail lending markets remained mostly national. Large EU banks continued their strong expansion abroad and broadened the scope of their activities, becoming larger, more systemic and complex to resolve.

The integration of financial markets came to a halt in 2008 following the failure of Lehman Brothers. Fragmentation forces first affected emerging European countries as some banks from advanced EU countries weakened by losses on legacy assets and facing funding pressures aimed at curtailing liquidity lines to subsidiaries. The Vienna initiative achieved coordination and helped stabilize the foreign capital invested in some countries in emerging Europe, though it did not resolve underlying problems, while the creation of the ESAs and the ESRB improved policy coordination. Growing concerns about sovereign risk in the EA and the lack of adequate buffers reignited deleveraging forces, while high dependence of EA banks on wholesale funding made them highly vulnerable to funding shocks originating from money markets funds and other creditors.

Uncoordinated actions resulted in a simultaneous reduction of cross-border exposures, in particular within the EA, thereby contributing to fragment the financial system and disrupt the transmission channels of monetary policy. The collapse of cross-border exposures was particularly severe in the wholesale funding market and sovereign bond markets, and amplified adverse sovereign-bank links in the periphery of the EA.

Substantial policy measures have been taken since the start of the crisis to stabilize financial systems and resolve the crisis and important steps toward the creation of a Banking Union for EA countries have been taken to provide a common safety net and safeguard the single market. The EU also continued its regulatory effort to harmonize rules and remove barriers to cross-border financial transactions. The crisis and fragmentation of financial systems of the EU, however, and the deleterious effects on stability of the contamination of risk between banks and sovereign have raised important questions about the future of the EU financial structure. Restoring the solvability of banks is a necessity, but it must be achieved in a way that will preserve the single market for financial services and

restore financial integration. Furthermore, while some degree of macroprudential flexibility at the national level is desirable to ensure early identification of national risks, it is essential to create a more integrated approach to systemic risk identification and macroprudential policy actions at the European level through the ESRB and the ECB to prevent uncoordinated actions that may further damage the single market for financial services.

I. EU FINANCIAL INTEGRATION IN PERSPECTIVE[1]

A. The Pre-Crisis Period

1. **Financial integration in the EU increased markedly since the inception of the euro, supported by the single passport and common market.** From the inception of the euro to the start of the financial crisis in 2008, the integration of EU banking systems progressed at a fast pace, as reflected in the rapid growth of foreign exposures of EU banks to residents from other EU countries. Between the start of 2000 and the first quarter of 2008, total intra-EU foreign exposures to non-residents grew by €5.5 trillion (about 215 percent).[2] About 40 percent of this deepening of financial integration was accounted for by the combined increased foreign exposures to the EA periphery from the "core" of the EA and the U.K. (by about €1.6 trillion), as well as to emerging EU countries from advanced EU countries (by about €540 billion).[3]

2. **These capital flows from the "core" EA and the U.K. to the periphery of the EA and to emerging EU countries helped sustain large external imbalances.[4]** In the EA, current account balances of Greece, Ireland, Italy, and Spain worsened significantly during the first decade of European Monetary Union, while Portugal's deficit remained at the very high levels it had reached early in the decade. As a result of the increasing recourse to external financing, net external liabilities of these countries rose sharply, reaching levels close to or above 100 percent of GDP by the end of 2010 in Greece, Ireland, Portugal, and Spain.[5] During this period, Germany and a number of other countries in Northern Europe progressively built large current account surpluses, with the current account for the EA as a whole remaining in broad balance throughout the period. Meanwhile, emerging European countries also experienced sharp deteriorations of their net foreign asset positions.

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[1] Prepared by Luc Laeven (RES) and Thierry Tressel (EUR). Research assistance from Lindsay Mollineaux is greatly acknowledged.

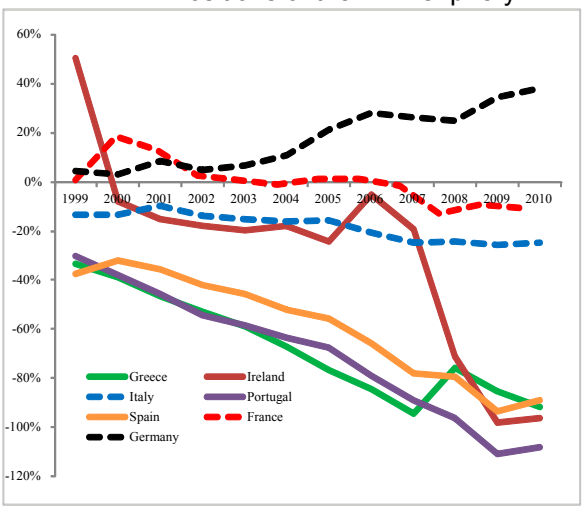
[2] Valuation effects arising from exchange rate movements are corrected for under the assumption that all claims are in euros.

[3] The EA periphery includes Greece, Ireland, Italy, Spain and Portugal. Emerging EU countries include Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia.

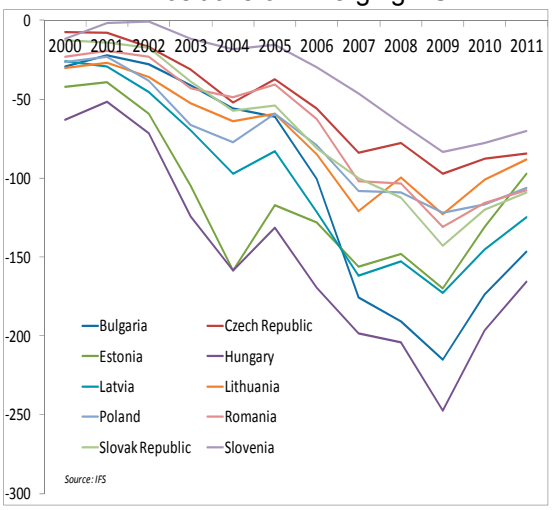
[4] See for example Chen, R., G.M. Milesi-Ferretti and T. Tressel, 2012, "External Imbalances in the Euro Area," IMF Working Paper 12/236, Forthcoming in Economic Policy.

[5] Italy's NFA deteriorated moderately in percent of GDP, but was among the five largest in absolute terms at the onset of the crisis.

NFA Positions of the EA Periphery

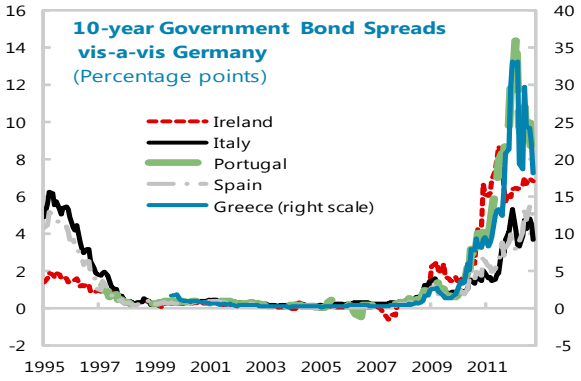


NFA Positions of Emerging EU



Source: IFS data

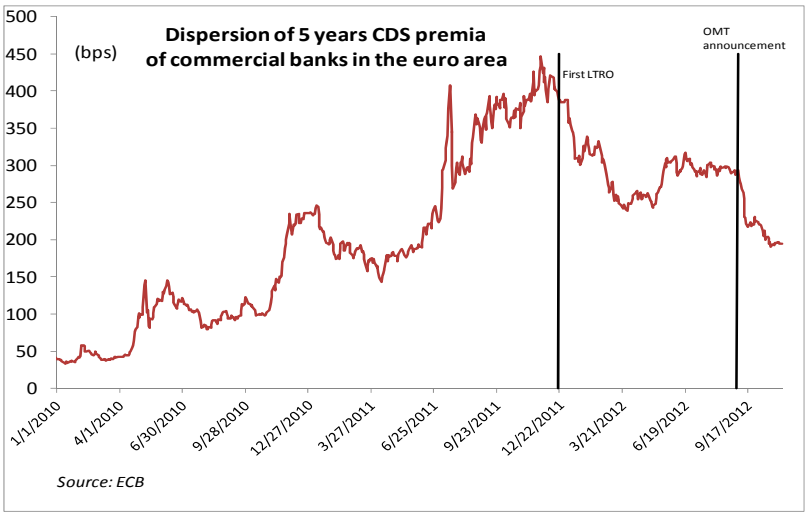
3. **Financial integration was accompanied by a strong reduction of spreads across EU countries:**



Sources: Bloomberg L.P.; and IMF staff calculations.

- *Sovereign bond markets.* The compression of sovereign bond yields in the EA reached a maximum at the onset of the 2008 financial crisis, when the spreads between German bunds and bond yields of Greece reached 20bps only.

- *Interbank markets.* There was also a strong convergence of funding costs in wholesale funding markets in the EA. From the inception of the euro to 2007, the dispersion of rates on unsecured and secured (repo) lending to banks also collapsed. By 2007, the standard deviation of repo rates or unsecured rates (at one month maturity) had fallen to between 0.5 and 0.7. Furthermore, until the start of the crisis, there was little differentiation of bank CDS spreads across countries.



- *Retail markets.* The convergence of funding costs for banks and sovereigns spilled over to retail local markets across member states: (i) *deposit rates* strongly converged across the EA; and (ii) *loan rates* also converged significantly across member states.

4. **Yet, integration was uneven across markets and geographies, with remaining fragmentation notably in several domestic banking markets.** Integration went farther in markets such as interbank markets and sovereign bond markets, and was more limited in retail deposit and loan markets, or equity markets:

- Evidence from EA banks geographical allocation of assets shows that the degree of cross-border integration varied across markets (Appendix 1):

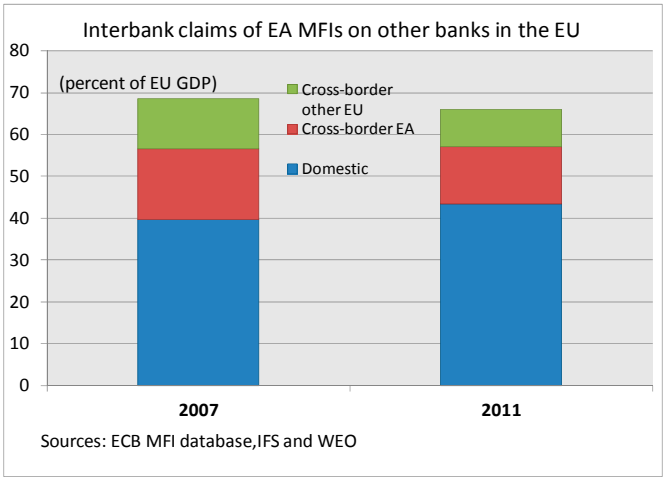
  (i) *Interbank markets.* Interbank markets were significantly integrated across border according to the ECB's MFI statistics. On the eve of the crisis, almost 40 percent of EA banks' interbank claims were vis-à-vis non-domestic banks in the EU.

  (ii) *Bond markets.* Bond markets were the most integrated, with cross-border holdings accounting for 54 percent of total holdings of EU bonds by EA banks at the end of 2007.

  (iii) *Loan markets.* Cross-border integration of loan markets remained limited. According to the ECB MFI data, cross-border loans were only a very small fraction of total loans to non-banks. At the end of 2007, about 85 percent of loans supplied by EA domestic credit institutions were to domestic residents, 12 percent to residents of other EA countries, and 3 percent to residents of other EU countries.

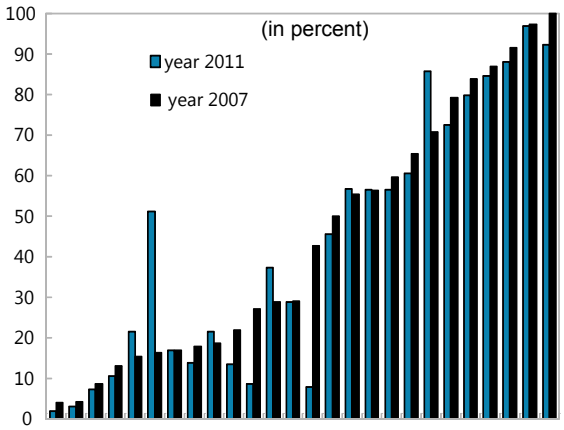
(iv) *Equity markets.* EA banks had to some extent, contributed to the integration of equity markets across the EU. At end 2007, about 25 percent of equity holdings of EA banks were in other EU countries.

- *Intra-EU interbank markets are very large.* Evidence suggests that interbank markets are very large in the EU. Before the start of the crisis, claims of EA banks on other banks in the EU amounted to about 70 percent of EU GDP, among which about 30 percent of EU GDP were cross-border claims. At the end of 2011, the interbank market remained large, in spite of a substantial contraction, and the same ratios were respectively 66 and 22 percent of EU GDP.



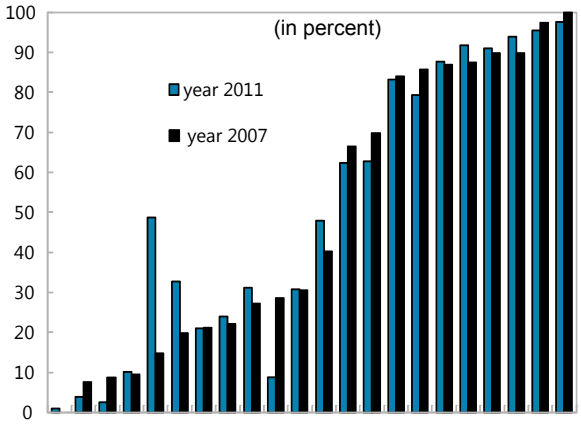
- *EU foreign banks dominate Emerging Europe's retail banking markets, but have a more limited presence in EA countries.* Foreign owned banks account for a very significant share of domestic deposits and loans in emerging EU countries, and have remarkably remained stable since the start of the crisis in 2008, partly owing to the Vienna initiative. Deposits held in foreign-owned banks range from 45 percent in Latvia to about 90 percent in Estonia, and are typically much smaller in more mature EU countries, suggesting a much more limited integration of retail markets in these countries. Note for example that only about 10 percent of U.K. deposits are held within foreign-banks, in spite of a much larger share of foreign-banks in total bank assets booked in the U.K. Data on loan shares provides a similar picture, suggesting a much higher local retail presence of foreign banks in emerging European countries than in more mature EU countries.

Share of Deposits in Foreign-Owned Banks



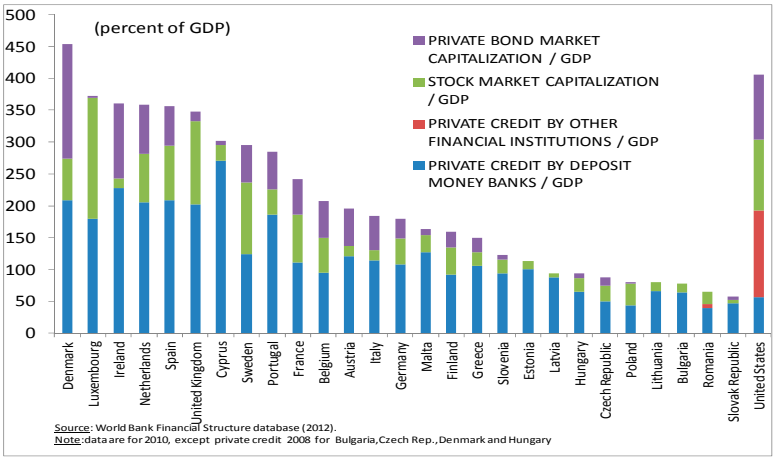
Source: ECB Consolidated EU Banking Statistics.

Share of Loans Booked by Foreign-Owned Banks



Source: ECB Consolidated EU Banking statistics.

- *The dichotomy of foreign bank presence between Emerging Europe and EA countries may be related to "overbanking" in more advanced EU countries. Domestic retail banking is typically large in percent of GDP in more advanced EU countries, and remains instead more limited in Emerging Europe.* While the penetration by foreign banks in Emerging Europe was also a consequence of the banking crises that took place during the transition of the 1990s, differences of profitability and of "saturation" of domestic retail markets may also be a possible explanation for the limited retail presence of foreign banks in most advanced EU countries.



B. EU Banking Structures

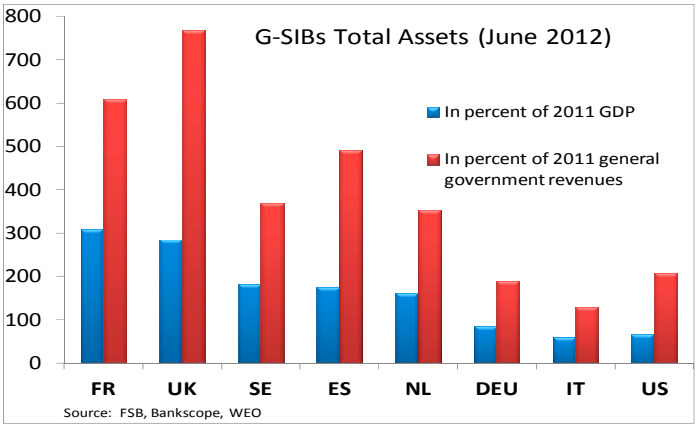
5. **The financial integration took place in a context of a "bank-based" financial system.** The EU financial systems are mostly bank-based, as stock and bond markets provide a relatively modest share of the financing to the private sector in most countries. Total bank assets account for 283 percent of GDP in the EU, compared to about 65 percent of GDP in the U.S.

Distribution of Banking Assets
by bank size

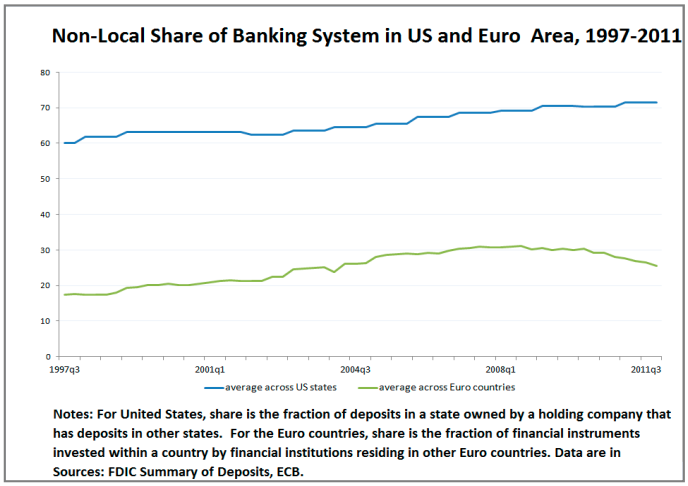
	EUR bil.	*% EU GDP*
Large	26,780	*211*
Medium	8,040	*63*
Small	1,082	*9*
Total	35,902	*283*

Source: ECB (2011), WEO

6. **The process of financial integration was to a significant extent the outcome of the cross-border expansion of large EU banks.** The main EU banking systems are dominated by a set of globally systemically important banks (G-SIBs). These European G-SIBs have grown in size and importance and are highly interconnected with the rest of the global financial system (see Annex 1). Their assets more than tripled since 2000, amounting to US $27 trillion in 2010. As key players in global derivatives and cross-border interbank markets (see below section on funding), they are also among the most interconnected G-SIBs. European G-SIBs tend to be larger and more leveraged than their peers.[6] In particular, they are very large relative to home country GDP, and in many EU countries, their size may dwarf the capacity of the home government to raise revenues.



7. **Despite an increase in banking integration since inception of the euro, banking integration in the EA still lags that in the U.S. where banking integration increased rapidly following interstate deregulation in the1980s.** While cross-border banking activity has grown rapidly in the EA, the integration of local banking markets remains low on average. Indeed, the non-local share of the banking system in the U.S. (as measured by the share of the banking system held by banks from other U.S. states) is a multiple of the non-local share of the banking system in the EA (as measured by the share of the banking system held by banks from much other EA countries). The non-local shares are computed using information from the Federal Reserve on out-of-state deposits[7]



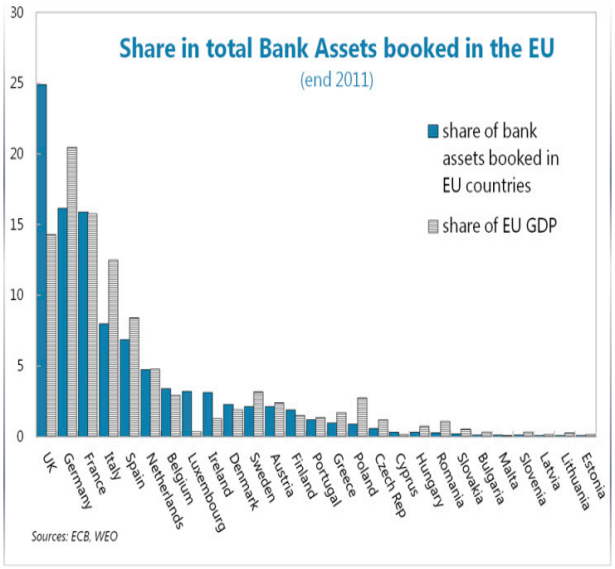
[6] In part this is because European banks tend to follow the universal banking model, which combines a range of retail, corporate, and investment banking activities under one roof. There are some accounting differences that would make the balance sheets of the IFRS-reporting banks appear more "inflated" than the balance sheets of banks reporting under the U.S. GAAP (e.g., netting of derivative and other trading items is only rarely possible under IFRS, but netting is applied whenever counterparty netting agreements are in place under U.S. GAAP).

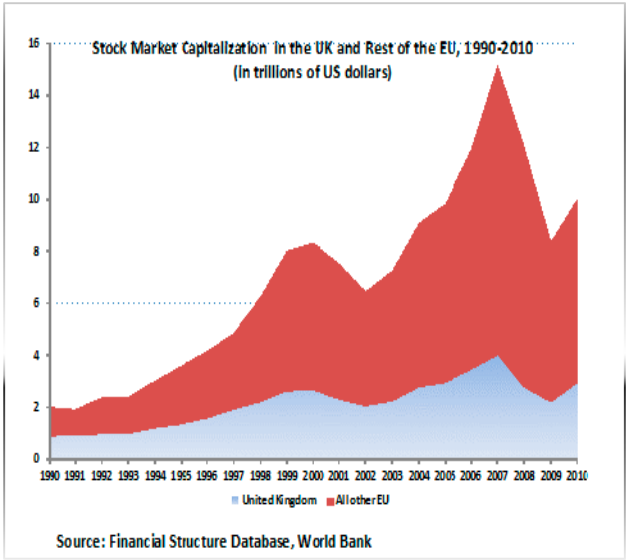
[7] Using deposits has the advantage that it is better proxy than assets for residency based activity of banks, as banks can book assets out of state where loans are made. This is less the case for deposits that remain mostly a local affaire.

held by U.S. bank holding companies, and data from the ECB on financial assets held by financial institutions residing in other EA countries.[8]

C. Financial Centers

8. **Financial markets in the EU are concentrated, with financial centers in London and elsewhere playing an important role.** U.K. based banks account for a disproportionate share of EU banking assets (about a quarter of the total) and the London-based capital markets and financial institutions account for a substantial share of global finance, including equity issuance, syndicated loan markets, foreign exchange trading, Eurobonds issuance, among others. Indeed, the U.K. financial system plays a central role not only within the EU financial system, but also globally, linking many EU financial systems to the rest of the world. In addition, the asset management industry in the EU is spread over a number of financial centers, with after London also Amsterdam, Dublin, Frankfurt, Luxembourg, and Paris playing significant roles (in addition to offshore centers).[9] The emergence and growth of these financial centers rests not exclusively on the importance of comparative advantage and economic clusters but is also due to tax considerations and differences in regulatory requirements.





[8] For the comparison with the U.S., as well as for any time that conclusions are drawn on the basis of the ECB cross-border data, a caveat is in order given the way that the data are reported for the EU. Specifically, such data are reported by residency rather than by nationality of the ultimate owner, and therefore miss any dynamics related to the resident subsidiaries of foreign banks. These resident subsidiaries may not have cut back as much on local loans as the direct cross-border loan numbers would suggest, and there are a few examples of core EU banks acquiring these foreign banks since the crisis, even as the BIS claims show a decrease in foreign claims in the aggregate.

[9] For a description of small EU off-shore centers, see also Milesi-Ferretti and Lane, 2010, "Cross-border Investment in Small International Financial Centers," IMF Working Paper 10/38.

Even prior to the crisis, there was a discussion on the role of financial centers in the context of a single market, and whether the concentrated nature of financial markets in the EU posed concerns for competition. Mergers and acquisitions have been closely watched under EU rules to ensure that consumer welfare does not suffer from industry consolidation and some efforts have been made to harmonize taxes and regulatory requirements across jurisdictions, although more progress toward harmonization would benefit the single market for financial services. From a competition perspective, there is also growing concern that financial restructuring in light of current banking problems will result in further industry consolidation.

D. Smoothing of Economic Cycles

9. **In theory, banking integration could cause higher or lower economic volatility, depending on the prevalence of national versus regional shocks and the degree of product and labor market integration.** A large literature has investigated the link between integration of banking markets and the amplitude of business cycles. In a seminal paper, Morgan, Rime, and Strahan (1994) analyze how integration of banks through ownership links and physical presence across U.S. states has affected economic volatility within U.S. states.[10] They find that annual fluctuation in state-level economic growth falls and converges as banks become more integrated (through ownership links) with banks in other states, suggesting that banking integration across U.S. states has made state business cycles smaller and more alike. However, recent work by Kalemli-Ozcan, Papaioannou, and Peydro (2012) finds a strong negative effect of banking integration on the synchronization of economic cycles for a broader set of advanced economies, including in the EU.[11] This difference arises in large part from measuring banking integration using time-varying, country-pair data on bilateral banking flows from the BIS International Locational Banking Statistics. In this section, we combine the insights and approaches in these two papers by analyzing the impact of banking integration on economic fluctuations using time-varying, country-pair data on both bank ownership links and cross-border banking flows.

10. **Regression analysis shows that banking integration within the EA has led to reduced fluctuations in output growth since at least 1999, although the effect is uneven across countries and substantially weakened during the recent crisis period (see text table).** This suggests that the amplitude of economy cycles across the EA was reduced after euro adoption, in part due to increased financial integration, thus benefiting the real economy. However, this effect comes primarily from integration through foreign bank presence (inward banking integration), not from cross-border banking flows, even though the latter grew much more rapidly during the run-up to the recent crisis. At the same time,

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[10] Morgan, Donald P., Bertrand Rime and Philip E. Strahan, 2004, "Bank Integration and State Business Cycles," Quarterly Journal of Economics 119 (4): 1555-1584.

[11] Kalemli-Ozcan, Sebnem, Elias Papaioannou, and Jose-Luis Peydro, 2012, "Financial Regulation, Globalization and Synchronization of Economic Activity," Forthcoming in Journal of Finance.

outward banking integration (i.e., banking assets held in other states) appears to have increased economic fluctuations at home, suggesting that economies with international banks are vulnerable to shocks from abroad. Additionally, the positive effect of banking integration operates primarily through output, not income growth. Importantly, these benefits from financial integration obtain even though the effect is substantially weakened (or even reversed) during the recent crisis period. Overall, the results are rather weak, suggesting that the benefits of financial integration in term of smoothing of economic cycles have not accrued to all economies.

Economic Fluctuations and Local and Cross-Border Banking Integration in EA Countries

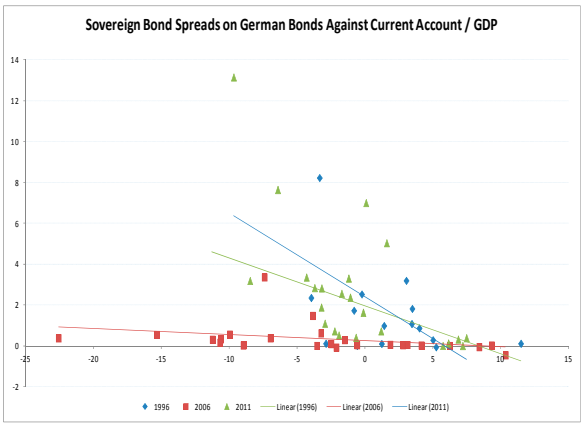
VARIABLES	Fluctuations in real GDP growth			
	(1) Local banking integration		(2) Cross-border banking integration	
	(A) 1999q1 - 2012q1	(B) 1999q1 - 2007q4	(A) 1999q1 - 2012q1	(B) 1999q1 - 2007q4
IAR	-2.276	-12.79***		
	(3.882)	(4.867)		
OSAR	1.850**	3.406***		
	(0.886)	(0.950)		
Total BIS claims / GDP			-0.0398	-0.717
			(0.303)	(0.753)
Country FE	x	x	x	x
Time FE	x	x	x	x
Observations	612	419	317	130
Adjusted R-squared	0.393	0.424	0.399	0.400

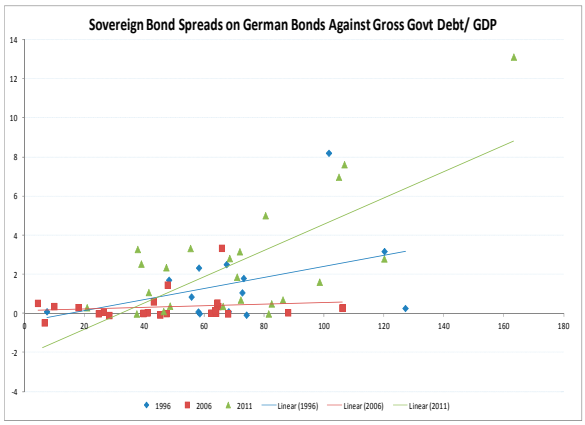
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1, clustered by country

Countries included in regression: Austria, Belgium, Germany, Spain, Finland, France, Greece, Ireland, Italy, Netherlands, and Portugal

Notes: Dependent variable is the residual of ln(GDP,t/GDP,t-1) when regressed on country and time FE. IAR denotes Interstate asset ratio, computed as banking assets in country i held by MFIs from all other Euro countries divided by total banking assets in country i held by domestic and all other Euro countries. OSAR denotes Other states asset ratio (OSAR), computed as banking assets held by MFIs from country i in countries other than country i (including outside euro area) divided by banking assets held by MFIs from country i in country i. IAR and OSAR variables are constructed using quarterly cross-border banking data from the ECB. Cross-border claims are from BIS on a quarterly, bilateral basis. Total BIS claims denote the sum of claims by home country banks on other countries and claims by foreign banks on the home country. Exchange rate for construction of BIS Claims/GDP variable is from the ECB, using last daily exchange rate of the quarter. Population is at the country level. Regressions include a constant term and control for the labor shares of major industries, as in Morgan, Rime, and Strahan (1994) (coefficients not reported). Sector data is from Eurostat. 1998-2012, quarterly. GDP denotes real GDP. Nominal GDP data are from the ECB and chain-linked.

11. **But it has also contributed to a mispricing of risks.** Although sovereign bond spreads prior to euro adoption were strongly correlated with indicators of macroeconomic vulnerability such as current account and government debt ratios, during the run-up to the crisis, sovereign risks within the EA were seriously mispriced; there was virtually no correlation between sovereign spreads of individual member states (relative to Germany) and their current account or government debt ratios. Since the sovereign debt crisis in the euro zone, such macro factors have again become priced.





These patterns are confirmed in regression analysis of sovereign CDS spreads (relative to Germany) for EU member states (see text table). These regressions related sovereign CDS spreads to measures of government indebtedness while controlling for other measures of macro-economic vulnerability, including current account deficits, household debt, and house prices. While government indebtedness (as measured by the ratio of gross government debt to GDP) has been strongly reflected in CDS spreads since the start of the crisis in 2008, this was not the case during the run-up to the crisis.

Sovereign spreads and indicators of macroeconomic vulnerability, 2004-2011

Dependent variable is average of sovereign CDS spread relative to German CDS during year	(1) Full Period: 2004-2011	(2) Pre Crisis: 2004-2007	(3) Crisis Period: 2008-2011
Gross Debt of Government / GDP	8.626*	0.0714	11.80*
	(1.958)	(0.275)	(1.983)
Current Account / GDP	19.99	-2.065***	17.66
	(1.529)	(-4.437)	(1.068)
Gross Debt-to-Income Ratio of Households	-0.623	-0.274***	-2.687
	(-0.416)	(-4.271)	(-0.386)
Housing Price Index	4.634	-0.223*	6.503
	(1.026)	(-1.911)	(1.059)
Year FE	x	x	x
Country FE	x	x	x
Observations	81	36	45
Adjusted R-squared	0.603	0.682	0.594

Notes: Countries included in regression: Austria, Belgium, Estonia, Finland, France, Ireland, Italy, Netherlands, Portugal, Slovakia, Slovenia, Spain. All regressions include a constant term (not reported). Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Sources: Bloomberg LP, IMF IFS, Eurostat.

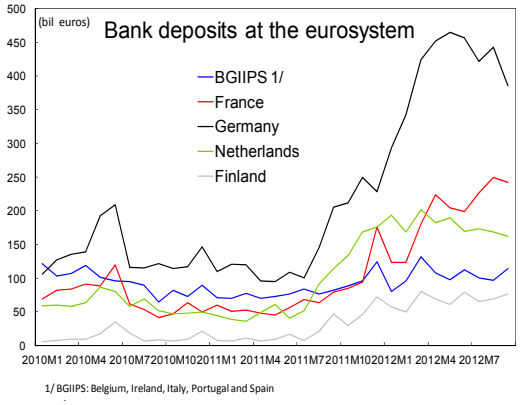
II. Adverse Effects of Financial Fragmentation During the Crisis

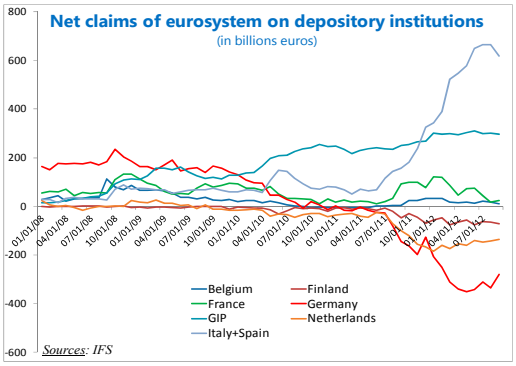
A. Fragmentation and Deleveraging

12. **Integration came to a halt during the financial crisis, raising concerns of de-integration of the EA financial system:**

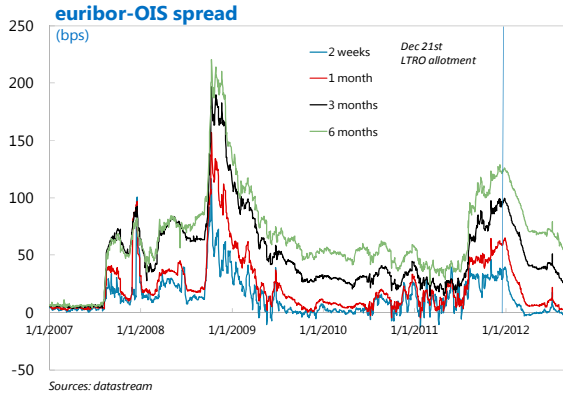
- *Sharp reversals of capital flows in the periphery of the EA.* The euro-system and official creditors stepped-in to cushion the shock of the capital flow reversal. In particular, net reliance on ECB funding has segmented along national lines, and the euro-system has intermediated funds from surplus countries' banks to banks in the

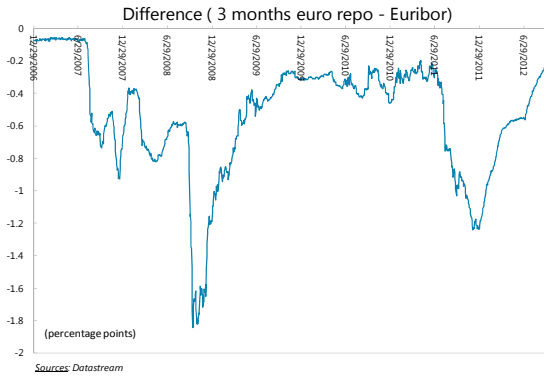
periphery of the EA, resulted in an indirect mutualization of liabilities through the so-called "Target 2 imbalances."



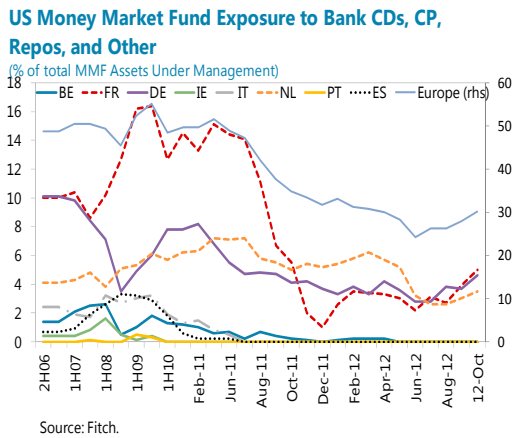


- *Sharp increase in counterparty risks in EA funding markets, on the back of sovereign risk concerns.* Sudden changes in the availability of wholesale funding in secured and unsecured markets in the second half of 2011 amplified the crisis that spread to the core of the EA financial system.

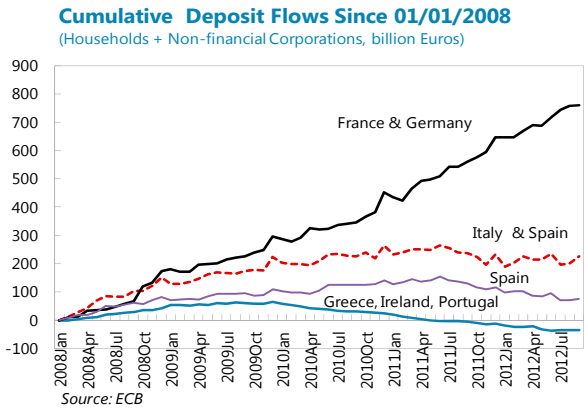




- *EA banks experienced severe funding pressures starting mid-2011, on the back of concerns about sovereign risks.* Part of the funding shock originated from U.S. money market funds (MMFs), which sharply reduced their exposures to French and other EA banks. Between June 2011 and December 2011, the 10 largest U.S. MMFs reduced their exposures to French banks by about US$ 100 billion.



- *Significant divergence of retail deposit markets also occurred.* Retail deposit markets have exhibited divergent trends in the core and in the periphery since 2010 (for Greece, where deposit flight has been substantial) or mid-2011 (for Spain, where some corporate have shifted deposits).[12] However, in recent months, the deposit base seems to have stabilized in the periphery, including in program countries, perhaps a consequence of the OMT announcement.



13. **Evidence from MFI data confirms that the deleveraging by EA banks was a key driver of the sharp fragmentation of the EU financial system.** Since the onset of the crisis in 2008, EA banks as a whole have sharply reduced their cross-border exposures within the EA and from other EU countries, while broadly preserving or increasing their domestic exposures. In other words, a very strong process of re-nationalization of EA banking systems has taken place during the past years. In absolute terms, intra-EA cross border positions of EA banks have fallen by about €1.5 trillion, while their cross-border exposures to other EU countries have, on aggregate fallen by €370 billion. During the same period, the domestic positions of EA banks (excluding claims on the eurosystem) have increased by about €1.2 trillion.

14. **Specifically, the following fragmentation took place in various financial markets as a result of EA banks deleveraging:**

- *Interbank markets.* Cross-border claims of EA banks on MFIs located in other EA countries and in other EU countries have collapsed by respectively €670 billion and €285 billion, or 42 percent and 23 percent, since the onset of the crisis in September 2008. In the meantime, domestic claims on other banks have fallen by €206 billion (or 3 percent).

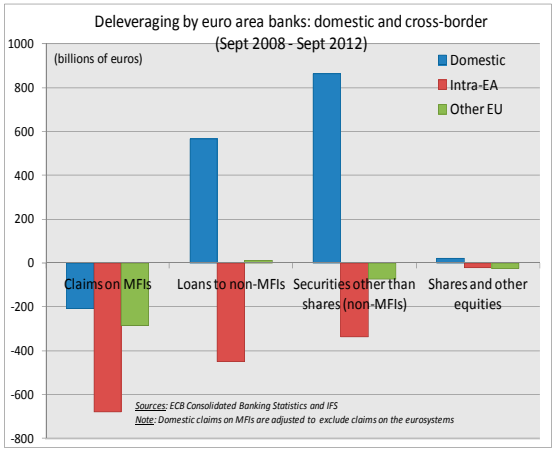
- *Loans to the private sector.* Evidence of domestic bias has also been very strong for loans to the non-bank private sector. Considering all EA banks as a whole, loans to the domestic non-bank private sector have increased by €570 billion (or 5 percent)

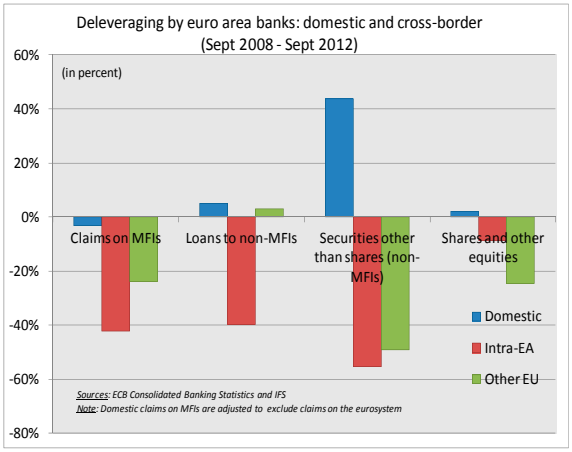
[12] Part of the drop in deposits was driven by temporary shift from bank deposits to commercial paper ("pagares").

but cross-border loans have fallen by €450 billion (or 40 percent) vis-à-vis other EA (and have been broadly stable vis-à-vis other EU countries).[13]

- *Securities other than shares.* Home bias in bond markets has, perhaps, been the strongest. Indeed, domestic exposures of EA banks have strongly increased by €860 billion (or 43 percent) since the 2008 crisis, while cross-border exposures vis-à-vis other EA countries have fallen by 55 percent (about €340 billion), and by 50 percent (about €70 billion) vis-à-vis other EU countries.

- *Shares.* Cross-border equity markets have been the most stable since the start of the crisis, but have also been subject to home bias. While domestic exposures have slightly increased (by 2 percent); cross-border exposures vis-à-vis EA countries and other EU countries have fallen by respectively 8 percent and 23 percent since September 2008.





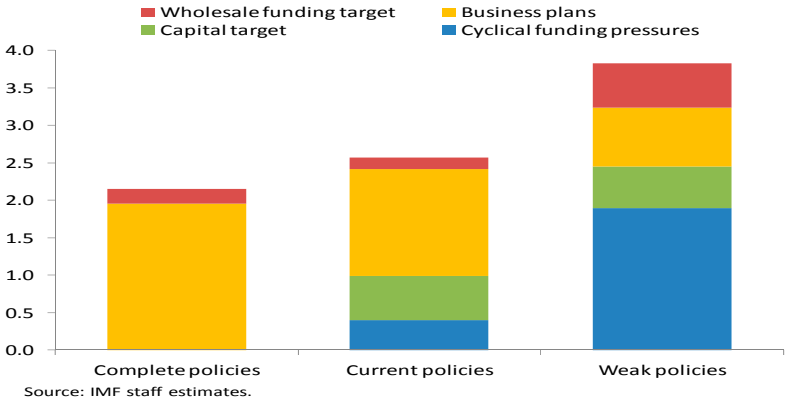
15. **The financial fragmentation process and the associated decline in cross-border lending are a consequence of several factors, including a broader deleveraging process triggered by the global financial crisis, increased fragmentation within the EA as a result of a repricing of risks, capital and funding shortages, and structural developments, including the new Basel III rules at banks.** Bank deleveraging can be explained by combinations of both structural and cyclical forces (.[14] Structural forces include the need to adjust banks' business models to the new regulatory and economic environment (and often reflected in business plans announced by banks) the need to further strengthen capitalization, and the necessity to reduce reliance on less stable (short-term, wholesale) sources of funding. But bank deleveraging has also been the outcome of cyclical factors such as financial conditions in sovereign and bank funding markets (where the ECB LTRO

[13] The reported figures are changes in position, hence include asset write-downs.

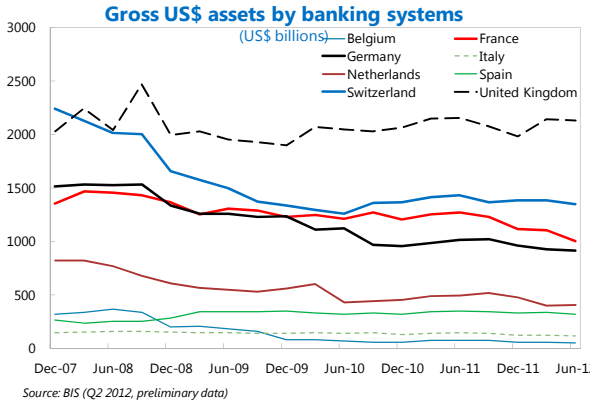
[14] IMF Global Financial Stability Report: "Restoring Confidence and Progressing on Reforms" (October 2012), "The Quest for Lasting Stability (Spring 2012).

liquidity provision helped cushion the funding shocks, and the OMT stabilized sovereign debt markets, with positive knock-down effects on bank access to wholesale markets), the state of the economy, which affects banks' retained earnings, and forces of financial fragmentation and financial repression in the EA. Moreover, the stronger reduction recorded in cross-border claims on distressed economies in the EA periphery illustrates the increasing fragmentation between those euro area economies that are distressed and those that are not. Interbank lending from banks resident in countries less affected by the sovereign debt crisis to banks in the distressed countries has fallen substantially.[15]

Factors Contributing to Deleveraging (IMF's GFSR Spring 2012)



16. **EU banks also withdrew from overseas markets and US dollar activities.** Many European cross-border banks have significant overseas activities funded in US dollars. A significant part of this funding has remained short-term, contributing in creating structural funding gaps (e.g., gap between long-term assets and long-term funding in US dollars) in balance sheets, including among EA banks. These funding gaps remained significant at the end of Q2 of 2012, in spite of heavy reductions in US dollar assets of French and German banks.[16]



[15] Special Feature in the December 2012 ECB Financial Stability Review

[16] Estimates from BIS data suggest that French and German banks have reduced their gross US$ assets by respectively US$270 billion and US$ 100 billion between Q2 of 2011 and Q2 of 2012.

B. Determinants of Cross-Border Leveraging and Deleveraging

17. **To assess the determinants of the cross-border leveraging and deleveraging in the EU, a panel regression analysis of the evolution of foreign claims of international banks is performed.** We estimate standard panel regressions to explain the determinants of the quarterly percent changes in bilateral bank exposures between EU home and host countries (where host countries include EA countries, excluding Luxembourg, and other EU countries) and all BIS reporting countries are included as home countries.

$$y_{ijt} = \alpha + \beta \cdot \frac{FC_{ijt-1}}{GDP_{jt-1}} + \delta \cdot \frac{FC_{.jt-1}}{GDP_{jt-1}} + \varphi \cdot DXrate_{jt} + \phi \cdot X_{jt-1} + f_i + g_j + \varepsilon_{ijt}$$

where FC_{ijt} is the total foreign claims of reporting banks of country i on country j, $FC_{.jt}$ is the total claims of BIS reporting countries on country j, $y_{ijt} = \frac{\left(FC_{ijt} - FC_{ijt-1}\right)}{GDP_{jt-1}}$ is the change in bilateral foreign claims, scaled by GDP of the previous period, $DXrate_{jt}$ is the percent change in the US dollar exchange rate during the period, and X_{jt} is a set of additional control variables. Regressions contain home country (f_i) and host country (g_j) fixed effects to account for unobservable time invariant factors. The sample period covers 2005Q1 to 2012Q2. We also consider three sub-periods: the pre-crisis period (2005Q1 to 2008Q3); the period following the Lehman collapse and global repercussion (2008Q4 to 2009Q4); and the EA crisis period (2010Q1 to 2012Q2). We rely on various data sources: quarterly BIS consolidated banking statistics (ultimate risk basis); World Economic Outlook and BOP-IIP quarterly data of the IMF; ECB banking system structure data; and Bloomberg.[17]

18. **Explanatory variables aim to capture various potential determinants of foreign bank activities.** The exposure to country j of banks from country j captures whether there is momentum in the bilateral capital flows of country i's banks to country j: a positive coefficient would imply that banks with a larger initial exposure are increasing their exposure at a faster pace than other banks, and therefore that there is a tendency in increasing concentrations of bilateral exposures. A negative coefficient would instead imply either that there is a correction mechanism stabilizing bilateral exposures at some level (if flows are positive) or that banks with a greater initial exposure are withdrawing faster than others (if flows are negative. Total claims of BIS reporting banks on country j is a measure of gross external liabilities to banks, and therefore a measure of external vulnerability to capital

[17] The sample includes the following countries. BIS reporting countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, Portugal, Sweden, and the U.K. Host countries: Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Portugal, Romania, Slovak Rep., Slovenia, Spain, Sweden, and the U.K.

outflows. Additional control variables include (i) the share of country j in country's i banks' foreign assets (as an indicator of portfolio composition); (ii) the net IIP position in percent of GDP, as an indicator of potential external imbalances; (iii) gross external liabilities of the government in percent of GDP; and (iv) gross external liabilities of resident banks in percent of GDP. We also include quarterly indicators of macroeconomic performance, such as annual real GDP growth and inflation rate.

19. **Regression analysis of the evolution of foreign claims of international banks, summarized in Table 1, offers the following insights:**

- *Before the start of the financial crisis:* bilateral bank exposures to EU countries showed sign of momentum and increasing concentration of bilateral exposures as banks with greater initial exposures tended to increase exposures at a faster pace than other banks. Bilateral exposures were however growing at a slower pace in countries that had largest gross liabilities to foreign banks, a finding consistent with the hypothesis that bank capital flows took into account potential gross external vulnerabilities. However, bilateral bank exposures were growing *faster* in countries with the largest *net* IIP liabilities. This finding implies that a key indicator of external imbalances was not only ignored by bank bilateral capital inflows; instead it had the opposite effect on these flows than what prudent behavior would have implied as bilateral bank inflows where stronger in countries with larger net foreign liabilities, suggesting a mispricing of risks. There was no indication of significant portfolio reallocation among foreign exposures of EU banks.

- *The failure of Lehman Brothers and its aftermath.* There was a reversal of bilateral bank exposures in the EU. Bilateral bank capital flows declined faster where bilateral exposures where the largest. Hence, the observed correction in bilateral flows was consistent with prudent behavior. However, other factors did not seem to influence bank capital flows significantly, in particular there was no indication of a stronger reversal in countries with the largest net foreign liabilities.

- *EA crisis.* During the period 2010-2012Q2, the reversal of bilateral exposures responded to the previous quarter's bilateral exposure in a stronger way than during the period 2008Q3-2009Q4. There is, however, evidence that portfolio allocation mattered. In particular, the reversal of bank capital flows was weaker in host countries where EU banks had a larger share of their foreign activities. Moreover, bilateral bank capital flows were correlated with net foreign asset positions, consistent with the hypothesis of a correction mechanism as banks withdrew more from countries with initially larger external imbalances.

Table 1. EU: Determinants of Leveraging and Deleveraging

	(1)	(2)	(3)	(4)	(5)	(6)
	pre-crisis		Lehman		EA crisis	
FC(ij)/GDP(j), t-1	0.0449***	0.0457***	-0.0247*	-0.0165	-0.0333***	-0.0232***
	0.000	0.000	(0.069)	(0.300)	0.000	(0.004)
FC(j)/GDP(j), t-1	-0.0214***	-0.0019**	-0.0472***	-0.0011	-0.0126***	-0.0004
	0.000	(0.014)	(0.001)	(0.520)	(0.002)	(0.444)
FC(ij)/FC(i) , t-1	-0.024	-0.0288	0.0747	-0.0185	0.1232***	0.0553**
	(0.657)	(0.360)	(0.412)	(0.797)	(0.002)	(0.033)
Drate (j), t	-0.1234**	-0.0720**	-0.1275***	-0.0758*	-0.0483***	-0.0457***
	(0.018)	(0.033)	0.000	(0.097)	0.000	(0.001)
Real GDP growth (j), t-1	0.1612*	0.0989**	0.3464***	0.0766	0.0453	0.0792***
	(0.098)	(0.026)	(0.001)	(0.136)	(0.246)	(0.008)
Inflation (j), t-1	0.0119	0.0081	-0.4339**	0.0041	0.006	0.0093
	(0.857)	(0.839)	(0.011)	(0.925)	(0.383)	(0.130)
Net IIP(j)/GDP(j), t-1		-0.0013*		0.0001		0.0013*
		(0.085)		(0.953)		(0.099)
home & host FE	yes	no	yes	no	yes	no
Observations	2,933	2,298	1,497	1,217	3,331	2,934
R-squared	0.18	0.16	0.14	0.05	0.15	0.1

Robust p-values in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: Data are from the BIS Consolidated Banking Statistics on ultimate risk basis, IFS and WEO. The sample includes the following BIS reporting countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, Portugal, Sweden, and the UK. Host countries: Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Portugal, Romania, Slovak Rep., Slovenia, Spain, Sweden and the UK.

20. **Next, we assess whether the patterns of cross-border leveraging and deleveraging of EU banks differed between emerging Europe and EA countries.** We perform cross-sectional regression over the periods 2005Q1–2008Q3 (pre-crisis) and 2008Q4–2012Q2 (post-crisis) of cumulative change in bilateral foreign claims of EU banks between home country i and host country j on a set of control variables defined at the beginning of the period (hence 2005Q1 for the pre-crisis period, and 2008Q4 for the post-crisis period). The variable of interest is an indicator variable EE for emerging European countries and/or $\log FGN$ defined as the log of the share of foreign banks in total banking assets:[18]

$$y_{ij} = \alpha + \beta \cdot EE + \delta \cdot Foreign + \phi \cdot DXrate_j + \varphi \cdot X_{j0} + f_i + \varepsilon_{ij}$$

Control variables include the following: (i) the initial bilateral claims of country i on country j in percent of GDP; (ii) the initial total claims of foreign banks on country j in percent of GDP; (iii) the share of country j in the foreign portfolio if banks from country j; (iv) the initial net foreign asset position in percent of GDP; (v) the initial gross public debt to GDP ratio; (vi) the initial current account balance to GDP ratio; and (vii) the cumulative percent change in the bilateral exchange rate vis-à-vis the US dollar.

[18] This variable is constructed as of end 2007.

21. **There is little evidence that, before the crisis, the cumulative increase in foreign liabilities of emerging European countries was significantly larger than for EA countries, after controlling for the factors cited above (text table).** After the crisis, it appears that foreign exposures to Emerging European countries also turned more stable than the foreign exposures to other countries (notably peripheral European countries) after accounting for the set of indicators above cited.

	pre-crisis	*crisis*
Log(Foreign)	-1.6355	4.8095***
EE dummy	6.6518**	5.7968***

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

Furthermore, when including the foreign ownership variable, we find that while this variable is insignificant during the pre-crisis period, it turns strongly and positively significant during the crisis period. From estimated coefficients, we find that a one standard deviation increase in foreign share is associated with foreign liabilities to foreign banks that are higher by 2 percentage points of initial GDP over 2 ½ years. R-squared vary between 0.26 and 0.5, implying that our empirical specification explains a large share of the cross-sectional variation in the cumulative change of bilateral exposures of foreign banks.

22. **The pattern of capital flows before and after the crisis suggests that the type of financial integration matters in a crisis.** Before the crisis, emerging European countries (with a large domestic presence of foreign banks, and large cross-border intra-group capital flows) experienced a significantly faster build-up of liabilities to foreign banks than other EU countries. However, after the crisis erupted in 2008 and capital flows started to reverse within the EU, emerging European countries experienced a slower reversal of capital flows on average, after accounting for various determinants and home country factors. This finding is consistent with the hypothesis that the Vienna initiative played an important role in stabilizing capital flows between some countries in emerging Europe and the rest of the EU. Furthermore, it seems that a larger initial foreign bank presence was indeed a stabilizing factor, perhaps as these banks were more likely to consider these countries as home markets. This suggests that the type of financial integration (local presence, potentially partially funded by intra-group flows, as opposed to cross-border flows between unrelated lenders and borrowers) matters in a crisis. Foreign bank presence can a stabilizing factor when the vulnerability is home grown, but this presence can also contribute in accumulating vulnerabilities.

23. **We further make use of our empirical approach to estimate extent to which the sovereign-bank nexus in the EU contributes in explaining the sudden stops in capital flows.** Assessing such links is important. Financial fragmentation and the reversals of capital flows within the EA and possibly the broader EU contribute to amplifying the crisis, disrupting the transmission channels of monetary policy in the EA and causing contagions and spillovers through financial markets. Using bilateral exposures, we are able to control for all unobserved home factor effects that may have impacted capital flows during the crisis.

24. **For this purpose, we re-estimate the panel regression, but focusing on the post Lehman crisis period.** To empirically test a link between sovereign and banking fragilities

and the evolution of bilateral foreign exposures of EU banks, we add as explanatory variables sovereign CDS spreads and bank CDS spreads averaged on a quarterly basis.[19] The period of observation is 2010Q1-2012Q2.[20] Specifically, we estimate the following regression, where control variables include (i) the initial bilateral claims of country i on country j in percent of GDP; (ii) the initial total claims of foreign banks on country j in percent of GDP; (iii) the share of country j in the foreign portfolio if banks from country j; and (v) the percent quarterly change vis-à-vis the US dollar. In contrast to specification (1) we do not include host country fixed effects to ensure that identification also accounts for cross-sectional differences in sovereign or bank stress. Finally, building on the results of specification (2), we also include in some specifications, interaction terms between sovereign or bank CDS spreads with the foreign ownership variable above described. The period of observation is 2009Q3 to 2012Q2.

$$\begin{cases} y_{ijt} = \alpha + \mu \cdot sovCDS_{jt} + \lambda \cdot sovCDS_{jt} * Foreign_j + \varphi \cdot X'_{jt-1} + f_i + \varepsilon_{ijt} \\ y_{ijt} = \alpha + \mu \cdot bankCDS_{jt} + \lambda \cdot bankCDS_{jt} * Foreign_j + \varphi \cdot X'_{jt-1} + f_i + \varepsilon_{ijt} \end{cases}$$

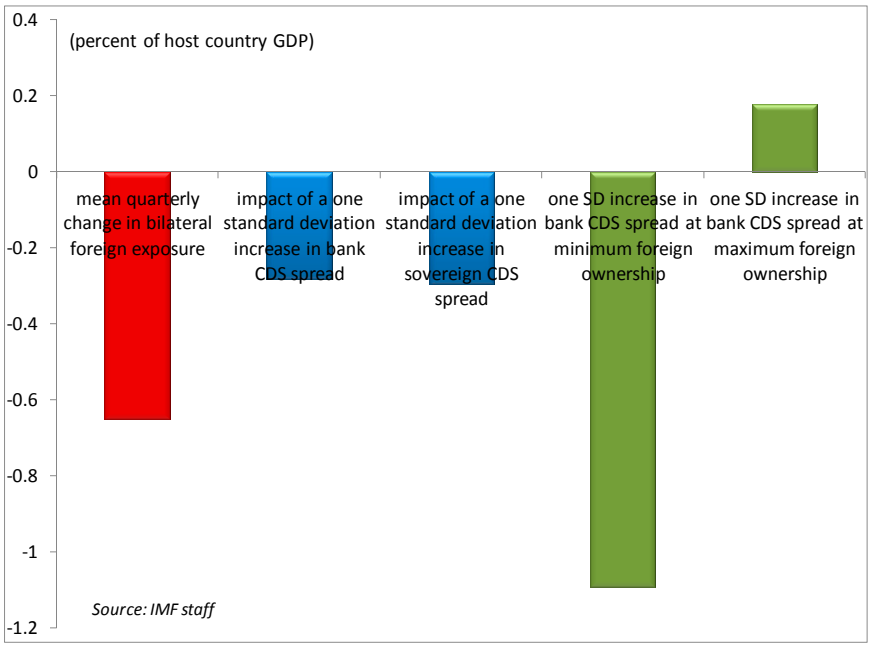
25. **Bilateral changes in foreign bank exposures to a particular EU country are significantly and negatively correlated with bank CDS spreads (text table, column 1).** According to our estimates, a one standard deviation increase in bank CDS spread is associated with a 0.28 percent of GDP average decrease in bilateral exposure of EU banks. Similarly, a one standard increase in sovereign CDS spread is associated with a decrease in bilateral exposure of EU banks by 0.3 percent of host country GDP (column 3). Furthermore, there is evidence that the impact of bank CDS spreads on bilateral exposures of EU banks is muted when foreign banks have a larger presence in the domestic market (column 2). According to our estimates, the impact of a one standard deviation increase in bank CDS spreads translates into a 1.1 percent of GDP decrease in foreign banks bilateral exposures to that country if domestic bank presence is at the lowest level (about 9 percent of total bank assets), but translates into a 0.18 *increase* in foreign bank exposures if domestic presence is that the sample maximum of about 45 percent of bank assets.

	(1)	(2)	(3)	(4)
Bank CDS sp.	-0.0008***	-0.0040***		
Bank CDS sp. * Foreign		0.0001**		
Sov. CDS sp.			-0.0003***	-0.0013
Sov. CDS sp. * Foreign				0.0001
Obs.	2,192	2,192	3,044	2,868
R2	0.15	0.15	0.13	0.13

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

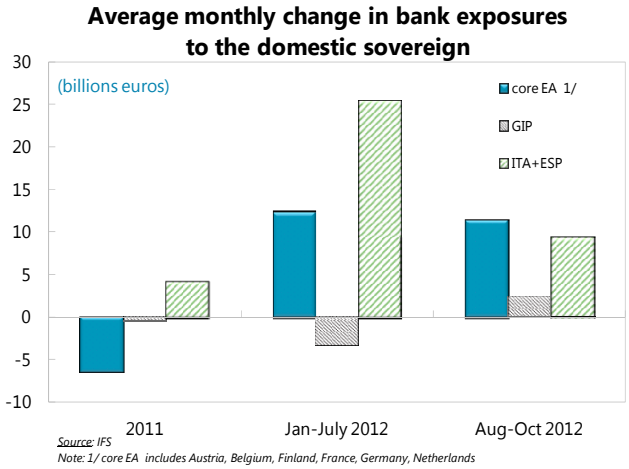
[19] Weekly Bank CDS spreads for the sample of EBA banks are averaged per country and quarter.

[20] In addition to the set of control variables defined above, we also add in some robustness tests the sectoral composition of foreign claims (public sector, banks, non-bank private sector), for which data are publicly available from Q4 2010 onwards.



C. Real Effects of Financial Integration and Disintegration

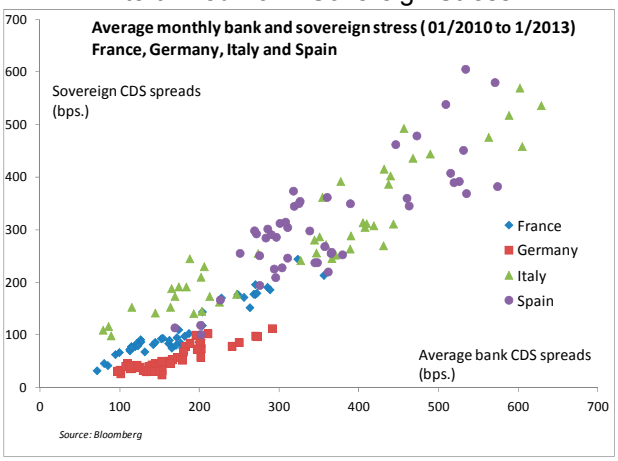
26. **The fragmentation of the EA financial system contributed to intensifying downward spirals between sovereigns, banks and the real economy.**[21] The sudden stop of capital flows affecting peripheral EA countries reinforced the intertwining of sovereign-bank balance sheet risks as investors withdrew simultaneously from sovereign bond markets and interbank markets, and contributed to impairing the transmission mechanism of monetary policy across borders in the EA.



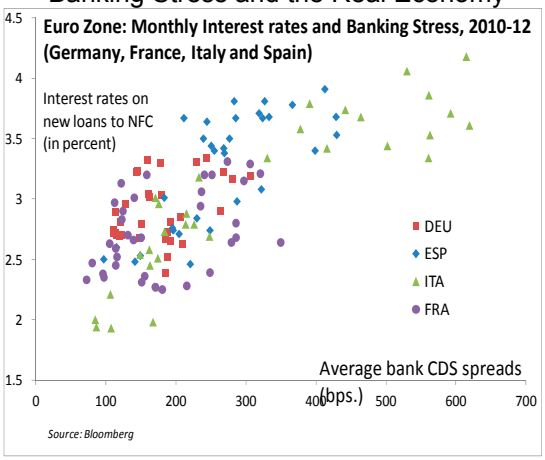
Furthermore, stressed banking systems curtailed the supply of credit through banks raising interest rates on loans, further disrupting the transmission channels of monetary policy. Sovereign-bank linkages were also strengthened in the periphery, as a side effect of the three year LTROs, which allows funding the purchase of domestic sovereign bonds by local banks.

[21] This section focused on EA countries where de-integration is a fundamental issue as it disrupts the transmission of monetary policy impulse.

Intertwined Bank-Sovereign Stress

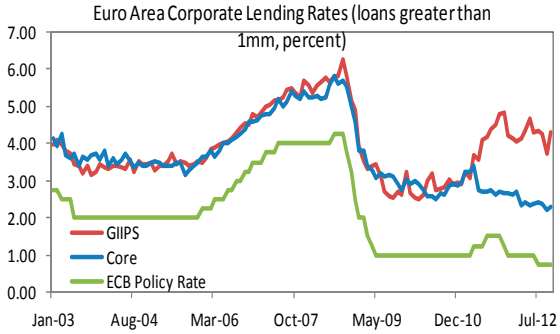


Banking Stress and the Real Economy



27. **The fragmentation of the EA financial system and the associated sovereign-bank nexus have disrupted the transmission channels and countercyclical role of monetary policy.** High sovereign stress in the periphery has disrupted the traditional interest channel of monetary policy, while banking stress has impaired the bank lending channels. As a result, as lending conditions tightened in countries experiencing stronger downturns and interest rates diverged across countries, monetary policy has become pro-cyclical across EA countries. Bank funding costs in the periphery have increased as the cross border interbank market is fragmented and banks in the periphery have to offer higher deposit rates to attract funds. With banks struggling to build capital buffers, credit risk remains high increasing because of the weakening economic outlook. Thus, despite the recent easing in the ECB's policy rate, lending rates in banking systems under stress have edged upwards, and monetary impulses from the policy rate are not transmitted to the real economy.

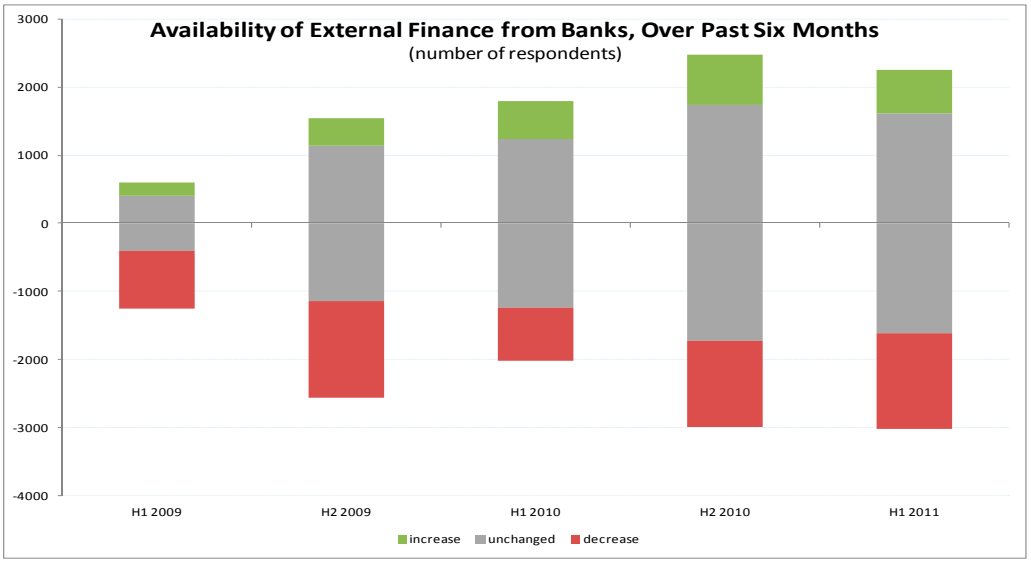
Euro Area Corporate Lending Rates (loans greater than 1mm, percent)

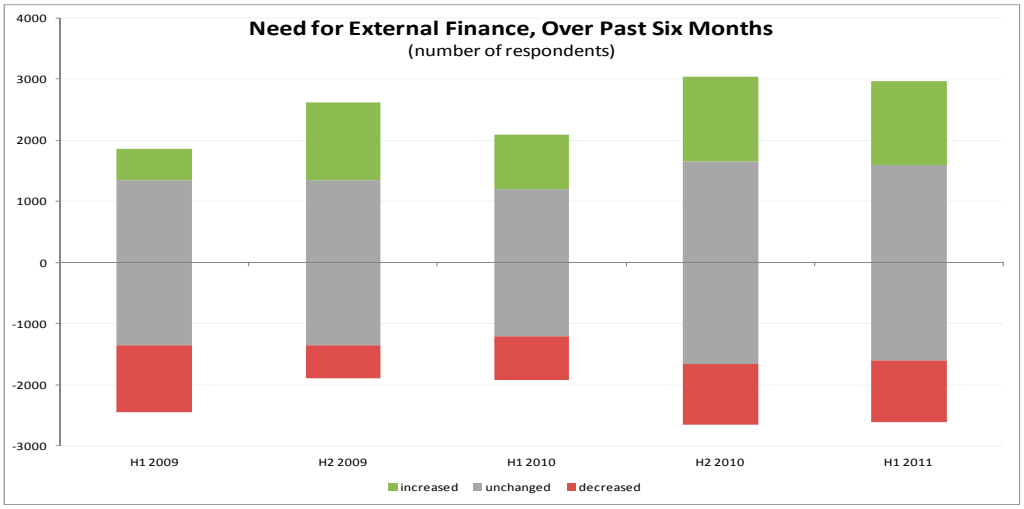


Note: Unweighted average; MFI lending to corporations over €1 million, 1-5 years.
Belgium and Portugal reflect rates on all maturities.
Core: Germancy, France, Belgium, Netherlands.

28. **The deleveraging process raises concerns about a credit crunch that would particularly affect SMEs.** SMEs in peripheral Europe are particularly hard hit by the deleveraging process, as deposit outflows and capital shortages at banks limit the availability and raise the cost of bank loans. Data from the European Commission and European Central Bank Survey on the Access to Finance of SMEs show that the availability of external finance from banks has decreased since 2009 while the demand for external finance has increased. However, there is much cross-country variation, with the availability of external finance having deteriorated markedly since 2009 in Greece and Ireland and having remained fairly stable in countries like Finland and Germany. Regression analysis suggests that the

deterioration in the supply of credit to SMEs is partly driven by the financial dis-integration process, as measured by the decline in cross-border BIS claims.





Source: EU and ECB Survey on the Access to Finance of SMEs

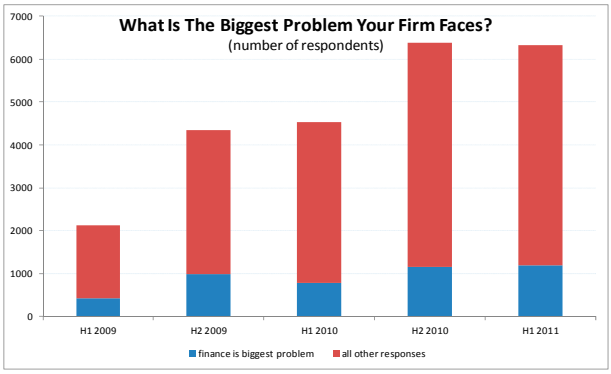
Table 2. EU: Access to Finance, Domestic Financial Activity, and Cross-Border Banking: 2009H1–2012H1

VARIABLES	Availability index	Need for finance index	Turnover index
Δ total BIS claims / GDP	0.00293**	-0.000951	-0.000761
	(2.903)	(-1.138)	(-0.672)
Δ ln(gdp)	0.502	-1.237**	4.141***
	(0.475)	(-2.629)	(7.134)
Δ DFA / GDP	-0.00399*	0.000465	0.00213
	(-2.182)	(0.453)	(1.237)
Constant	-0.209***	-0.314***	0.198***
	(-4.966)	(-8.750)	(5.892)
Country and survey fixed effects	x	x	x
Firm characteristics	x	x	x
Observations	23,064	26,405	34,269
R2	0.057	0.029	0.125

Notes: Dependent variables are from the European Commission and European Central Bank Survey on the Access to Finance of SMEs. Each index is calculated from responses where the variable of interest has increased, decreased, or remained unchanged over the past 6 months. These responses are coded 1,-1, and 0, respectively. The need for finance index is based on the change in need for external finance in the form of bank loans. The availability index is based on the change of the availability of bank loans for the individual firm. The turnover index is based on changes in the turnover of the firm. Total BIS claims is the sum of BIS claims on other countries and BIS claims by other countries from the BIS Consolidated Banking Statistics. Domestic Financial Activity (DFA) is the sum of all financial instruments invested in the country by resident financial institutions as defined by the ECB cross-border statistics. Regressions are estimated using OLS. Statistical significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics or z-statistics in parentheses, clustered at the country level. Firm-specific control variables included are dummy variables for whether the firm is small/medium, public/private, new/old, and in trade/other industries. Country and survey specific fixed effects are included in all regressions.

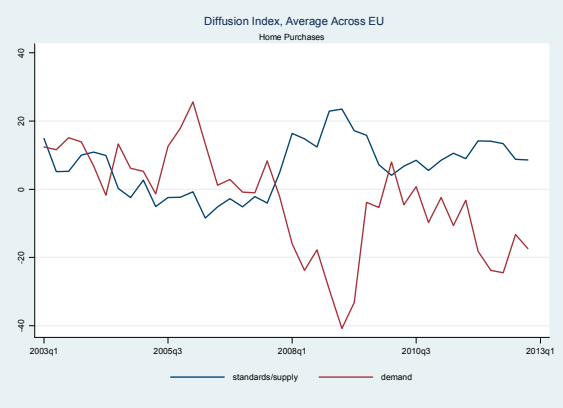
Sources: ECB Survey on the Access to Finance of SMEs in the euro area, BIS, ECB.

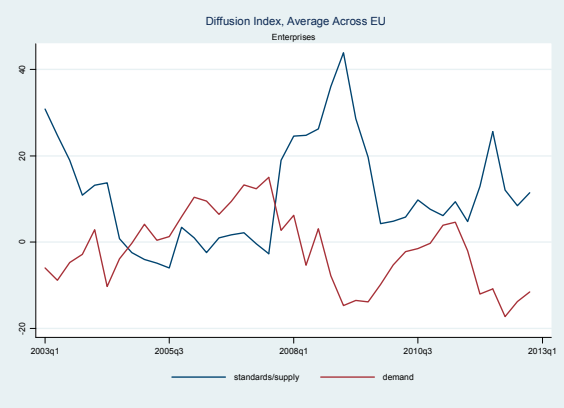
29. **However, demand factors play an important role in the lack of borrowing by SMEs.** Indeed, limited access to finance is not reported by most firms to be their main challenge. Limited demand for products is the most common obstacle according to this SME survey, indicating that demand for finance has reduced as well. Furthermore, regression analysis shows that the demand for credit is closely associated with declines in GDP, while the availability of credit is not.



30. **Demand factors also play an important role in the lack of borrowing by corporates and households.** Lending standards for corporate and households are stable but credit demand conditions remain weak, suggesting that the reduced lending activity is

primarily demand driven. Data from the ECB bank lending survey show that lending standards for corporate and households have stabilized, while credit demand especially for corporate continues to fall (both measured using the diffusion index).[22] But, as lending standards and credit demand conditions are driven by common factors, such as economic conditions, it is difficult to infer a causal interpretation based on lending survey data (in the absence of exogenous shifts in the supply of credit).





31. **To disentangle whether changes in lending standards or credit demand conditions are driving loan growth, regression analysis of bank lending survey responses is used.** To gauge the importance of supply-side constraints for credit growth, regressions of loan growth are estimated where demand is purged from supply factors, and vice versa. These regressions use ECB bank lending survey responses to changes in lending standards and credit demand conditions as proxies for changes in supply and demand factors, respectively. These regressions are estimated separately for lending to corporates and households. Purging demand from supply factors, and vice versa, allows for an estimate of upper and lower bounds of the effect of supply-side factors on credit growth. While this approach is subject to criticism, primarily because it assumes that the loan survey responses are accurate and exogenous, it offers some guidance on the relative importance of supply and demand factors.

32. **Regressions are first estimated using data on the bank lending survey for corporations.** The basic regression model is:

$$\Delta L_t = \alpha_t + \Delta S_t + \Delta D_t + \varepsilon_t,$$

where the dependent variable is the growth rate of loans to non-financial corporations in a given quarter. ΔS denotes the change in the supply of credit to corporate, measured as the change in lending standards over the past three months on loans or credit lines to

[22] It should be noted that the number of banks responding to the BLS in each quarter in some EU countries is very small.

enterprises.[23] Higher numbers denote a relaxation in standards, which are taking to be equivalent to an increase in supply. ΔD denotes the demand for credit from corporate, measured as the change in demand for loans or credit lines to enterprises over the past three months. Higher numbers denote an increase in demand.

33. **To purge demand factors from supply factors and obtain an *lower-bound* estimate of the effect of supply-side factors on credit growth, the regression model is adjusted as**

$$\Delta L_t = \alpha_t + \Delta \hat{S}_t + \Delta D_t + \varepsilon_t,$$

where $\hat{S}_t$ denotes the residual of a country-specific OLS regression of *S* on *D* for corporates.

34. **To purge supply factors from demand factors and obtain an *upper-bound* estimate of the effect of supply-side factors on credit growth, the regression model is adjusted as**

$$\Delta L_t = \alpha_t + \Delta S_t + \Delta \widehat{D}_t + \varepsilon_t,$$

where $\widehat{D}_t$ denotes the residual of a country-specific OLS regression of *D* on *S* for corporates.

35. **Regressions are estimated using OLS and include quarterly fixed effects (Table 3).** The sample consists of quarterly loan growth and survey data from March 2006 to September 2012 for a sample of EU countries. The regression in column (3) gives an upper bound of the effect of supply on loan growth because it removes supply factors from demand and therefore attaches maximum weight to supply factors, while the regression in column (4) gives a lower bound on the effect of supply on loan growth because it removes demand factors from supply and therefore attaches maximum weight to demand factors.

36. **The economic effect of demand-side factors for lending to corporates is substantial.** Based on the estimates reported in column (4) of Table 3, a one standard deviation increase in Demand from corporates implies an increase in loan growth of non-financial companies of 1.7 percentage points. This is substantial given that it amounts to about one-fifth the standard deviation in loan growth of non-financial companies.

[23] The change in lending standards variable is based on the survey question: "Over the past three months, how have your bank's credit standards as applied to the approval of loans or credit lines to enterprises changed?," and the change in demand variable is derived from the survey question: "Over the past three months, how has the demand for loans or credit lines to enterprises changed at your bank, apart from normal seasonal fluctuations?" The survey responses on lending standards and credit demand conditions are effectively lagged one period in the regression analysis. For example, the results reported in the April 2012 bank lending survey relate to changes during the first quarter of 2012 and expectations of changes in the second quarter of 2012. This survey was conducted between March 23and April 5, 2012.

Table 3. EU: Supply and Demand of Loans to Non-Financial Companies: 2006Q1–2012Q3

Dependent variable: Growth rate of loans to non-financial companies	(1)	(2)	(3)	(4)
Supply to corporates	-0.0135		-0.0277	
	(-0.630)		(-1.258)	
Demand from corporates		0.110***		0.108***
		(3.798)		(3.804)
Demand from corporates - residual			0.116***	
			(3.580)	
Supply to corporates - residual				0.0181
				(0.710)
Constant	9.849***	8.863**	9.057**	8.995**
	(2.606)	(2.477)	(2.530)	(2.513)
Quarter Fixed Effects	x	x	x	x
Observations	222	222	222	222
Adjusted R-squared	0.502	0.529	0.528	0.528

Notes: Robust t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Countries in sample are Austria, Cyprus, Estonia, Germany, Italy, Luxembourg, Luxembourg, Malta, Netherlands, Portugal, Slovenia, Spain.

Source: ECB Bank Lending Survey

37. **Similar regressions are estimated using bank lending survey responses on lending to households (Table 4).** The dependent variable in these regressions is the growth rate of loans to households for house purchase in a given quarter. Supply to households is the change in lending standards over the past three months on loans to households for house purchase, with higher numbers denoting a relaxation in standards (an increase in supply). Demand from households is the change in demand for loans to households for house purchase over the past three months, with higher numbers denoting an increase in demand. Otherwise, the regressions are similar to those for corporations.

38. **The economic effect of demand-side factors for lending to households is also substantial.** Based on results in column (4), a one standard deviation increase in Demand from households implies an increase in household loan growth for house purchase of 2.1 percentage points. This is substantial given that it amounts to about one-fourth the standard deviation in loan growth of household loans for home purchase.

Table 4. EU: Supply and Demand of Household Loans for Home Purchase: 2006Q1–2012Q3

Dependent variable: Growth rate of household loans for home purchase	(1)	(2)	(3)	(4)
Supply to households	-0.0384*		-0.0507**	
	(-1.965)		(-2.595)	
Demand from households		0.0811***		0.0811***
		(4.439)		(4.480)
Demand from households - residual			0.0967***	
			(3.893)	
Supply to households - residual				0.0388
				(1.352)
Constant	12.97***	10.93***	10.39***	10.74***
	(4.205)	(3.555)	(3.399)	(3.516)
Quarter Fixed Effects	x	x	x	x
Observations	249	249	249	249
Adjusted R-squared	0.116	0.171	0.172	0.172

Notes: Robust t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1
Countries in sample are Austria, Cyprus, Estonia, Germany, Italy, Luxembourg, Luxembourg, Malta, Netherlands, Portugal, Slovenia, Spain.
Source: ECB Bank Lending Survey

39. **Regressions indicate that supply factors play a more important role in lending to households than in lending to corporates.** Moreover, demand factors play a similar role in lending to households and lending to firms. Importantly, these results are for the corporate sector as a whole and may not prove a firm basis for inference of the relevance of supply factors for lending to SMEs.

40. **Overall, the evidence suggests that the real effects of financial disintegration and deleveraging are mitigated by policy responses and sharp declines in aggregate demand, although there are pockets of vulnerabilities and signs of credit supply shocks.** They also suggest that increased financial integration would be beneficial to credit conditions in individual member states.

III. Policies Options to Restore Financial Integration

41. **The ongoing financial crisis has shown that it is essential that the EU regulatory and supra-national institutional environment is strengthened to ensure that policies for the stability of the financial system are consistent with the single financial market.** Two questions in particular have been raised:

- How to stop the deleveraging and fragmentation process to restore the single financial market?

- How to ensure that financial integration and stability of the financial system going forward are supported by an adequate financial architecture?

42. **Policy action should be coordinated to level the playing field and counter market forces that contribute to the deleveraging process and fragmentation of the financial system.** Uncoordinated actions have resulted in a simultaneous reduction of cross-border exposures, in particular within the EA, thereby contributing to fragmenting the financial system further and disrupting the transmission channels of monetary policy. The collapse of cross-border exposures has been particularly severe in the wholesale funding market and sovereign bond markets, and amplified adverse sovereign-bank links in the periphery of the EA. While some policies have been coordinated (notable monetary policy and competition policy), other policies have been less so (such as supervision and financial safety nets) and have contributed to ring fencing behavior, causing adverse cross-border externalities. A coordination of policies at the EU level will counter market forces that contribute to a fragmentation of the financial system and help repair the single market.

43. **The establishment of a banking union with common supervision, resolution authority and financial safety net would go a long way to provide the necessary underpinnings to a stable and integrated financial market.** A BU would substantially reducing the tail risk that an individual member state will not be able to honor the financial safety net provided in support of its financial sector, and would help delink banks and sovereign risk. It would also bring about higher quality of supervision and help solve coordination problems in the resolution of cross-border banks within the BU. Although the BU is more urgent and essential for EA countries, other EU countries would also benefit from joining the BU. . With the prospect of some member states, notably the U.K. which plays a dominant role in the provision of international financial services, having expressed a desire not to join the BU, questions are raised about unintended consequences of the establishment of a BU for the single market. In particular, the creation of a SSM—as recently announced—should not conflict with the role of existing EU regulatory agencies, such as the EBA, to avoid unintended consequences for the single market between the ‘ins” and the ‘outs.” For example, ECB decisions to issue its own supervision guidelines should be accompanied by efforts led by the EBA to harmonize supervision practices among the “ins” and the “outs.”

44. **The possibility of ESM direct recapitalizations would help speed-up addressing solvency issues.** It is primordial that solvency issues are addressed to restore proper financial intermediation and supply of credit to the real economy. Having in place the possibility of direct ESM recapitalization of banks would relieve contingent liabilities from the balance sheet of weak sovereign, thereby weakening incentives for forbearance and helping create some fiscal space.

45. **The merits of limits on size and activities of financial institutions are being actively debated (e.g., Vickers and Liikanen reports).** Current initiatives aim to address the problems associated with size can be addressed through improving supervision and resolvability (including cross-border and bail-in arrangements) and the establishment of a BU

(which will weaken sovereign-bank linkages and ensure a more systemic and coordinated approach to supervision). However, too big to fail considerations will remain. These can in principle be partially addressed through regulation or taxation. More generally, the introduction of financial sector taxes can address externalities associated with systemic risk created by the financial sector. However, the political reality of bank failures will remain complicated, including between countries that are part of the BU and others. Importantly, regulatory and taxation initiatives to address systemic risk have to be closely coordinated among EU member states to ensure they do not distort the single market and enable a level playing field.

46. **In this light, it should be stressed that the protection of financial centers out of national interests, or indeed the implementation of restrictive measures against a financial center, would be against the principle of a single market.** In this context, the flexibility provided by the CRD IV should in practice, be used only for macroprudential purposes and not as a tool to protect specific national approaches which might impede integration of banking systems. In this regard, the ESRB should play a forceful role in coordinating the use of macroprudential instruments among member states, while efforts to establish a "single rule book" should be furthered.

47. **The increasing focus on improving the resolvability of banks and limiting use of taxpayer money throughout the EU can help to reduce the risks associated with bank size.** The EU Directive for the recovery and resolution of credit institutions will limit the use for bank bailouts in the future by ensuring preparedness, providing strong powers for early intervention and resolution of credit institutions in the EU. The possibility of statutory bail-ins and the establishment of resolution funds would provide first lines of defense to address individual bank failures and may help contain deleveraging pressures out of countries experiencing bank failures. It is also critical that the SSM is complemented by a single resolution mechanism involving a central resolution authority with strong intervention and resolution powers, and with common backstops.

IV. Financial Integration Going Forward

48. **Going forward, the answer is more and better, not less financial integration.** The evidence presented shows that there can be large benefits from financial integration, including ensuring a smooth transmission of monetary impulses. However, integration must be realized in a way that does not pose serious risks to financial stability, and requires to be accompanied by reforms to complete the financial architecture of the monetary union and of the broader EU.

49. **Policy action thus far has mitigated the deleveraging process but more is needed to address underlying weaknesses.** In the absence of major policy action in the areas of monetary and fiscal policy, as well as government recapitalization of banks and the Vienna

Initiative, deleveraging would have been more severe and damaging, with substantial associated fire sales.

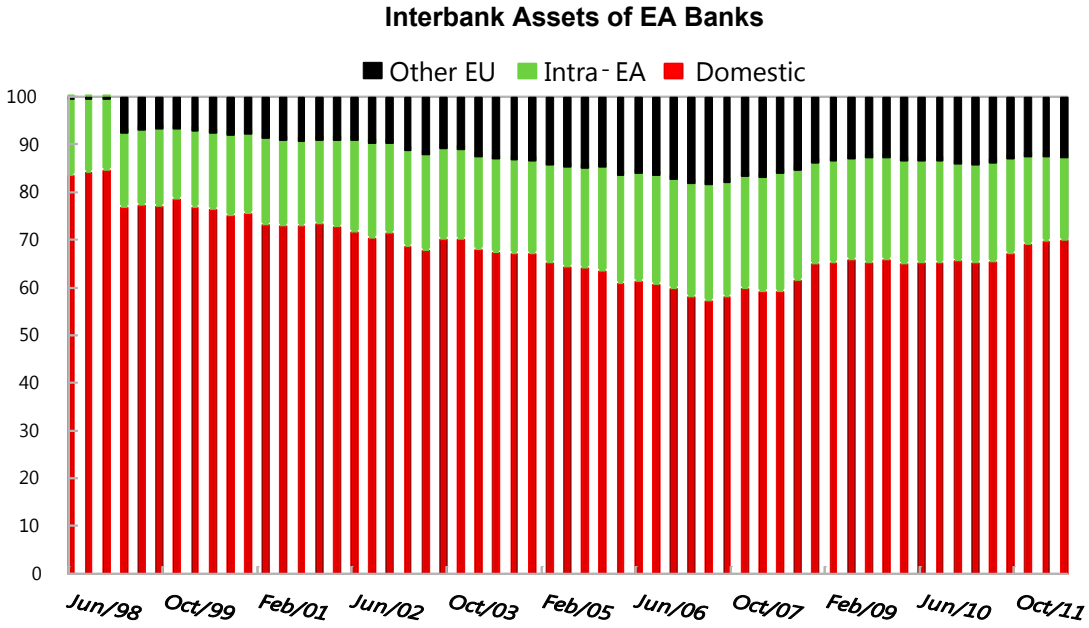
50. **The integrity of rules and institutions for the EU's single financial market has been maintained.** The EU has continued to develop its regulatory framework designed to promote market integration so as to further dismantle regulatory hurdles to cross-border financial transactions, reduce scope for regulatory arbitrage, and ensure a consistent implementation and application of the EU financial market framework.

51. **However, to ensure the functioning of the single market for financial services, increased financial integration will need to be supported by a credible financial safety net, higher supervisory quality, and strong resolution tools.** This requires progress towards banking union;[24] the centralization and strengthening of supervisory and resolution frameworks, and the harmonization of depositor guarantee schemes (more details can be found in a separate technical note on depositor guarantee schemes), as well as a strengthening of capital requirements under CRD IV (more on this in a separate technical note) and constraints on the provision of liquidity support to ailing financial institutions.[25] This will address weaknesses under the current system, including weak supervision and regulatory arbitrage (including zero risk weights on national sovereign debt and generous ECB collateral policy), as well as differences in safety nets and moral hazard associated with expectation of bailouts. It has become clear now that, in spite of the 'no-bail-out clause" of the Treaty, imbalances do matter in a monetary union.

[24] For a motivation and characterization of the elements of the Banking Union, see "A Banking Union for the Euro Area," paper prepared by the staff of the International Monetary Fund.

[25] The recent decision to establish the SSM under the auspices of the ECB is a welcome step this direction, but more is needed as also highlighted by the blueprint issued by the European Commission.

Appendix 1. Euro Area MFIs: Share of Cross-Border Holdings of Financial Assets



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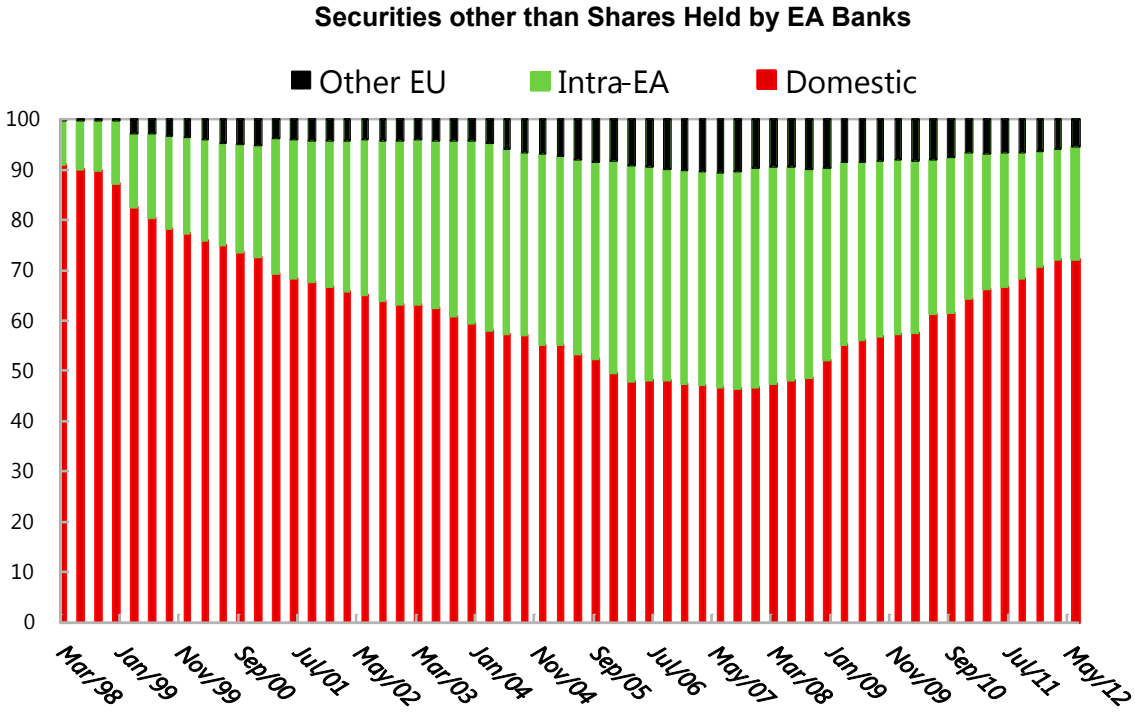

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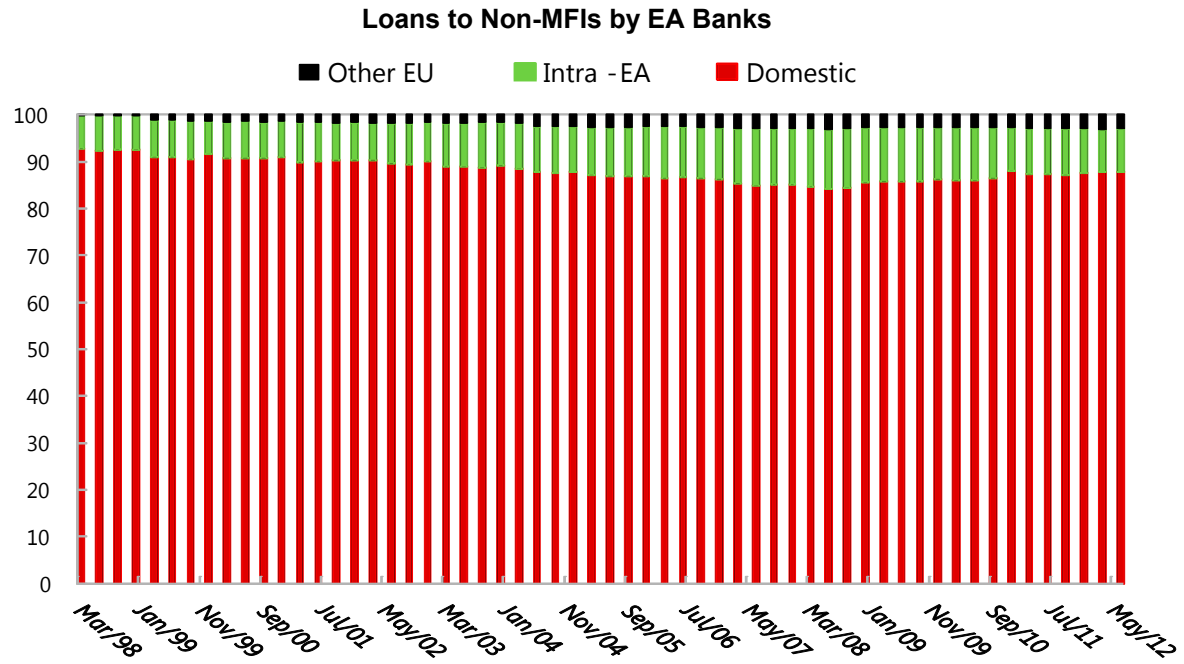

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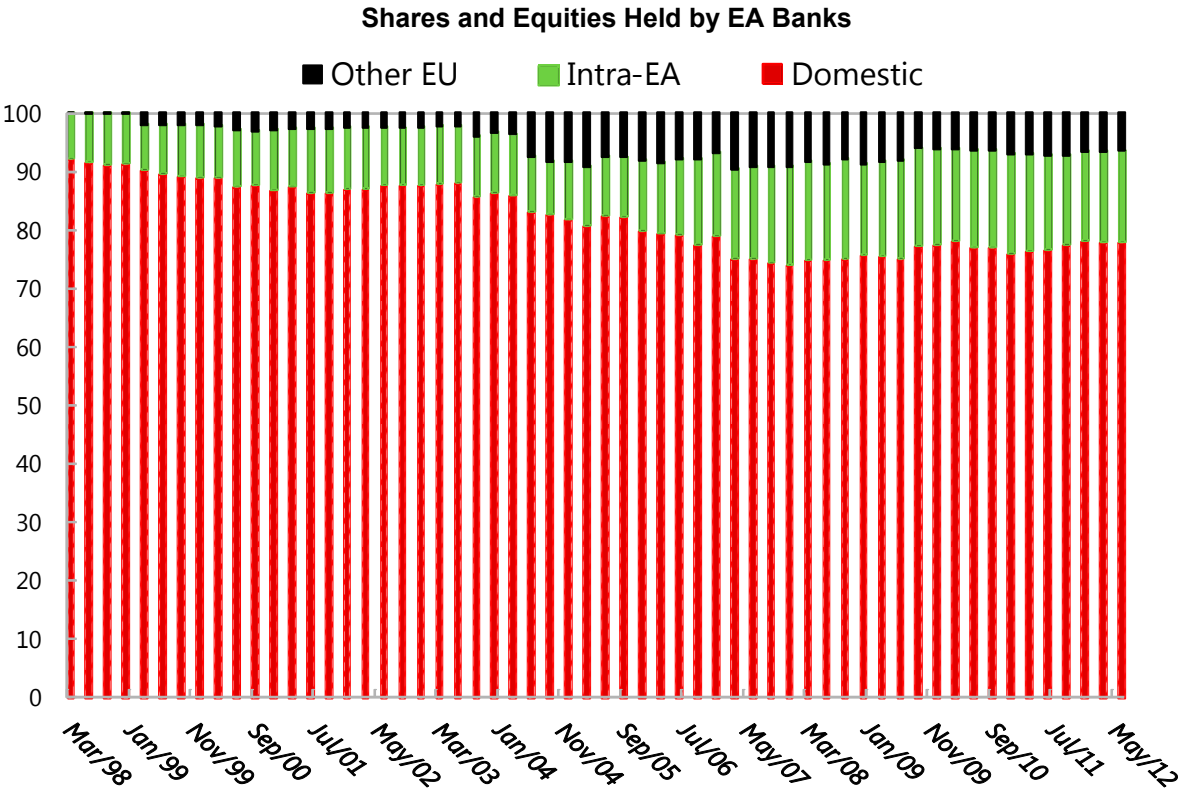

Source: ECB