EUROPEAN CENTRAL BANK

EUROSYSTEM

Financial integration in Europe

May 2017

Contents

Preface

The ECB's annual report on financial integration in Europe contributes to the advancement of the process of European financial integration by analysing its development and the related policies. For the ECB, the market for a given set of financial instruments and/or services is fully integrated if all potential market participants with the same relevant characteristics: (1) face a single set of rules when they decide to deal with those financial instruments and/or services; (2) have equal access to those financial instruments and/or services; and (3) are treated equally when they are active in the market.[1]

The Eurosystem has a keen interest in the integration and efficient functioning of the financial system in Europe, especially in the euro area, as reflected in the Eurosystem's mission statement. Financial integration fosters the smooth and balanced transmission of monetary policy throughout the euro area. In addition, it is relevant for financial stability and is among the reasons behind the Eurosystem's task of promoting well-functioning payment systems. Without prejudice to the objective of maintaining price stability, the Eurosystem also supports the objective of completing the EU Single Market, of which financial integration is a key aspect.

In September 2005 the ECB published a first set of indicators of financial integration and an accompanying report assessing the state of financial integration in the euro area. Since then, this work on financial integration has evolved and has led to the publication of a yearly report.

This year the ECB is introducing two changes to the report. First, it will now alternate biennially between a full and a more concise version. This approach has been chosen in view of the fact that financial integration tends to be a slow-moving process; a full report is not therefore required every year. The more concise version will consist of shorter chapters on the main financial integration developments and the Eurosystem's activities relating to financial integration, while still including an in-depth discussion of a selected topic in a special feature. The bi-annual release of financial integration indicators on the ECB's website will not be affected by this change. The second change is that the report will now include a regular analysis of the "quality" of financial integration, i.e. the economic benefits it delivers and its resilience. This extension of perspective is based on the Special feature "Financial integration and risk sharing in a monetary union" in the 2016 report and will involve the inclusion of indicators of cross-country risk sharing.

[1] Baele, L. et al., "Measuring financial integration in the euro area", *Occasional Paper Series*, No 14, ECB, April 2004.

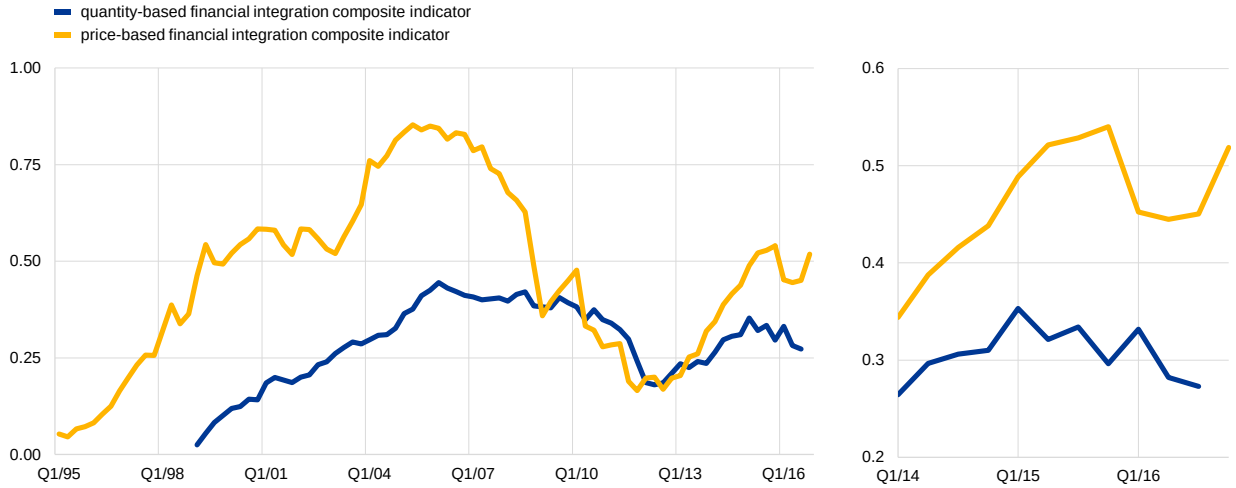
Key messages

Overall assessment of financial integration

- **Overall financial integration within the euro area has shown mixed developments since last year's report.** While money market integration remained at broadly stable levels in 2016, the various indicators for euro area banking, bond and equity markets showed diverse tendencies. These diverging signals were related to the counterbalancing effects that shaped financial market conditions in 2016. The effects, in turn, were partly due to changing market expectations concerning future economic fundamentals and, as a consequence, the resulting asset price convergence or divergence cannot be unambiguously linked to changes in financial integration. Overall, after the deceleration of the previous financial reintegration trend described in last year's report, the ECB's price-based composite indicator of financial integration appeared volatile in 2016, and the quantity-based composite indicator flattened out. Both signal no progress in aggregate financial integration across euro area countries over the observation period (Chart A).

Chart A

Price-based and quantity-based financial integration composite indicators



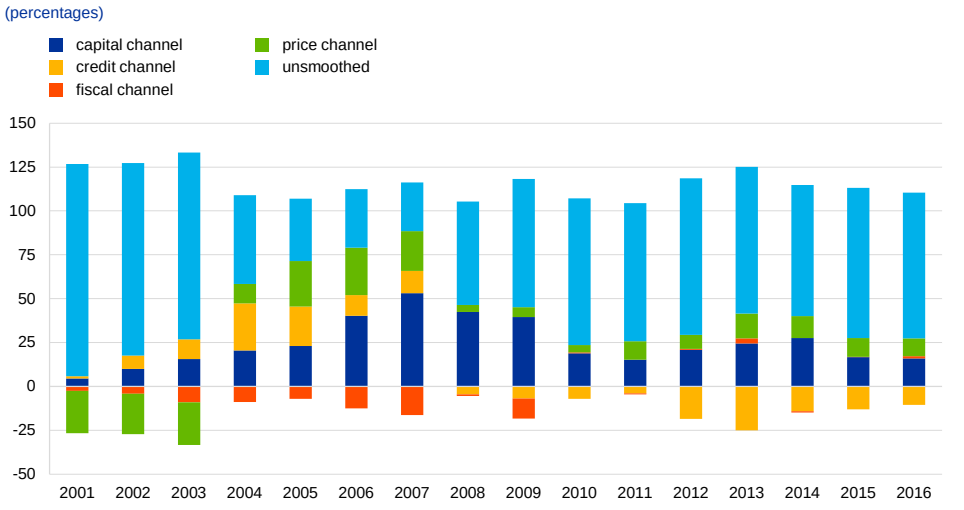
Sources: ECB and ECB calculations.
Notes: The price-based composite indicator aggregates ten indicators covering the period from the first quarter of 1995 to the fourth quarter of 2016, and the quantity-based composite indicator aggregates five indicators available from the first quarter of 1999 to the third quarter of 2016. The composite indicators are bounded between zero (full fragmentation) and one (full integration). Increases in the composite indicators signal higher financial integration. For a detailed description of the indicators and the input data, see the Statistical annex.

- **The halt in measured aggregate financial integration warrants careful monitoring and an assessment of the economic benefits of current integration levels, and underlines the importance of ongoing policy initiatives regarding the capital markets union (CMU) and the completion of the banking union.** It should be borne in mind that part of the higher levels of the two financial integration composite indicators in the years directly preceding the financial and sovereign debt crises, as shown in Chart A, was

linked to the fact that cross-country risk differentials were insufficiently reflected in financial markets. This is one of the reasons why this year's report has now started to complement quantitative measurement by including assessments of the quality of financial integration, with the aim of capturing its economic benefits. To this effect, two measures of cross-country risk sharing are added and will be monitored regularly. The most recent estimates suggest that risk sharing remains low in the euro area and that limited private financial risk sharing plays a significant role in this, as can be seen in Chart B below. The large light blue parts of the bars indicate that a large share of income shocks in euro area countries are reflected in their consumption, whereas the small dark blue and yellow parts indicate that cross-border equity holdings or credit do not contribute greatly to smoothing consumption.

Chart B

Consumption risk sharing in the euro area and its channels



Source: ECB calculations.
Notes: The chart displays, by year, the contribution of capital markets (via cross-border ownership of productive assets), credit markets (via cross-border borrowing and lending), fiscal tools (via public cross-border transfers), and relative prices (via changes in the domestic consumer price index relative to the euro area average index) to the smoothing of country-specific shocks to real GDP growth. The respective contributions are calculated using a vector-autoregression (VAR) model whose parameters are estimated over a ten-year rolling window of annual data, applying the approach given by Asdrubali, P. and Kim, S., "Dynamic risksharing in the United States and Europe", *Journal of Monetary Economics*, Vol. 51, 2004, pp. 809-836, enhanced for relative price adjustments (see Chapter 1 for more details). The bars display the share of a one-standard-deviation shock to domestic GDP growth that is absorbed by each respective risk sharing channel. The shares are computed on the basis of the cumulative impact of the shock on the variables capturing each risk sharing channel over a five-year horizon. Year-to-year variation in the shares reflects changes in the re-estimated model parameters. The remaining portion represents the portion of the shock to country-specific real GDP growth that remains unsmoothed and is fully reflected in country-specific consumption growth. The individual bars can go below 0% and above 100% if one or more of the channels involved has a dis-smoothing effect on country-specific consumption growth. All bars together total 100%. Ireland is currently excluded from the calculation of the indicator owing to unusually large revisions in some of the country's main macroeconomic statistics for 2015 that were made in July 2016. These revisions affected real GDP, some of its components and balance-of-payments figures; some of them would feed into the indicator in this chart although they would not indicate a change in risk sharing. (See Box 1.2. "Tackling Measurement Challenges of Irish Economic Activity", *World Economic Outlook,* International Monetary Fund, April 2017, pp. 43-45, which also presents the timetable for resolving the measurement problems in the future.)

Selected policy issues for financial integration

- **The ECB's activities contributing to financial integration in 2016 centred on the EU's two key financial policy initiatives: the banking union and the CMU. In order to complete the banking union, swift and parallel progress in the pursuit of risk reduction and risk sharing is key.** To this effect, the

ECB supports the proposal to establish a European Deposit Insurance Scheme (EDIS), is working towards the reduction of non-performing exposures on bank balance sheets, is currently conducting a targeted review of bank-internal models, and is carrying out many other risk-reducing supervisory activities. The reviews of the Capital Requirement Directive (CRD) and Regulation (CRR), the Bank Recovery and Resolution Directive (BRRD) and the Single Resolution Mechanism Regulation (SRMR) should lead to tangible and timely progress in the EU's regulatory framework. Progress in harmonising options and national discretions (ONDs) in EU legislation, for example, would facilitate financial integration. The ongoing review of the EU's macroprudential policy framework should simplify activation procedures for macroprudential policy instruments, divide the policy instruments between the authorities more effectively, and add borrower-based instruments to the macroprudential toolkit.

- **The harmonisation of insolvency rules for credit institutions and other entities in the context of the CMU can make an important contribution to integrating and developing European capital markets.** For example, it could encourage out-of-court settlements and enhance the comparability of the ranking of creditor claims. Moreover, a macroprudential framework for non-bank financial intermediaries is needed so that the CMU can develop in a context of financial stability.

- **It is important that the legislation for a new framework for simple, transparent and standardised (STS) securitisation, which is close to finalisation, strike the right balance between reviving the European securitisation markets and avoiding financial stability risks as experienced in the financial crisis.** For example, the discussions on the appropriate retention rate for securitisations should take into account the fact that the alignment of interests can also be achieved by complementary measures such as ensuring transparency.

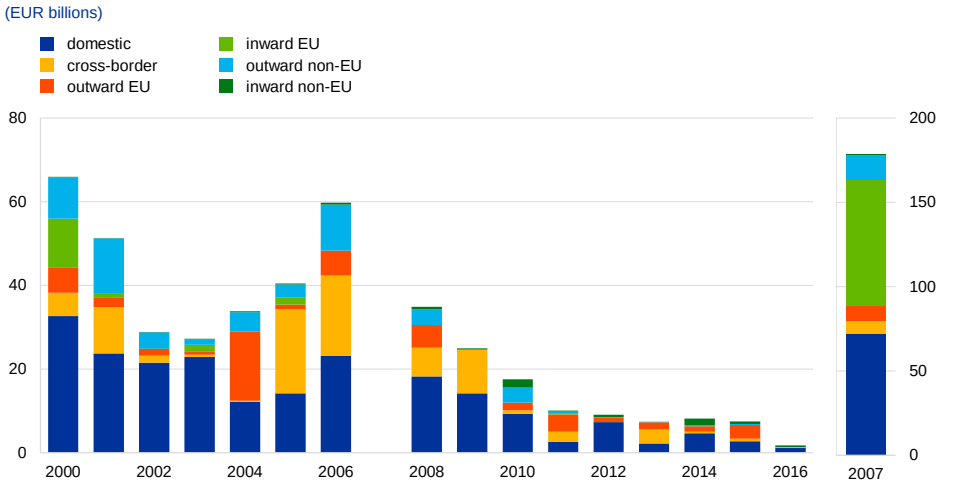
- **Finally, during 2016 and early 2017 three migration waves brought the number of central securities depositories connected to the universal settlement platform TARGET2-Securities (T2S) to 18 covering 16 European markets.** This further enhances the support T2S provides to the integration of European capital markets.

- **The limited integration of retail credit markets is related to a lack of cross-border bank mergers and acquisitions (M&As) within the euro area and an underrepresentation of pan-European banks.** Chart C shows that bank consolidation has made very limited, and mainly domestic, progress in recent years (and is sometimes heavily influenced by a single large transaction). These facts require attention, because cross-border consolidation seems to be the only realistic path towards greater retail bank integration, which could improve risk sharing via credit markets as well as the functioning of Monetary Union. In addition, more banks could reach a scale that would allow them to provide effective capital market services without creating competition problems in local loan and deposit markets. In terms of financial stability, cross-border M&As could make a valuable contribution to resolving non-performing loans

(NPLs) and increase diversification. The new Single Supervisory and Single Resolution Mechanisms as well as the post-crisis regulatory framework are designed to alleviate potential too-big-to-fail concerns associated with cross-border M&As, to meet the challenges they may pose for bank resolution and to contain cross-border contagion risks.

Chart C

Bank M&As involving euro area banks – value of transactions



Sources: Dealogic and ECB calculations.
Notes: "M&As" refers to transactions where the acquired stake is more than 20% of the target bank. The data do not cover participation by governments or special legal entities in the restructuring or resolution of credit institutions. Transactions whose amounts are not reported are excluded. "Domestic" refers to transactions that take place within national borders of euro area countries. "Cross-border" M&As involve euro area targets and non-domestic euro area acquirers. "Inward" refers to M&As by non-EU or non-euro area EU banks in the euro area and "outward" indicates M&As carried out by euro area banks outside the euro area.

- **There are a number of avenues that could be followed to reduce the obstacles to cross-border bank M&As within the euro area.** One is the completion of the banking union. Other targeted financial sector policies could include removing ONDs in European banking regulation, allowing the euro area to be considered as a single jurisdiction for calculating the Basel surcharges for systemic institutions, harmonising insolvency laws and consumer protection, streamlining supervisory merger review procedures and coordinating these with competition reviews, and addressing legacy NPL problems. Harmonising taxation would also be helpful. This concerns the tax treatment of financial products and of banks, for example through the removal of inconsistencies in how tax loss carry-forwards are treated by national laws or even through the introduction of a common consolidated corporate tax base in the EU – the CCCTB proposal recently relaunched by the European Commission. Since low growth and political uncertainty create an unfavourable environment for banking consolidation, broader measures aimed at improving these aspects could also make an important difference.

Overview of the report

Chapter 1 contains the ECB's assessment of the degree of financial integration in the euro area. This is based on price-based and quantity-based indicators for both the aggregate level of financial integration and the levels of financial integration in four key financial market segments – the money, bond, equity and banking markets. In addition, the chapter covers, for the first time, an indicator of the different channels of cross-country risk sharing in the euro area, which measures the extent to which one important economic benefit of financial integration materialises. A box entitled "Financial integration indicators based on enhanced euro area accounts 'who-to-whom data'" presents new data that offer possible ways to improve the analysis of cross-border holdings of bonds, loans and deposits by the main economic sectors.

Chapter 2 summarises the main actions taken by the Eurosystem in 2016 and early 2017 with a view to fostering financial integration in the euro area. It focuses, in particular, on activities that contributed to advancing the important banking and capital markets union projects.

A Special feature, entitled "Cross-border bank consolidation in the euro area" reviews the current state of cross-border consolidation, summarises insights from the literature on the related costs and benefits, and takes a look at possible ways to reduce obstacles to cross-border M&As.

Each chapter/special feature is preceded by a summary of results and conclusions, which provide more detail on the key messages above.

The **Statistical annex** gives details on the calculation of the financial integration composite indicators and their sub-indices. The set of 39 standard indicators now also includes another measure of cross-country risk sharing, in addition to that presented in Chapter 1. For each financial integration indicator, an explanation describes how it is technically derived and the main messages it conveys in term of developments in financial integration. Some of the indicators are also used to describe recent financial integration developments in Chapter 1.

Chapter 1: Recent developments in financial integration in the euro area

Developments in overall financial integration in the euro area have been mixed since last year's report. While several measures showed money market integration remaining at broadly stable levels in 2016, the various indicators for euro area banking, bond and equity markets showed differing developments. These diverging signals related to the counterbalancing effects that shaped financial market conditions in 2016, and that were partly due to changing market expectations regarding future economic fundamentals. The resulting asset price convergence or divergence cannot, therefore, be unambiguously associated with changes in financial integration or fragmentation. Overall, following the deceleration of the financial reintegration trend observed in last year's report, the ECB's price-based composite indicator of financial integration appeared volatile in 2016, and the quantity-based composite indicator flattened out. In other words, they signal no progress in aggregate financial integration across euro area countries over the observation period.

The halt in measured aggregate financial integration warrants careful monitoring in the future, and underlines the importance of ongoing policy initiatives. At the same time, it should be noted that the price and quantity-based financial integration composite indicators show a level of aggregate integration similar to that seen during the early 2000s and that part of the higher levels of integration experienced in the years that followed (those preceding the financial and sovereign debt crises) was linked to the fact that cross-country risk differentials were insufficiently reflected in financial markets. This is one of the reasons behind the ECB's decision to add to its standard set of indicators – which focus purely on the quantitative extent of financial integration – several indicators which seek to capture the quality of financial integration, as an input into the assessment of its economic benefits. To this effect, and following last year's special feature explaining the rationale in greater depth, this year's report adds two measures of the extent and composition of cross-country risk sharing, which will be regularly monitored. One insight from these measures is that cross-country risk sharing remains low in the euro area and that limited private financial risk sharing plays a significant role in this, further emphasising the importance of policy initiatives such as the CMU and the completion of the banking union.

This chapter reviews the main developments in financial integration in the euro area during 2016. Section 1 starts with general developments in overall financial integration, before Section 2 turns to the integration of the four core segments of the financial system, i.e. the money, banking, bond and equity markets.

The analysis is based on a series of indicators.[2] As a general caveat, it is important to note that, in particular, some of the price-based indicators do not necessarily reflect only varying degrees of market integration, but also factors such as differentials in credit risk premia priced into sovereign or corporate bond yields. The chapter also presents a few indicators that illustrate diverging developments for different groups of euro area countries. Section 3 of the Statistical annex describes the methodology for the country groupings used in this report.

1 General developments

Overall, there were fairly mixed developments in euro area financial integration in 2016. There is ambiguous information regarding the state of intra-euro area financial integration and this holds true across, as well as within, the four market segments considered in this report, i.e. the money, banking, bond and equity markets.

The mixed developments related to the countervailing effects of several factors that shaped financial market conditions in the euro area in 2016. On the one hand, market participants' perceptions of diverging economic and fiscal policy outlooks across euro area countries were at times reinforced by increased global risk aversion and bouts of political uncertainty (one example being the outcome of the UK European Union membership referendum in June 2016). This tended to increase the dispersion of cross-country asset returns in the various financial market segments, while differing efforts with regard to structural reforms across countries might also have contributed to macroeconomic divergence. On the other hand, the ECB implemented various non-standard monetary policy measures – adopted to counter risks to price stability – which supported financial integration as well as, ultimately, macroeconomic convergence across euro area countries. The ECB used its targeted longer-term refinancing operations (TLTROs) and its expanded asset purchase programme (APP) to smooth out frictions in monetary policy transmission across euro area countries in a wide range of market segments.

The ambiguous developments are reflected in the fact that the level of the ECB's financial integration composite indicators did not change much all in all over the review period (see Chart 1). This continued the deceleration of the post-crisis financial reintegration trend that had started in 2015. Between the fourth quarters of 2015 and 2016, the price-based financial integration composite indicator showed some volatility and, ultimately, ended at a marginally lower level, mainly driven by bond market developments. While the sub-index measuring intra-euro area convergence in bank retail interest rates stayed flat overall over the same period, its underlying components experienced mixed developments, with interest rate

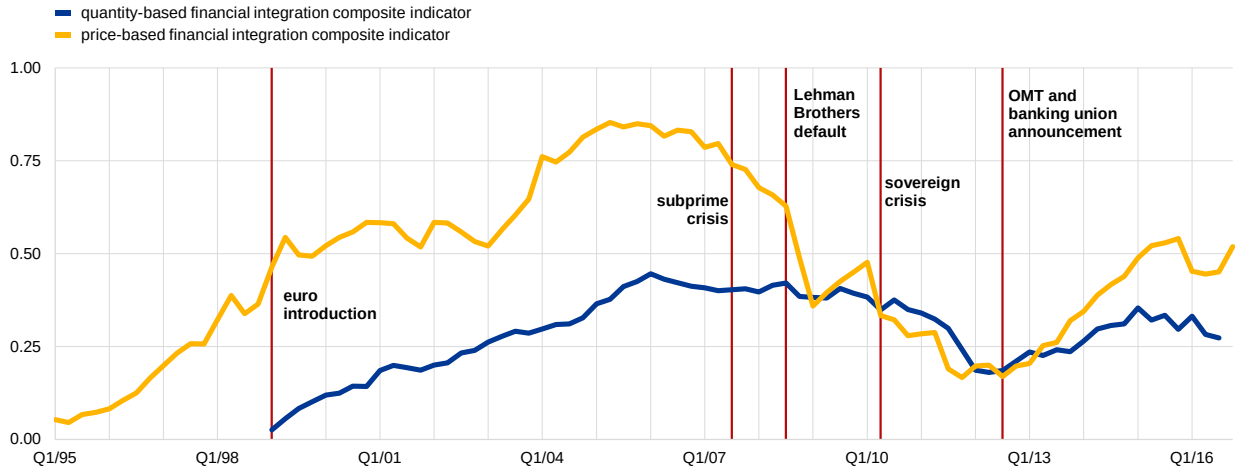
[2] As in last year's report, the impact of extreme outliers has been removed for a few standard financial integration indicators as these distort the information content regarding euro area-wide developments in financial integration. Those cases are identified in the notes to the respective charts in the main text or in the Statistical annex, which features the full set of financial integration indicators regularly monitored by the ECB.

dispersion for loans decreasing and for deposits increasing.[3] The quantity-based composite indicator, measuring relative portfolio shares of intra-euro area cross-border asset holdings, also declined marginally in the first three quarters of 2016 compared with the fourth quarter of 2015.[4]

The results suggest that there was no overall progress in financial integration across euro area countries in 2016. Chart 1 shows that the latest level of the quantity-based financial integration composite indicator is comparable to the level prevailing in 2004, whereas the latest level of the price-based composite indicator is roughly comparable to levels observed between 2000 and 2004. There are reasons to believe that, during the subsequent pre-crisis boom period (2004 to 2006), the observed convergence of key asset returns[5] as well as both the direction (country composition) and the nature (type of assets) of intra-euro area capital flows reflected the underestimation of fundamental risks.[6]

Chart 1

Price-based and quantity-based financial integration composite indicators



Sources: ECB and ECB calculations.
Notes: The price-based composite indicator aggregates ten indicators covering the period from the first quarter of 1995 to the fourth quarter of 2016, and the quantity-based composite indicator aggregates five indicators available from the first quarter of 1999 to the third quarter of 2016. The indicators are bounded between zero (full fragmentation) and one (full integration). Increases in the indicators signal greater financial integration. For a detailed description of the indicators and their input data, see the Statistical annex.

Against this background, it is an essential task for European policymakers to improve not only the extent of financial integration – as captured in the convergence of asset returns and the amount of cross-border financial flows – but, in particular, the quality of integration and thus the wider economic

3 For a graphical representation of developments in price-based financial integration composite sub-indices for the four market segments concerned, see Charts S1 to S4 in the Statistical annex.

4 The quantity-based financial integration composite indicator reflects developments in the shares of cross-border inter-MFI lending as well as cross-border MFI and investment fund holdings of bonds and equities relative to a benchmark in the form of a fully diversified portfolio. See the Statistical annex for further details.

5 See, for example, the article entitled "The determinants of euro area sovereign bond yield spreads during the crisis", *Monthly Bulletin*, ECB, May 2014, and "(Under-)pricing of risks in the financial sector", speech by Jean-Claude Trichet, delivered at the Coface Country Risk Conference 2009, Carrousel du Louvre, Paris, 19 January 2009.

6 See Special feature A, "Financial integration and risk sharing in a monetary union", Financial integration in Europe 2016, ECB, April.

benefits it confers. As last year's report argued, the quality of financial integration depends, among other things, on its ability to withstand large asymmetric shocks and on whether it supports cross-country risk sharing within the monetary union.[7] Therefore, from this year on, the ECB will monitor developments in risk sharing and the resilience of intra-euro area capital flows on a regular basis. In this regard, Chart 2 presents a novel indicator which is based, with some amendments and applied to euro area data, on the risk sharing literature that estimates the extent and composition of cross-border consumption risk sharing, i.e. the ability to smooth domestic consumption in the presence of country-specific shocks to domestic income. The chart displays, by year, the contribution of capital markets (via cross-border ownership of productive assets, marked in dark blue in the chart), credit markets (via cross-border borrowing and lending, marked in yellow), fiscal tools (via public cross-border transfers, marked in red), and relative prices (via changes in the domestic consumer price index relative to the euro area, marked in green) to the smoothing of country-specific shocks to GDP. The respective contributions are calculated using an empirical model whose parameters are estimated over a ten-year rolling window. The bars display the share of a one-standard-deviation shock to domestic GDP growth that is absorbed by each risk sharing channel. The shares are computed on the basis of the cumulative impact of the shock on the variables, for each channel over a five-year horizon. The year-to-year variation in the shares reflects changes in the re-estimated model parameters. The remaining portion (marked in light blue in Chart 2) represents the portion of the shock to country-specific GDP that remains unsmoothed and is fully reflected in country-specific consumption growth. The individual bars can go below 0% and above 100% if one or more of the channels involved has a dis-smoothing effect on country-specific consumption growth. All bars together total 100%.

Chart 2 suggests that the extent of cross-country risk sharing in the euro area remains quite low, highlighting the importance of policy initiatives such as the CMU and the completion of the banking union. The left part of Chart 2 suggests that after the adoption of the euro consumption risk sharing generally increased, notably through credit markets, capital markets and relative price adjustments. With the financial and sovereign debt crises, however, consumption risk sharing declined once more, with the contribution of capital markets falling to a low level and the contribution of credit markets even turning negative, as the European banking sector was hit particularly hard.[8] The contribution of fiscal policy is negligible, in line with the way Economic and Monetary Union has been designed. The indicator shows that for the most recent data almost 80% of the idiosyncratic income shocks to a country's economy have remained unsmoothed, with only minor changes in the different risk sharing channels. Given that, according to the literature, capital and credit markets

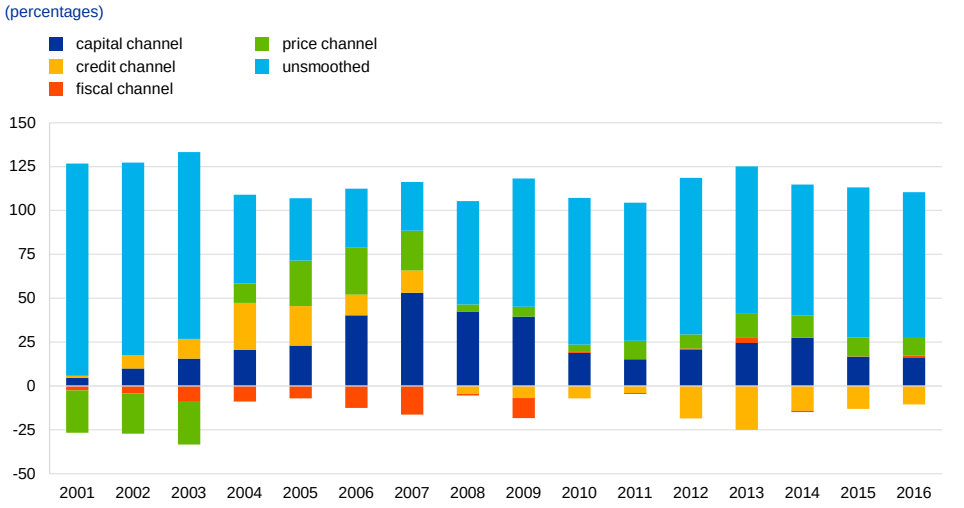
7 See Special feature A, "Financial integration and risk sharing in a monetary union", op. cit., April 2016.

8 One caveat to be mentioned is that this risk sharing indicator (like other indicators) is estimated on the basis of ten years of data up to the year indicated. As a consequence, it will lag somewhat in time. For example, it could well be that euro area credit markets have now recovered to the extent that their contribution to risk sharing is already positive again.

can make much larger contributions to risk sharing,[9] it seems that the CMU and the completion of the banking union constitute important policy agendas.[10]

Chart 2

Consumption risk sharing in the euro area and its channels



Source: ECB calculations.
Notes: The chart displays, by year, the contribution of capital markets (via cross-border ownership of productive assets), credit markets (via cross-border borrowing and lending), fiscal tools (via public cross-border transfers), and relative prices (via changes in the domestic consumer price index relative to the euro area average index) to the smoothing of country-specific shocks to real GDP growth. The respective contributions are calculated using a vector-autoregression (VAR) model whose parameters are estimated over a ten-year rolling window of annual data, applying the approach by Asdrubali, P. and S. Kim: "Dynamic risksharing in the United States and Europe", *Journal of Monetary Economics*, Vol. 51, 2004, pp. 809-836, enhanced for relative price adjustments. The bars display the share of a one-standard-deviation shock to domestic GDP growth that is absorbed by each respective risk sharing channel. The shares are computed on the basis of the cumulative impact of the shock on the variables capturing each risk sharing channel over a five-year horizon. Year-to-year variation in the shares reflects changes in the re-estimated model parameters. The remaining portion represents the portion of the shock to country-specific real GDP growth that remains unsmoothed and is fully reflected in country-specific consumption growth. The individual bars can go below 0% and above 100% if one or more of the channels involved has a dis-smoothing effect on country-specific consumption growth. All bars together total 100%. Ireland is currently excluded from the calculation of the indicator owing to unusually large revisions in some of the country's main macroeconomic statistics for 2015 that were made in July 2016. These revisions affected real GDP, some of its components and balance-of-payments figures; some of them would feed into the indicator in this chart although they would not indicate a change in risk sharing. (See Box 1.2. "Tackling Measurement Challenges of Irish Economic Activity", *World Economic Outlook*, International Monetary Fund, April 2017, pp. 43-45, which also presents the timetable for resolving the measurement problems in the future.)

2 Market-specific developments

Indicators of money market integration remained at broadly stable levels in 2016. While some measures of money market interest rate dispersion increased, trading volumes tended to send more positive signals with regard to the level of cross-border integration in the markets for short-term instruments. This overall picture should be interpreted against the background of Eurosystem non-standard monetary policy measures, which, on the one hand, lent support to money market integration but, on the other, made it more difficult to interpret integration indicators

9 Asdrubali, P., Sorensen, B., and Yosha, O., "Channels of Interstate Risk Sharing: United States 1963—1990." *Quarterly Journal of Economics*, Vol. 111, 1996, pp. 1081-1110; Hepp, R., and von Hagen, J., "Interstate risk sharing in Germany: 1970-2006", *Oxford Economic Papers* 65, 2013, pp. 1-24.

10 For a second, different indicator for the presence of income risk sharing that will be monitored, see Chart S7 in the Statistical annex. This indicator was presented in Special feature A of last year's report. While it continues to clearly reject the null hypothesis of perfect risk sharing, the measured reduction of the correlation between domestic consumption growth and domestic GDP growth since 2012 also suggests a gradual improvement in risk sharing.

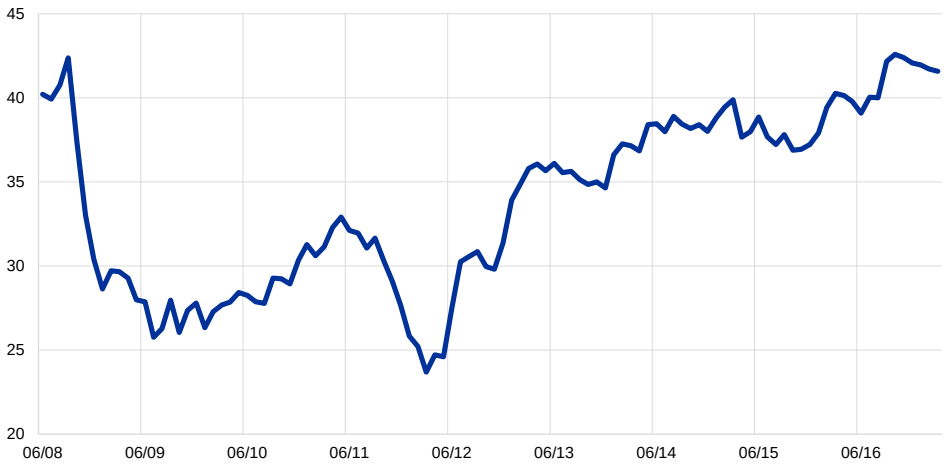
given the reduced need for market funding at high levels of excess liquidity. The continued increase in levels of excess liquidity was driven mainly by non-standard monetary policy measures, such as the APP, and to a lesser extent the TLTROs. It thus did not indicate funding stress in the banking sector, as had been the case at the height of the financial crisis.

Cross-border activity in the TARGET2 payment system recovered further in 2016. Chart 3 shows the share of intra-euro area euro-denominated cross-border volume in TARGET2. This share declined rapidly after the Lehman Brothers bankruptcy in September 2008. It then recovered gradually, before declining markedly again when the sovereign debt crisis intensified between mid-2011 and the beginning of 2012. The subsequent gradual increase in cross-border market activity, partly spurred by the Eurosystem's expanded APP, continued in 2016.[11]

Chart 3

Share of cross-border activity in TARGET2

(cross-border volume (as percentage of total))



Source: ECB.
Notes: The series shows the monthly cross-border share of the volume of all transactions carried out in euro in the TARGET2 system as a percentage of total transactions (T2S and technical transactions excluded). The total transaction volume for 2016 amounted to an average of €1.7 trillion per day.

In the interbank money market, cross-border transactions between domestic banks and non-domestic banks from other euro area countries played a larger role in the secured than in the unsecured market segment. The latest data for 2016 show that in the unsecured market the share of trading between domestic banks was above 50%, compared with 35% for the secured market (Chart 4). The share of cross-border trading with counterparties from other euro area countries stood at 19% in the unsecured and at 25% in the secured market segment. Historically, the shares of cross-border trading have been fairly similar in the two market segments, but cross-border secured trading within the euro area has recently been supported by the fact that a larger share of collateralised trades has been executed via (international) central clearing counterparties (CCPs). This trend could

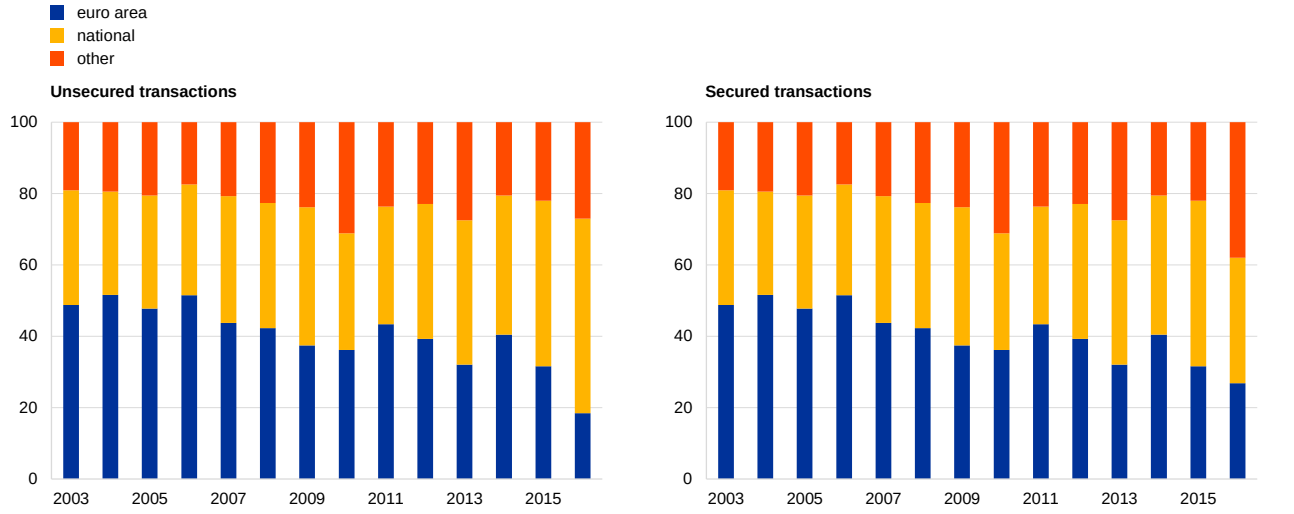
[11] Average daily transaction volumes for the APP are very small compared with those of TARGET2 (€2.7 billion compared with €1.7 trillion).

be driven by the reduction in counterparty and settlement risk as well as by lower capital charges resulting from the netting of matched trades with the same place of settlement. The lower share for cross-border unsecured market trading should be interpreted against the background of strongly declining market activity in this segment: the average daily EONIA volume dropped from €20 billion in 2015 to about €10 billion in 2016. The decline in market activity in the unsecured segment appears to be closely related to persistently high levels of excess liquidity and regulatory measures which favour secured trades; however, there is little evidence for a broad-based re-opening of cross-border business in the unsecured segment.

Chart 4

Geographical distribution of money market transactions

(annual data, percentages of total volume)



Sources: The ECB's Euro Money Market Survey, Money Market Statistical Reporting (MMSR), and ECB calculations.
Note: Data refers to the second quarter of each year. Data for 2016 are taken from the MMSR (third quarter) for those reporting banks that were also part of the Money Market Survey panel. These data are still subject to potential revision.

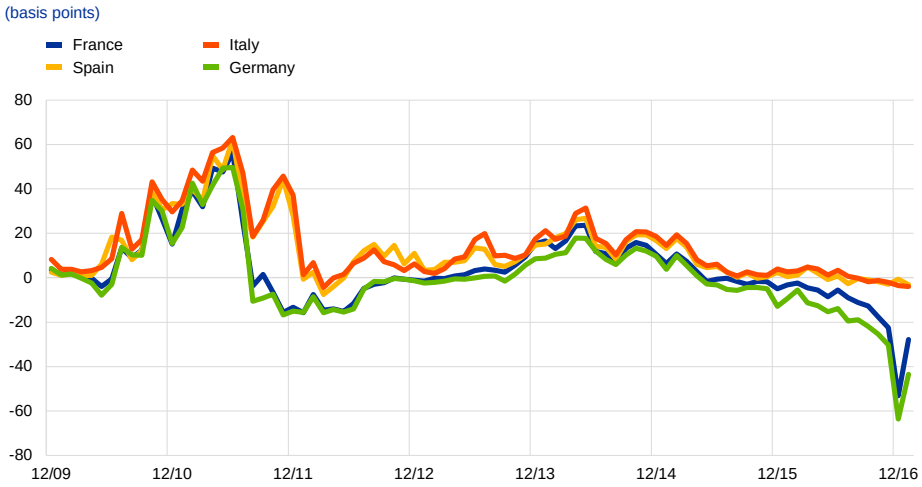
Particularly strong demand for high quality liquid assets increased the spread between repo rates for collateral issued by different euro area sovereigns. The increase in repo spreads (which can be inferred from Chart 5 showing the spreads of repo rates against the ECB's deposit facility rate) followed the implementation of new regulations, a reduction in the supply of collateral, and impairment in the fluidity of collateral, which the Eurosystem's Securities Lending Facility (SLF), including the cash collateral option, aims to improve. Such an interpretation is consistent with the fact that repo rates for Italian and Spanish collateral also traded at levels that were below the deposit facility rate, and no longer showed any signs of tensions on balance sheet reporting dates (Chart 5).[12] Thus the widening of repo market spreads should not be taken as a sign of increased market segmentation,[13] but instead as a reflection of strong demand for the highest quality collateral.

[12] Repo rates on Italian and Spanish collateral have been consistently below the deposit facility rate since September 2016 and have not displayed substantial increases at the end of the month since October 2016.

[13] Credit default swap (CDS) premia for sovereign debt have remained at very low levels (See Statistical annex: "Dispersion in five-year CDS premia across the euro area" (Chart S16)).

Chart 5

Monthly average spread between repo rates on sovereign bond collateral and the ECB's deposit facility rate



Sources: Bloomberg, Banco de España and ECB calculations.
Notes: The repo rates for Germany, France and Italy are based on RepoFunds Rate indices. The Spanish series is based on repos against Spanish sovereign bonds.

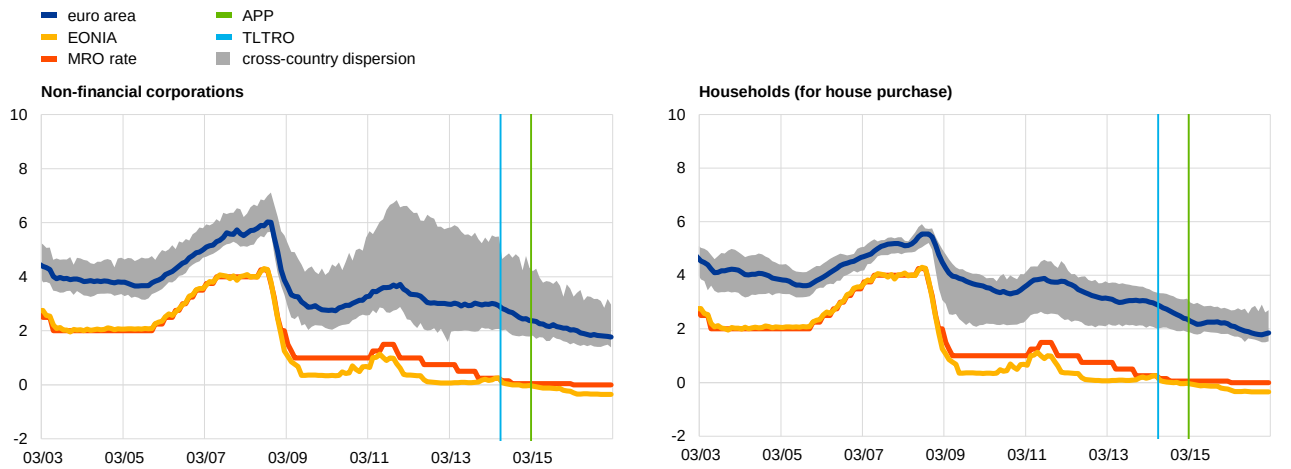
Turning to euro area banking markets, indicators of financial integration showed mixed signals in 2016. Whereas, as in the past, quantity-based indicators showed limited retail banking integration, bank lending rates for firms continued to converge across countries (Chart 6) supported by the ECB's non-standard monetary policy measures as suggested, inter alia, by the latest euro area bank lending surveys.[14] In contrast, deposit rates for non-financial corporations (NFCs) became more dispersed as negative deposit rates were introduced in some countries, and the cross-country divergence of bank bond yields increased further compared with the end of 2015 (Chart 8).

[14] See e.g. The euro area bank lending survey - Fourth quarter of 2016, ECB, January 2017.

Chart 6

Composite euro area bank lending rates for NFCs and households

(monthly data, percentages per annum)



Sources: ECB and ECB calculations.
Notes: The indicator is computed by aggregating short and long-term rates, using a 24-month moving average of new business volumes. The cross-country dispersion displays the minimum-maximum range after trimming off extreme values.

Quantity-based indicators of banking sector integration continued to signal fragmentation in retail banking. The special feature of this report shows that the assets and loans of foreign bank branches and subsidiaries in euro area countries remained at relatively low levels. The total number of foreign affiliates has declined steadily since 2011.[15] Direct cross-border loans to firms continued to grow gradually but accounted for only around 9% of all loans to firms. The share of cross-border loans to households remained negligible at around 1%. In a similar vein, cross-border deposits held by firms stabilised at low levels and represented only marginal amounts for households.

Lending rates for firms continued to converge – this was visible for all loan sizes, although particularly for small loans. During the sovereign debt crisis, the rates on small loans diverged to a greater extent than those on large loans, implying a larger burden on small and medium-sized enterprises (SMEs) in Group B countries in relative terms (Chart 7).[16] The ECB's announcement of its credit easing package in June 2014 helped reduce this dispersion, and the reversal accelerated in 2016 following the introduction of TLTRO-II. The ECB survey on access to finance corroborated the recent improvements in the availability of bank funding for SMEs in the euro area, except for SMEs in Greece.[17]

15 The ECB's Report on financial structures (October 2016) also provides information on domestic and foreign branches and subsidiaries, based on consolidated and non-consolidated ECB statistics.

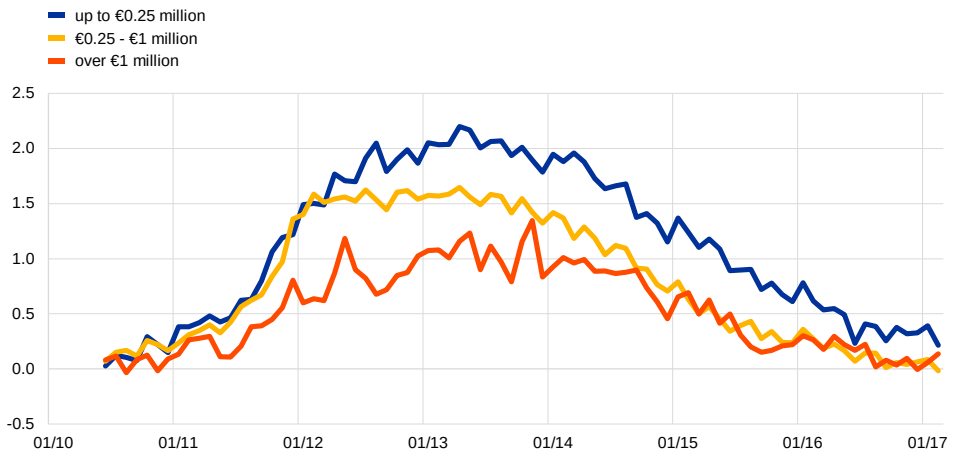
16 This refers to countries which experienced significant downgrades of their sovereign debt during the crisis, as listed in the notes to Chart 7. The methodology for the country groupings used in this report is described in the Statistical annex.

17 Survey on the Access to Finance of Enterprises in the euro area - April to September 2016, ECB, November 2016.

Chart 7

Composite rates on small, medium and large bank loans: spread between country groups A and B

(monthly data, percentages per annum)



Sources: ECB and ECB calculations.
Notes: Based on a fixed sample of euro area countries as of 2008. Group B countries here are Ireland, Spain, Italy, Cyprus, Portugal and Slovenia. Group A countries are Belgium, Germany, France, the Netherlands and Finland. No data are available for Greece, Luxembourg and Malta. Within each country group, national rates are aggregated using 24-month moving averages of new business volumes as weights. At the beginning of the sample, weights are fixed at the first computable value.

Converging lending rates, combined with diverging deposit rates, implied transitory cross-country differences in the development of interest rate margins. In line with an uneven pattern of decreasing lending rates, the narrowing of loan-deposit interest rate margins has been more pronounced in some of the countries most affected by the financial crisis, where the margins were, however, generally higher to start with. However, in some of the less affected countries, margins have also been affected by difficulties in passing on decreases in policy rates to deposit rates in the presence of a negative deposit facility rate as well as competitive pressures, or – in some cases – legal constraints. The evidence points towards downward rigidities in the pricing of deposits in several countries, especially for household deposits.[18]

Bank bond yields diverged to some extent in 2016. The increase in bank bond yields seen in the last report became a more outright divergence during 2016 (Chart 8). Moreover, whereas the divergence since last year had originally been driven by the high-yield bond segment, more recently the dispersion of the yields on investment-grade bonds has also increased to some extent.[19]

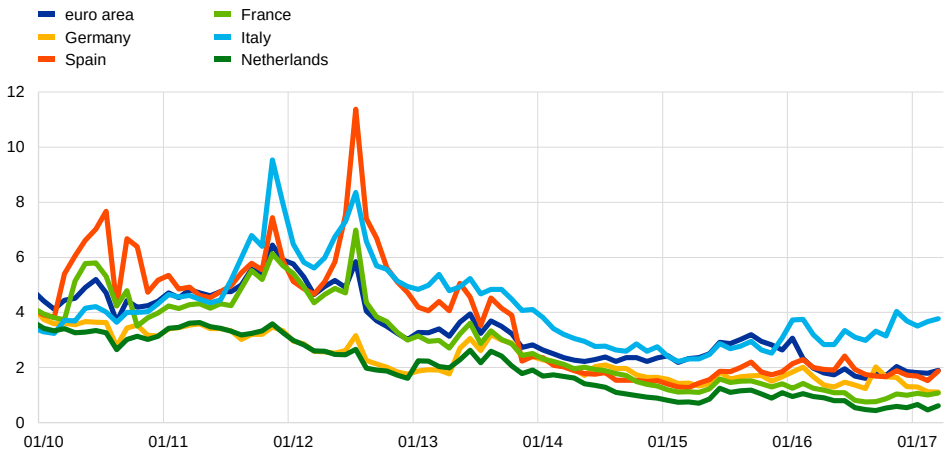
[18] See Box 4 entitled "The ECB's monetary policy and bank profitability", Financial Stability Review, ECB, November 2016. Negative rates have, however, been introduced on deposits for NFCs in some countries.

[19] Similar to the overall indicator depicted in the chart, the yields on German and Italian bank bonds also diverged from the general declining tendency in the investment-grade segment. Despite the exception of the behaviour of German bank bond yields, the developments are still closely linked with those of each country's sovereign bond yields. Chart S21 in the Statistical annex provides additional evidence of the still-tight link between sovereign and bank creditworthiness in euro area countries.

Chart 8

Bank bond yields in selected euro area countries

(monthly data, percentages per annum)



Sources: Merrill Lynch Global Index and ECB calculations.
Note: Each line refers to an index that is constructed as the average of investment-grade and high-yield unsecured senior and subordinated bank bonds weighted by their market value.

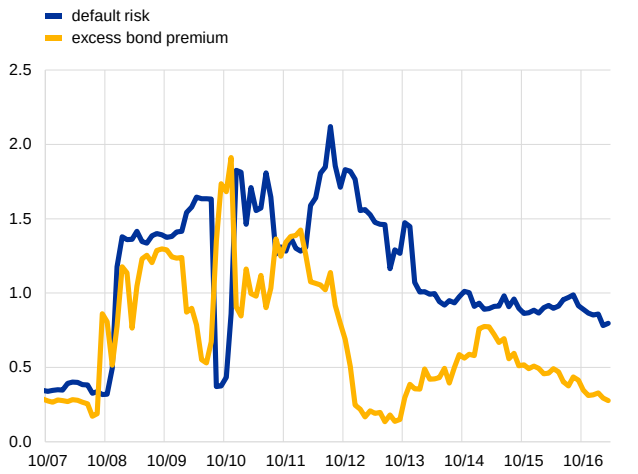
Institution-specific factors may have contributed to the most recent increase in bank bond yield divergence. At the same time, the relatively high level of divergence has been supported by persisting doubts of market participants over bank business conditions in certain jurisdictions. Focusing on the credit risk component of bank bond yields, Chart 9 shows that these perceptions may have, to a large extent, reflected differences in the default risk for banks operating in different countries (blue line). The importance of other factors that are unrelated to default risk, such as market fragmentation (yellow line), has continued to diminish particularly since the launch of the Eurosystem's public sector purchase programme (PSPP) in early 2015. Despite this improvement, however, market participants may also have incorporated factors relating to different operating conditions in euro area banking markets into the default risk of banks. For example, differences in rules guiding fixed and floating rate lending affect the sensitivity of banking sectors to the persistently low interest rate environment and, thereby, their profitability outlook and default risk. Likewise, factors shaping the efficiency and capacity of a given market, or factors determining the ability of the system to swiftly tackle NPLs in some regions, may have similar effects.[20] However, institution-specific issues such as litigation costs also played a role in the increased yield dispersion shown in Chart 8, a factor that is unrelated to financial fragmentation per se.

[20] Such structural factors often originate from differences in legal or regulatory frameworks or are history-dependent and can thus create different operating conditions for market participants. For cross-country data and an analysis of the impact of these factors on expected bank profitability, see Chapter 2 in Report on financial structures, ECB, October 2016 and Section 3.1 in Financial Stability Review, ECB, November 2016.

Chart 9

Cross-country dispersion of excess bond premia and default risk across euro area monetary financial institutions

(monthly data; standard deviation, percentage points)



Sources: Bank of America Merrill Lynch, Moody's and De Santis, R., "Credit spreads economic activity and fragmentation", *Working Paper Series*, No 1930, ECB, 2016.
Notes: The excess bond premium (EBP) is the deviation of the corporate credit spread from the measured default risk of the issuer. It is obtained by estimating the asset swap spreads of individual bonds on the basis of company and sector-specific credit risk measures as well as bond-specific characteristics using a panel methodology. The bonds covered are euro-denominated investment-grade and high-yield bonds with a maturity ranging from one year to 30 years contained in the Bank of America Merrill Lynch EMU corporate bond indices. To obtain the dispersion measures, the dispersion of default risk and EBP across nine euro area countries (Belgium, Germany, Ireland, Spain, France, Italy, the Netherlands, Austria and Finland) is used.

Given the risk sharing and broader economic benefits retail banking integration could bring, it is important to work towards overcoming the current retail fragmentation.[21] The overall low levels shown by quantity-based indicators, as well as the volatile behaviour of price-based indicators and the evidence in Chart 2 that credit markets have acted as an amplifier rather than a dampener of shocks in previous years, underline the need to work towards improving (the resilience of) integration and increasing risk sharing in credit markets. The European Commission's initiatives regarding retail financial services, a European Deposit Insurance Scheme (EDIS) and risk-reducing measures seek to introduce a common set of rules and to narrow the gap between the institutional and the regulatory set-up of the banking union.[22] The Special feature in this report discusses how a larger number of pan-European banks could contribute to better retail banking integration and risk sharing within the banking union.

Other segments of euro area bond markets showed mixed evidence on cross-country convergence in 2016. The dispersion of euro area sovereign bond yields showed a slight increase at the beginning of 2016, before oscillating around fairly elevated levels which, however, were far below the peaks reached during the crisis (Chart 10). By contrast, the dispersion of yields on euro area non-financial corporate bonds, following a brief rise in early 2016, declined steadily for the remainder of the year, particularly following the announcement of the Eurosystem's corporate sector purchase programme (CSPP) in March 2016. As a result, the dispersion of euro area non-financial corporate bond yields neared the comparatively low levels of mid-2015.

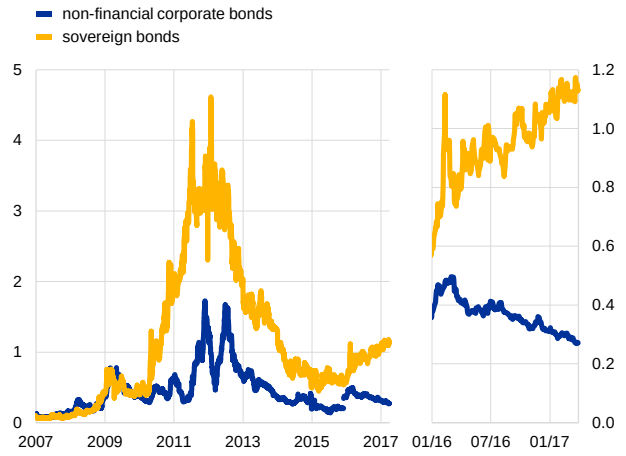
21 See Special feature A of the ECB's report Financial integration in Europe 2016, for an analysis of the risk sharing and welfare impacts of the various forms of financial integration.

22 See Green paper on retail financial services - Better products, more choice, and greater opportunities for consumers and businesses, European Commission, 10 December 2015; Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) 806/2014 in order to establish a European Deposit Insurance Scheme, COM/2015/0586 final – 2015/0270 (COD), published on 24 November 2015; and the Commission's communication Towards the completion of the Banking Union, published on 24 November 2015.

Chart 10

Cross-country dispersion of euro area sovereign and non-financial corporate bond yields

(daily data; standard deviation, percentage points)

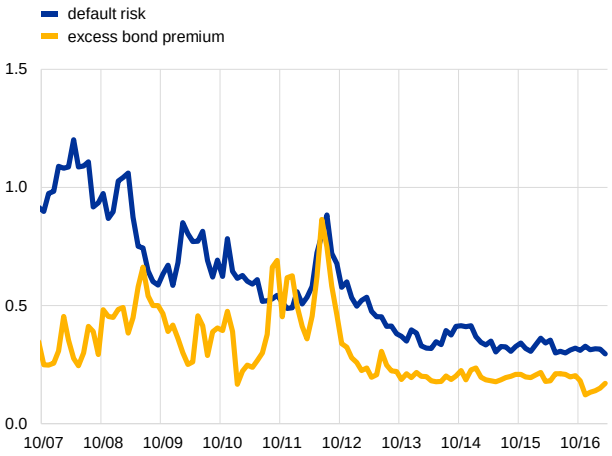


Sources: Thomson Reuters, Markit and ECB calculations.
Notes: The chart shows standard deviations for Barclays' country indices for corporate bonds (issued by NFCs) and country ten-year benchmark government bond yields. Owing to data unavailability, data include observations for (i) Germany, Ireland, Spain, France, Italy, the Netherlands, Austria, Portugal and Finland (sovereign bonds); and (ii) Germany, Spain, France, Italy, the Netherlands, Austria and Finland (non-financial corporate bonds). For non-financial corporate bonds, some of the rising dispersion in late 2015 can be attributed to technical adjustments by the index provider to the bond indices employed to compile the indicator. The effect of these changes is indicated by the gap shown in the chart.

Chart 11

Cross-country dispersion of excess bond premia and default risk across euro area NFCs

(monthly data; standard deviation, percentage points)



Sources: Bank of America Merrill Lynch, Moody's and De Santis, R., "Credit spreads economic activity and fragmentation", *Working Paper Series*, No 1930, ECB, 2016.
Notes: The excess bond premium (EBP) is the deviation of the corporate credit spread from the measured default risk of the issuer. It is obtained by estimating the asset swap spreads of individual bonds on the basis of company and sector-specific credit risk measures as well as bond-specific characteristics using a panel methodology. The bonds covered are euro-denominated investment-grade and high-yield bonds with a maturity ranging from one year to 30 years contained in the Bank of America Merrill Lynch EMU corporate bond indices. To obtain the dispersion measures, the dispersion of default risk and EBP across nine euro area countries (Belgium, Germany, Ireland, Spain, France, Italy, the Netherlands Austria and Finland) is used.

Issuer and market-specific factors are likely to have been the main driver of the widening divergence observed in sovereign bond yields. Specifically, market participants appear to have priced in rising divergence in the macroeconomic and political environment across euro area countries.[23] Mounting concerns over developments in Portugal since late 2015 are a case in point, with the associated higher yield on its government debt accounting for a sizeable part of the surge seen in the dispersion of euro area sovereign bond yields. Nevertheless, dispersion has also increased among the yields of the remaining euro area sovereigns, albeit to a lesser extent.[24] At the same time, several periods of heightened financial market volatility in the course of 2016, partly related to increased political uncertainty, as well as the phasing-in of liquidity regulation such as the liquidity coverage ratio (LCR), may have supported demand for those sovereign debt securities that are offering a high degree of liquidity, pushing up the yield spreads of the other countries' bonds vis-à-vis those highly liquid bonds.

Corporate bonds provide some additional evidence for issuer-specific factors determining at least part of the fluctuations in yield divergence. Indeed, one measure of such issuer-specific factors, the default risk of issuers of corporate bonds (Chart 11, blue line), has tracked changes in the divergence of corporate bond

[23] Some increase in the dispersion of euro area sovereign ratings in the period under review, albeit small, lends further support to the interpretation that some of the divergence of sovereign bond yields has originated from developments at country level.

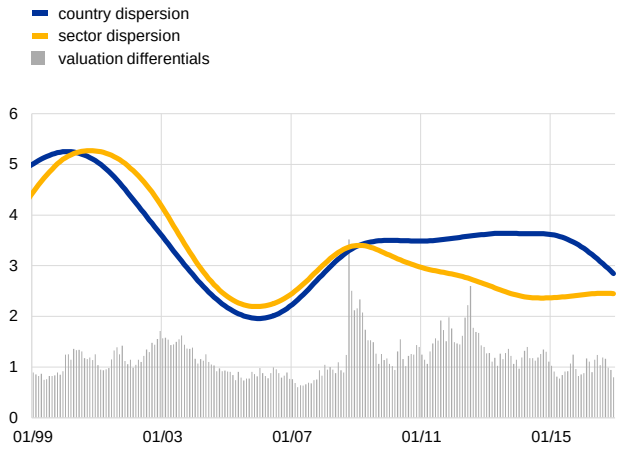
[24] After excluding Portuguese government debt, the divergence of euro area sovereign bond yields rose to 0.66 by 31 March 2017, from 0.37 at the end of 2015.

spreads (Chart 10, blue line) quite closely in recent years. By comparison, the divergence of excess bond premia, i.e. the part of the credit spread not explained by default risk, has shown only modest variability since late 2013 (Chart 11, yellow line). Taken together this suggests that a sizeable share of the remaining dispersion of corporate bond yields reflects discrimination by investors according to the credit quality of the issuer. A more substantial degree of market segmentation, in contrast, would also be expected to translate into a more significant divergence of excess bond premia.

Chart 12

Indicators of equity market segmentation

(country and sector dispersion: percentages; valuations differentials: percentage points)

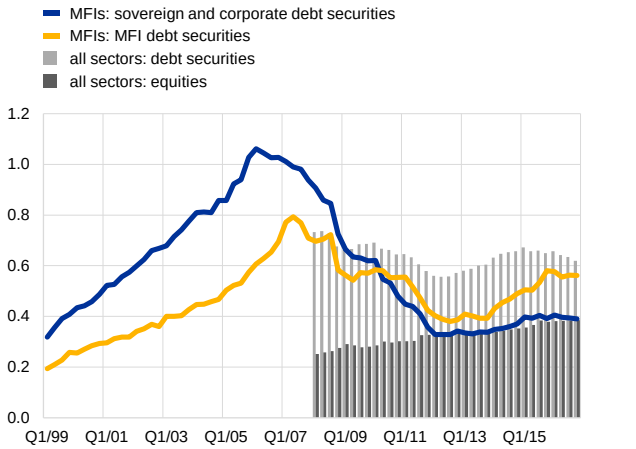


Sources: Thomson Reuters and ECB calculations.
Notes:
(1) Valuation differentials: a larger valuation differential indicates a higher level of market segmentation. To obtain the indicator, the absolute difference between the stock market valuation level (based on analyst forecasts) of a given country and the euro area average is computed for each calendar month, based on industry portfolios that allow for different valuation levels in different industries. These absolute differences are then aggregated by calculating the median across countries (see notes to Chart S23 in the Statistical annex for further technical details).
(2) Country and sector dispersion: a larger country dispersion relative to sector dispersion indicates a higher level of market segmentation. Country and sector dispersions are filtered using the Hodrick-Prescott smoothing technique (see notes to Chart S17 in the Statistical annex for further technical details).

Chart 13

Indicators of home bias in the portfolio allocation of euro area investors

(ratio, 1.0 = identical portfolio shares)



Source: ECB.
Notes: A rising ratio indicates that euro area investors are allocating an increasing portfolio share to euro area assets outside their domestic market in relation to the portfolio share allocated to their domestic market. A higher ratio therefore indicates a larger degree of cross-border euro area financial market integration and a lower home bias in portfolio investments.

Turning to equity markets, price-based indicators of segmentation show some improvement for the period under review. The convergence of euro area equity markets increased slightly compared with the end of 2015. When measured using industry-specific valuation differentials across countries (Chart 12, grey bars), convergence did not change much in 2016, remaining near pre-2008 levels. With higher bars indicating a greater degree of market segmentation, valuation differentials based on industry-level analyst forecasts are calculated as the median of the absolute differences between the valuation of the stock market of an individual euro area country and the euro area average.[25] Equity market convergence has also improved when the dispersion of equity returns across euro area sectors (Chart 12, yellow line) is compared with the dispersion of equity returns across the stock

[25] For further details, see also the explanations accompanying Chart S23 in the Statistical annex.

markets of euro area countries (Chart 12, blue line). Indeed, the excess of country dispersion versus sector dispersion continued to decline in the period under review, pointing towards euro area equity market integration approaching levels seen before the global financial crisis.[26]

Measures of integration based on the home bias observed in the portfolio structures of euro area investors did not, for the most part, improve further in the period under review. In particular, the share of assets that euro area investors allocated to debt securities from other euro area countries in relation to the share that they allocated to debt securities from their domestic market continued to decline, to a ratio of 0.62 at the end of 2016 (Chart 13, light grey bars). Likewise, the continuous rise in the ratio for equity holdings since 2008 moderated, reaching close to 0.39 at the end of 2016 (Chart 13, dark grey bars). Monetary and financial institutions (MFIs), one of the most prominent sub-sectors of euro area investors, largely maintained their relative exposure to euro area sovereign and corporate bonds issued outside their domestic market, at a ratio of about 0.39 at the end of 2016 (Chart 13, blue line). By contrast, MFI's relative holdings of debt securities issued by euro area MFIs outside their domestic market declined somewhat to 0.56 by the end of 2016, after they had shown a marked trend increase for several years (Chart 13, yellow line).

The recently included who-to-whom data on securities within the euro area accounts (EAA) framework will, in the future, offer additional ways to analyse developments in cross-border holdings of bonds at sectoral level. Box 1 shows that a major share of the bonds issued by NFCs and other financial institutions were held cross-border in June 2016.

[26] For further details, see also the explanations accompanying Chart S17 in the Statistical annex.

Box 1

Financial integration indicators based on enhanced euro area accounts' "who-to-whom" data

The ECB has recently enhanced its EAA by including extended "who-to-whom" information. Who-to-whom accounts show the funding interconnections between institutional sectors by type of financial instrument. The ECB collects quarterly who-to-whom data from each euro area country on stocks, transactions and other changes in volume, which specify the underlying financial instrument, original maturity and the institutional sectors of the creditor and the debtor. It is relevant for studying financial integration that, for euro area aggregates (but not for specific countries), the data can be broken down according to the residency of the debtor, distinguishing between domestic, other euro area, and extra-euro area debtors, with time series starting from the fourth quarter of 2013. This allows, for example, credit in the euro area (loans and debt securities) to be split into credit intermediated domestically and cross-border for all combinations of creditor and debtor sectors. Table A below presents some simple quantity-based measures of financial integration based on these data.

Table A

Simple measures of financial integration based on euro area accounts who-to-whom data on credit

	Percentage of outstanding amount held cross-border[1]		Stocks, EUR billions (Q3 2016)		Annualised growth, percentage points[2] (Q4 2013 - Q3 2016)	
Instrument/sector of debtor	Q3 2016	Q4 2013	Cross-border	Domestic	Cross-border	Domestic
Debt, long-term/NFCs	48.5	50.1	420	446	8.4	1.5
Debt, long-term/OFIs	44.9	45.8	933	1,246	-0.2	-7.8
Debt, short-term/government	41.8	26.8	91	126	1.4	-13.0
Loans, short-term/NFCs	40.0	35.3	1,108	1,660	4.7	-1.2
Debt, long-term/government	39.0	34.0	1,973	3,089	3.9	-2.0
Loans, long-term/OFIs	35.5	31.2	638	1,159	4.5	3.1
Debt, long-term/MFIs	32.6	25.5	800	1,653	-4.1	-12.8
Loans, short-term/OFIs	26.7	27.0	244	670	7.8	2.3
Loans, long-term/NFCs	23.8	21.5	1,525	4,888	2.7	0.9
Loans, long-term/government	19.8	22.9	329	1,333	-0.4	1.2

Notes: NFCs denote non-financial corporations, OFIs other financial intermediaries and MFIs monetary financial institutions. Data are based on positions exceeding €100bn as of the third quarter of 2016. Securities held by the Eurosystem are excluded from the calculations.
1) Ratio of liabilities owed to a non-domestic euro area creditor to liabilities owed to all euro area creditors (i.e. domestic and other euro area creditors). 2) The annualised growth is computed on the basis of the who-to-whom transactions cumulated over the period.

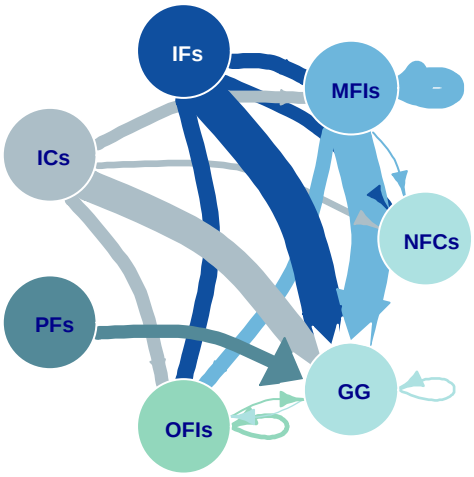
The data indicate that a major share of bonds issued by NFCs (48.5%) and other financial intermediaries (OFIs) (44.9%) was held by non-domestic euro area investors in the third quarter of 2016. For both sectors, investment funds and insurance corporations were the main cross-border creditors (see Chart A). Cross-border short-term loans to NFCs accounted for almost 40% of the

total and were granted mostly by OFIs, as well as by other NFCs (see Chart B).[27] In absolute terms, long-term government debt is still the largest position held cross-border (€1,973 billion), and has also shown significant growth (3.9% per annum) since data has been available.

Chart A

Cross-border holdings of bonds

(Q3 2016)

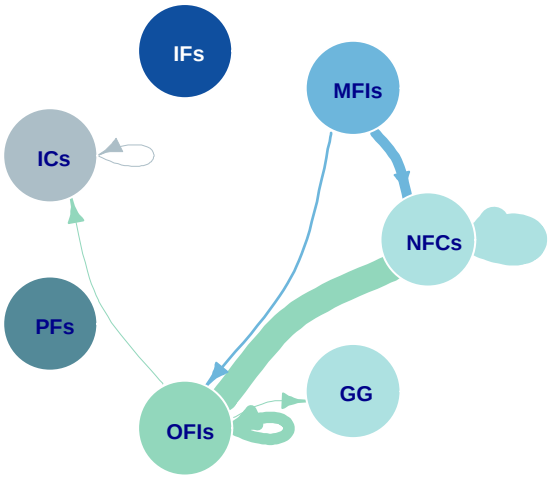


Notes: ICs denote insurance corporations, IFs denote investment funds, NFCs denote non-financial corporations, GG denotes the government, OFIs denote other financial intermediaries, MFIs denote monetary financial institutions, PFs denote pension funds. The thickness of the arrows is proportional to the outstanding amount of debt securities that are held on a cross-border basis. The origin and colour of an arrow denotes the holder sector, whereas the destination of an arrow identifies the issuing sector. Securities held by the Eurosystem are excluded from the calculations. Aggregate holdings below €10 billion are not plotted.

Chart B

Cross-border holdings of short-term loans

(Q3 2016)



Notes: ICs denote insurance corporations, IFs denote investment funds, NFCs denote non-financial corporations, GG denotes the government, OFIs denote other financial intermediaries, MFIs denote monetary financial institutions, PFs denote pension funds. The thickness of the arrows is proportional to the amount of short-term loans outstanding granted on a cross-border basis. The origin and colour of an arrow denotes the creditor sector, whereas the destination of an arrow identifies the debtor. Aggregate holdings below €10 billion are not plotted.

In summary, the information collected by the ECB on a who-to-whom basis facilitates an assessment of the relative importance of cross-border funding for each institutional sector in the euro area. A valuable feature of the data resides in the internal consistency which results from its compilation within the comprehensive framework of the EAA. This framework facilitates comparisons and aggregations of data across instruments, maturities and sectors. For instance, the share of combined credit liabilities (loans plus debt securities) that are funded on a cross-border basis by each institutional sector can be determined and monitored over time as an indicator of financial integration in the euro area.

[27] A significant part of cross-border short-term loans provided by the OFI sector to NFCs may correspond to loans granted by captive financial institutions to their parent NFC. Some captive financial institutions are established to issue marketable debt securities in another jurisdiction. The captives typically pass the proceeds of the issuance onto their parent or other companies within the corporate group. The extent to which these marketable debt securities are purchased by investors in a different jurisdiction from that of the parent NFCs is currently not known. The ECB is working to improve the information regarding the captives subsector within the broader OFI sector as a further improvement to the euro area accounts.

Chapter 2: Eurosystem activities for financial integration

The ECB's activities contributing to financial integration in 2016 have centred on two key policy initiatives at EU level: the banking union and CMU. To complete the banking union, it is important to pursue risk reduction and risk sharing in parallel, moving forward as quickly as possible. The ECB has contributed to this by supporting the proposal to establish a EDIS, by working towards the reduction of non-performing exposures on bank balance sheets and by conducting a targeted review of bank-internal models, among many other risk-reducing supervisory activities. It is important that the review of the CRD/CRR, the BRRD, and the SRMR leads to tangible progress in the EU's regulatory framework in good time. Limited action has so far been taken by legislators to harmonise ONDs in EU legislation, and the ECB would like to see more ambition in this area, in order to facilitate financial integration. With regard to the ongoing review of the EU's macroprudential policy framework, the ECB's contribution to the European Commission's consultation suggested, among other proposals, simplifying activation procedures for macroprudential policy instruments, dividing the policy instruments more effectively between microprudential and macroprudential authorities and adding borrower-based instruments to the macroprudential toolkit.

In order for the CMU to make progress and since it is necessary to proceed in a context of financial stability, the ECB also suggests that the EU create a macroprudential framework for non-bank financial intermediaries. It welcomes efforts to harmonise insolvency rules for credit institutions and other entities in the context of the CMU. For example, market-led initiatives to improve the comparability of information on the ranking of creditor claims could be a meaningful step forward. Moreover, the adoption of best practices for out-of-court settlements for viable firms and the establishment of standard guidelines for voluntary debt workouts in a larger number of EU countries would make restructuring and insolvency regimes more efficient. The legislation for a new framework for STS securitisation is close to finalisation. It is important that the new framework achieves the right balance between the need to revive the European securitisation markets and the need to avoid financial stability risks stemming from securitisation as experienced in the recent financial crisis. The discussions on the appropriate retention rate for securitisations should also take into account the fact that the alignment of interests can also be achieved by complementary measures such as ensuring transparency. Finally, the universal settlement platform T2S aims to reduce cross-border settlement costs to domestic levels and increase competition among providers of post-trading services in Europe. As such, T2S is an essential ingredient for the creation of a single market for financial services in the EU. In 2016 and early 2017 three migration waves brought the number of central securities depositories (CSDs) connected to the platform to 18 covering 16 European markets.

The ECB considers financial integration to be, first and foremost, a market-driven process, with policy initiatives focusing on enabling market forces to work across the euro area and on addressing potential market failures. The ECB is supporting this process via a number of activities, including advising on the legislative and regulatory framework for the financial system, catalysing private sector activities, and acquiring knowledge concerning the state of financial integration. In the following two sections, the most relevant activities are explained in more detail, relating them to the two major EU-level initiatives: the banking union and the CMU. The table at the end of this chapter provides a more complete list of Eurosystem and ECB activities supporting financial integration.

1 Banking union

Substantial achievements have been made in setting up a banking union in Europe but progress towards its completion has recently been slow. The banking union has already significantly improved financial integration in the euro area – the first pillar of the union, the Single Supervisory Mechanism (SSM), became operational on 4 November 2014, while the second pillar, the Single Resolution Mechanism (SRM), entered into force on 1 January 2015. Since then, the continuing harmonisation of supervisory methods and processes has contributed very substantially to financial integration in the euro area. However, quantity-based indicators of banking sector integration continue to show only a limited cross-country penetration of retail banking markets.[28] This fragmentation impedes effective private financial cross-country risk sharing and other benefits of the single market for financial services.[29] Moreover, except in some cases where a feedback loop exists between bank risk and sovereign risk (in particular for countries with a substantial home bias), the observed divergence in bank bond yields might also reflect the increasing doubts of market participants over bank business conditions in certain jurisdictions.[30] To strengthen and complete the banking union, further risk sharing and risk reduction are equally important and necessary. In this regard, the ECB has continued to support the establishment of the third pillar – the EDIS – and the respective fiscally neutral public backstop. The ECB has also contributed to the further development of the capacities of the SRM, in particular by supporting the establishment of a fiscally neutral public backstop to the Single Resolution Fund. In parallel, the ECB is contributing to efforts aimed at risk reduction within the banking sector, in particular by reducing non-performing exposures on bank balance sheets, and by reviewing internal models, in order to assess their adequacy and foster comparability between risk-weighted assets. It has also continued with a project to level the playing field for banks by harmonising and, in some cases, reducing the timeframe for exercising ONDs in the prudential regulatory framework granted to competent authorities.

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28 See Section 2 of Chapter 1, the Special feature and Charts S29 and S32 of the Statistical annex.

29 See Chart 2 in Chapter 1 (notably the credit channel therein), Chart S7 in the Statistical annex and Special feature A of the ECB's report Financial integration in Europe 2016.

30 See Chapter 1, e.g. Chart 9.

European Deposit Insurance Scheme

Establishing the third pillar of the banking union – an EDIS – remains a priority in fostering financial integration and financial stability in Europe. In order to reap the benefits of a common currency, more integrated financial markets need to be governed by proper rules and credible institutions. The supervision and resolution of banks has been elevated to the European level, and a single rulebook now provides a more level playing field as well as rules that foster financial stability. Deposit protection also follows the same rules across the EU, although it remains under national responsibility, as do economic policies that influence the business environment for banks. The ECB therefore fully shares the European Commission's view that a single system of deposit protection is the necessary third pillar of the banking union.[31] The pooling of resources within a European fund would enable the EDIS to withstand larger shocks, enable risk diversification and, overall, provide a stronger deposit guarantee system than the existing national systems that can engage in voluntary lending to one another.[32] A key benefit the EDIS offers is stronger and more resilient liquidity support, which is crucial for a deposit guarantee scheme's ability to make swift pay-outs to depositors should a bank fail.

While there are several possible designs for an EDIS, the ECB supports a fully fledged EDIS in the steady state, as proposed by the European Commission.[33] A fully fledged EDIS, i.e. a scheme with a pre-funded, single and common deposit insurance fund with a public backstop, would provide a uniform system of deposit insurance that would ensure adequate and consistent depositor protection across participating Member States and also limit the link between a bank and its home sovereign. These characteristics distinguish a fully fledged EDIS from less integrated schemes which would rely on co-insurance or re-insurance. The absence of a common backstop, in particular, would risk undermining the credibility of the third pillar and leave the banking union incomplete. A fully fledged EDIS could boost depositor confidence and foster development of the level playing field within the banking union. Confidence is needed under normal conditions to ensure stable deposit levels, but is particularly important in times of crisis, to prevent bank runs and contagion. The important stabilising effect of a fully fledged EDIS for the banking union as a whole, and thus the entire EMU, will benefit all participating Member States and support financial integration in a sustainable manner.

Enhanced risk sharing via the EDIS should be accompanied by adequate safeguards against moral hazard. The literature on deposit guarantee schemes highlights the potential existence of moral hazard linked to deposit guarantees, as the existence of a guarantee might eliminate or reduce incentives for depositors to exercise effective monitoring and market discipline. This could, in turn, encourage

31 See Opinion of the European Central Bank (CON/2016/26).

32 See also the European Commission's Effects Analysis on the European Deposit Insurance scheme.

33 See Chapter 2 of the ECB's report Financial integration in Europe 2016.

banks to freeride on deposit insurance and take on more risk.[34] Therefore, in addition to a strong supervisory and regulatory framework imposing discipline on bank management,[35] incentive mechanisms limiting moral hazard should be included in the design of deposit insurance schemes.[36] The European Commission's proposed EDIS foresees that the fully fledged European system will be phased in gradually, which will also provide the time needed to address potential legacy risks in specific banks or countries. Introducing risk sharing and risk reduction in parallel is important but not sufficient to address moral hazard risks, which could arise if banks take excessive risks or if Member States implement economic policies that are unsustainable for their banks, relying ultimately on the mutualisation of some losses across banks or countries. Therefore, the Commission's proposal further provides for risk-based contributions to the deposit insurance fund calculated on the basis of a banking union-wide methodology. Risks would be taken into account at the start of the EDIS and when aggregate deposits increase thereafter, relative to all other participating credit institutions and not just the national institutions. The appropriate regular pricing of the risk-based contributions is required so that the risks banks pose to the EDIS are taken into account in the correct manner.

At the same time, progress on the EDIS should continue to be accompanied by implementing the measures needed to finalise the reform of the regulatory framework for financial services. In this regard, the European Commission has proposed a package of changes to the CRR, the CRD, the SRMR and the BRRD that are a step in the right direction. It will implement important elements of the global regulatory reform agenda in EU legislation, such as the total loss-absorbing capacity (TLAC), the leverage ratio and the net stable funding ratio. Tangible and timely progress on these reforms is necessary as they will help to strengthen the regulatory architecture of the EU. However, the ECB would like to see more ambition from legislators on harmonising ONDs in the CRR and CRD (for supervisory harmonisation efforts see a subsection below).

Review of the macroprudential framework

Further harmonisation and coordination of macroprudential policies is essential to ensure financial stability and promote financial integration. This is especially relevant for Europe given the important interconnections and dependencies of the different national economies and their financial systems. For

[34] See for example Demirgüç-Kunt, A. and Detragiache, E., "Does deposit insurance increase banking system stability? An empirical investigation", *Journal of Monetary Economics* 49(7), 2002, pp. 1373-1406. See also Demirgüç-Kunt, A. and Huizinga, H., "Market discipline and deposit insurance", *Journal of Monetary Economics* 51(2), 2004, pp. 375-399. The net effect of introducing a EDIS on overall moral hazard risk relative to the moral hazard arising from previously existing national schemes will depend on the respective differences in the net balance between the degree of protection and the incentive mechanisms against moral hazard.

[35] See for example Anginer, D., Demirgüç-Kunt, A. and Zhu, M., "How does deposit insurance affect bank risk? Evidence from the recent crisis", *Journal of Banking & Finance* Vol. 48, Issue C, 2014, pp. 312-321.

[36] See for example Allen, F., Carletti, E., Goldstein, I. and Leonello, A., "Moral Hazard and Government Guarantees in the Banking Industry", *Journal of Financial Regulation* 1(1), 2015, pp. 30-50.

financial integration to be successful and sustainable in Europe a single banking market requires a consistent macroprudential approach.[37]

The ECB issued a contribution to the European Commission's consultation on the Review of the EU Macroprudential Policy Framework.[38] The European Commission published its consultation paper on 1 August 2016. The objective of the consultation was to gather evidence and stakeholder feedback to analyse possible framework improvements, reflecting upon: (i) the general approach and scope of the review; (ii) the macroprudential instruments, in particular with regard to the interactions of tools and procedures; and (iii) the institutional setting and governance.

In its reply the ECB suggests, among other points, simplifying activation procedures for macroprudential policy instruments, dividing the policy instruments more effectively between microprudential and macroprudential authorities, adding borrower-based instruments to the macroprudential toolkit and creating a macroprudential framework for non-bank financial intermediaries. The ECB supports the review of the macroprudential framework which should focus on simplifications and coherence, notably by streamlining notification and activation procedures for capital buffers and the other macroprudential instruments stipulated in the CRR/CRD IV. In addition, further harmonisation of the toolkit is required in order to ensure that the macroprudential authorities have a consistent set of tools that can be applied in a harmonised manner across Member States. In this regard, one additional goal is to disentangle the responsibilities of the microprudential and macroprudential authorities for the different instruments. At the same time, flexibility is needed when applying the macroprudential toolkit in order to be able to react to idiosyncratic elements in each banking system. The review also needs to ensure the establishment of the banking union is reflected in the relevant legislative texts, particularly the fact that national authorities have been responsible for macroprudential policy for euro area countries alongside ECB oversight and top-up powers since the establishment of the SSM. There is some evidence that borrower-based instruments, such as limits on loan-to-value (LTV), loan-to-income (LTI) or debt service-to-income (DSTI) ratios, are more effective in addressing risks emerging from, for example, real estate markets than capital-based measures.[39] For this reason they should be considered for inclusion in the European macroprudential toolkit, i.e. in the CRR and CRD IV, which would allow for the harmonised use of these instruments in the Single Market.[40] Finally, the ECB is of the view that creating a macroprudential framework for non-banks is necessary

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37 See Report on the Macroprudential Research Network (MaRs) by the ESCB Heads of Research for a discussion of cross-country spill-overs from macroprudential policies.

38 See ECB contribution to the European Commission's consultation on the review of the EU macroprudential policy framework.

39 See e.g. Claessens, S., Ghosh, S.R. and Mihet, R., "Macro-Prudential Policies to Mitigate Financial System Vulnerabilities", *IMF Working Paper,* No. WP/14/155, 2014, or Cerutti, E, Claessens, S. and Laeven, L., "The Use and Effectiveness of Macroprudential Policies: New Evidence," Forthcoming, *Journal of Financial Stability*, 2016.

40 Hartmann, P., "Real Estate Markets and Macroprudential Policy in Europe", *Journal of Money, Credit and Banking*, 47(S1), 2015, pp. 69-80, makes the case for the incorporation of these instruments in macroprudential policy frameworks, their introduction in the relevant European Union legislation and the need for a well-defined cross-country coordination mechanism for using them in Europe, and reviews the relevant literature.

so that the authorities can address risks arising from continuously growing credit activities outside the traditional banking sector.[41] This is all the more important in the context of the EU's CMU project, which should combine aspects of financial development with ensuring financial stability (see Section 2 in this chapter). The toolkit could include measures directed at non-bank entities and activities, for example margin and haircut requirements for derivatives and securities financing transactions.

Reduction of non-performing loans

The ECB is helping to reduce risks within the banking sector through various activities aimed at reducing non-performing loans (NPLs) on bank balance sheets. NPLs are a particular challenge for banks and have increased significantly since 2008, in particular in Member States that have undergone significant economic adjustment processes in that period. Large amounts of NPLs can weaken banks' balance sheets through different channels: increasing the riskiness of the asset side, increasing the cost of funding, or altering the risk-taking behaviour of banks. Large amounts of NPLs contribute to low bank profitability and constrain the ability of banks to provide new financing to the economy, and therefore limit investment and job creation.[42] Ultimately, the reduction of impediments to resolving NPLs and the reduction of NPLs themselves will also support financial integration, not least by facilitating the completion of the banking union and by creating a more favourable environment for cross-border market penetration (see the Special feature in this report).

ECB Banking Supervision aims to reduce NPLs by encouraging banks to set specific reduction targets. Since the comprehensive assessment in 2014 the ECB has continued to support NPL resolution activities through a constant supervisory dialogue with relevant banks. In order to address this lingering challenge in a determined and forceful manner, ECB Banking Supervision developed draft NPL guidance which was published in September 2016 for consultation. The final guidance on NPLs was published on 20 March 2017.[43] This guidance is an important step on the journey towards a deliberate and sustainable reduction in NPLs. High levels of NPLs should be addressed by the relevant banks as a matter of priority, and in a comprehensive manner, by focusing on their internal governance and setting their own quantitative targets which will be subject to scrutiny by joint supervisory teams. Proactive engagement by the banks will put them in a better position to fully support lending and investment in their economies. While addressing the high stock of NPLs is a key supervisory priority for ECB Banking Supervision, it must be stressed that this cannot be achieved by the supervisor or the banks alone.

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41 See Box 6 of the ECB's Financial Stability Review, November 2016, and Doyle, N., Lieven, H., Molitor, P. and Weistroffer, C., "Shadow banking in the euro area: risks and vulnerabilities in the investment fund sector", *Occasional Paper Series*, No 174, ECB, 2016.

42 See Special feature B of the ECB's Financial Stability Review, November 2016.

43 See the ECB's Guidance to banks on non-performing loans.

Further regulatory and policy actions at EU and national level are needed to address structural obstacles that prevent banks from resolving their NPLs and restructuring distressed debt. The ECB, together with the national supervisory authorities, has conducted a stocktake of national supervisory practices and legal frameworks concerning NPLs.[44] While a number of countries have taken proactive and coordinated prudential, judicial and other measures to tackle the issue, some countries could improve their legal and judicial framework still further to better facilitate the timely workout of NPLs. Therefore, active measures are needed to remove the external impediments to NPL resolution, such as improving the efficiency of judicial systems, increasing access to collateral, and creating fast out-of-court procedures. It is necessary to better develop secondary markets for distressed assets and facilitate sales of troubled loans to non-bank investors. In this context, efforts will be required to foster the development of an NPL servicing industry and to remove tax and legal impediments to debt restructuring. There seems to be very little cross-border integration of the few significant national markets for distressed assets that exist in Europe. Last but not least, an improvement of data quality and access is relevant at all stages of the NPL resolution process and, in particular, for the development of secondary markets. The ECB stands ready to continue to offer its input and to support reforms in this area.

Options and national discretions

ECB Banking Supervision has completed an important project to harmonise the use of ONDs in the relevant legislation for banks under its direct supervision.[45] On 24 March 2016 ECB Banking Supervision completed one of its most important projects to harmonise supervisory practices in the SSM by publishing the Regulation and the Guide on options and discretions.[46] These instruments permit the homogeneous treatment of over 130 supervisory options and discretions in the prudential framework and contribute to reducing the regulatory divergence which existed prior to the establishment of the SSM. Applying these instruments, banks that are directly supervised by ECB Banking Supervision can carry out cross-border operations in participating Member States under uniform rules and with consistent criteria guiding supervisory assessment. In this respect the implementation of the OND policy on waivers from liquidity requirements and the exemptions of intragroup large exposures from regulatory limits[47] are of particular importance. Since the waivers allow banks to apply these two requirements at group level rather than at the level of country entities, they facilitate the free flow, (re)allocation and centralised management of funds for cross-border banking groups. This is expected to have a positive effect on the degree of financial integration.

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44 See the ECB's report Stocktake of national supervisory practices and legal frameworks related to NPLs.

45 See Special feature B of the ECB's report Financial integration in Europe 2016.

46 See the ECB's press release ECB publishes Regulation and Guide on how to harmonise options and discretions in banking supervision, 24 March 2016.

47 The exemption of intragroup large exposures from regulatory limits is directly applicable from 1 October 2016.

ECB Banking Supervision has also achieved further harmonisation for banks that are supervised by national competent authorities (NCAs). In this regard, it has, in very close cooperation with NCAs, extended the majority of OND policies to less significant banks that are directly supervised by NCAs under the ECB's oversight.[48] Given the diverse landscape of these banks, the principle of proportionality has been a crucial factor in deciding the best way to apply the published OND policies to this group of banks. The aim is to ensure a level playing field and the smooth functioning of the euro area banking system as a whole. These supervisory actions represent an important step towards producing a rulebook that is truly single, although progress towards harmonisation still depends on sources of divergence which are beyond supervisory reach, and on the full completion of the banking union. Limited action has, until now, been taken by legislators to harmonise options and discretions in EU legislation, and the ECB would like to see more ambition in this regard in the review of the CRR and CRD, also to facilitate financial integration.

Analytical credit dataset (AnaCredit)

The ECB has made progress on establishing an analytical credit dataset (AnaCredit). On 18 May 2016 the Governing Council adopted Regulation ECB/2016/13 on the collection of granular credit and credit risk data (the AnaCredit Regulation). AnaCredit is a project to set up a dataset containing detailed information on individual bank loans in the euro area, harmonised across all Member States. The data are to be used as a primary source of information for analytical and statistical processes with regard to credit exposures of the financial sector and associated credit risks. The dataset is designed to support core central banking functions – notably the preparation and operation of monetary policy, risk management and macroprudential policies, as well as associated research and statistics. It will serve to assess credit developments, providing a comprehensive, accurate and detailed insight and supporting a wide range of monetary and financial stability analyses. Given the granularity of the data, it will also be relevant for banking supervision, although further work is required before AnaCredit can be used extensively for such purposes, including, for example, the addition of credit risk attributes or better coverage of foreign branches and subsidiaries which are currently outside the AnaCredit perimeter. The data collection is scheduled to start in November 2018, for data referring to end-September 2018.

AnaCredit is planned to be introduced in stages. The first stage relates to information on credit granted by euro area credit institutions to legal entities (including NFCs). Enhancements are possible in the future, such as extending the reporting population to other lenders, or other instruments and counterparty sectors, in order to cover, for example, residential real estate. The scope and timeline of such

[48] See the ECB's press release ECB harmonises supervisory rules for less significant institutions, 13 April 2017.

enhancements will be subject to a further assessment of related merits and costs and to a decision by the Governing Council.[49]

Given its granularity, AnaCredit data will support analyses beyond aggregates and reveal underlying developments at the national and European levels. For example, the availability of granular loan-by-loan data will support the monitoring of the characteristics of counterparties, allowing more advanced research into and thus a better assessment of the driving forces behind any aggregated development. In this context, AnaCredit will reinforce currently available tools supporting the soundness and transparency of the European financial system, allowing a better analysis of initiatives aimed at fostering the funding of the economy. Bank loans are the main source of financing for European companies – and almost the only source for SMEs – and loans constitute a very large share of the assets on banks' balance sheets. Detailed, timely and high-quality information on credit is essential for monetary and financial stability policies – such information, for example, will help provide an understanding of supply and demand factors in credit developments, both at the aggregated level and at regional or sectoral levels. Last but not least, AnaCredit allows NCBs that maintain a central credit register the flexibility to provide banks with information collected for AnaCredit purposes via "feedback loops". These will also, in the near future, be allowed to include cross-border data collected by other NCBs which have signed a Memorandum of Understanding for these purposes. The standardisation in credit datasets brought by AnaCredit, as well as the extended feedback loops, are expected to become a catalyst for market integration and offer support to cross-border lending.

2 Capital markets union

The CMU has the potential to become a key driver of financial integration in the EU. As an umbrella project for a wide range of legislative and non-legislative initiatives, the CMU is the natural complement to the banking union – it will strengthen EMU and deepen the Single Market. It will support the smooth and homogenous transmission of monetary policy, enhance funding sources and investment opportunities for firms and households, and help foster financial stability by, inter alia, creating deeper, more liquid and new financial markets, thereby increasing the resilience of the financial system and the economy at large. The CMU will also foster more cross-border private financial risk sharing, which will support the functioning of EMU by smoothing the effects of economic cycles.

The ECB welcomes progress on the European Commission's action plan and supports the ambitious agenda for further action in the long term aiming to achieve a high level of financial integration, as is called for in the Eurosystem contribution to the European Commission's Green Paper on "Building a Capital

[49] The Governing Council will take its decision on possible future enhancements at least two years prior to their implementation.

Markets Union".[50] In this regard, the ECB also welcomes the Commission's communication on accelerating the CMU. [51] Apart from supporting and engaging in various legislative initiatives related to the CMU, such as the ECB Opinion on the Prospectus Regulation[52] and the Eurosystem contribution to the Green Paper on Retail Financial Services[53], the ECB has made a significant contribution to establishing a STS securitisation framework[54] and a harmonised covered bonds framework in the EU.[55]

Insolvency frameworks

Efforts should continue to harmonise insolvency rules for credit institutions and other entities across Member States. In addition to the BRRD and the establishment of the SRM, in some cases credit institutions might still only be subject to normal corporate insolvency proceedings, which are not designed to take the special nature of credit institutions into consideration. The Insolvency Law Group of Experts should therefore be revived for the purpose of exploring which aspects of insolvency laws – procedural and substantive – can be harmonised, carefully considering the general scope of national insolvency law. A more harmonised legal framework for insolvency would also support the cross-border integration of capital markets in the EU.

With regard to insolvency rules for NFCs, the European Commission should identify further areas of insolvency law where harmonisation would be most beneficial for the development and integration of capital markets. As long as insolvency law remains national in character, it will be difficult for cross-border investors to properly evaluate the risks they take on when they invest in equities or bonds issued by legal entities in other EU jurisdictions. This also influences the recovery rates of NPLs and hence the economic viability of banks in different countries. The Insolvency Regulation provides a minimally harmonised procedure at EU level for the insolvency of legal entities established in the EU. However, many issues of substance, such as determining priority (i.e. the ranking of claims), remain anchored in national insolvency law, although recognised in the EU as a whole under EU law. A meaningful step forward could be to improve the comparability of information concerning the ranking of creditor claims in insolvencies across jurisdictions. This could be achieved by a market-led initiative by originators and issuers to increase the comparability of this information in the documentation they

50 See Building a Capital Markets Union – Eurosystem contribution to the European Commission's Green Paper.

51 See the European Commission's communication Capital Markets Union - Accelerating Reform (COM(2016) 601), 14 September 2016.

52 See Opinion of the European Central Bank (CON/2016/15).

53 See Eurosystem response to the Commission's Green Paper on retail financial services: better products, more choice, and greater opportunities for consumers and businesses.

54 See Opinion of the European Central Bank (CON/2016/11).

55 See Covered bonds in the European Union – ECB contribution to the European Commission's public consultation.

provide to investors. Also, the European Commission has recently made a legislative proposal to improve preventive restructuring.[56]

The procedural efficiency of insolvency should be addressed to ensure more efficient debt restructuring and insolvency regimes for firms, since these currently vary widely between Member States. Restructuring regimes' effectiveness is often hampered by slow creditor coordination, a lack of new financing for viable companies undergoing restructuring and an overburdened judicial system. In many cases, restructuring and insolvency regimes could become more efficient by adopting best practices more widely. This would include, inter alia, strengthening measures to facilitate out-of-court settlements for viable firms; introducing centralised guidelines for voluntary debt workouts, coupled with independent intermediation for larger companies; and establishing standardised voluntary workouts for SMEs. In that regard, the ECB has contributed to work done by the Eurogroup on designing, recommending and coordinating best practices across Member States. It is important to ask whether further legislative or non-legislative measures in this area can be taken for the purpose of allowing the CMU to produce its full effects on financial integration and capital market development.

Securitisation

The legislation for a new framework for STS securitisation is close to finalisation and will implement the lessons learnt in the financial crisis. STS securitisation is a CMU priority, and work has been undertaken at a very high pace at both the European[57] and wider international levels. While the EU standards will only be finalised after the successful completion of the trilogue negotiations between the European Commission, the EU Council and the European Parliament, the proposals from the three European institutions are generally aligned with the international standards, namely with the revision of the securitisation framework by the Basel Committee on Banking Supervision (BCBS) to include simple, transparent and comparable (STC) securitisation, completed in July 2016[58].

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56 See Proposal for a Directive of the European Parliament and of the Council on preventive restructuring frameworks, second chance and measures to increase the efficiency of restructuring, insolvency and discharge procedures and amending Directive 2012/30/EU (COM(2016) 723 final).

57 Following a call from the European Commission in January 2014 to identify appropriate characteristics to designate "high-quality" transactions, the European Banking Authority (EBA) delivered a report in July 2015 on qualifying securitisation. On the basis of the report, the Commission made a legislative proposal in September, and the EU Council finalised its negotiating stance in December of the same year. The European Parliament finalised its stance in December 2016, and trilogue negotiations have started in 2017.

58 The BCBS and the International Organization of Securities Commissions (IOSCO) published their consultation paper on simple, transparent and comparable securitisation in December 2014 and finalised their standards in July 2015. The BCBS incorporated the BCBS-IOSCO STC criteria into a revised securitisation framework published in July 2016. See Revisions to the securitisation framework, BCBS, July 2016.

The proposed securitisation regulation and STS framework[59] should achieve the right balance between the need to revive the European securitisation markets and the need to avoid financial stability risks stemming from securitisation as experienced in the recent financial crisis. The ECB, together with the Bank of England, was an early supporter of the STS framework[60] and of the need to differentiate between simple and transparent securitisations and more complex securitisations. The former can make a constructive contribution to ensuring that an adequate amount of bank lending is provided to the economy, whereas the latter are less transparent and involve incentive problems and higher structural risks. In its March 2016 Opinion on the European Commission's proposals,[61] the ECB made a number of recommendations for enhancements to increase, on the one hand, the applicability of the STS standards, and on the other hand, the prudential nature of the STS framework.

The ECB stresses the importance of the trilogue negotiations currently under way to arrive at a compromise that will enable the successful adoption of the STS framework. Discussions on a potential increase in the retention rate[62] for securitisations to above the current requirement of 5% should take into account that the alignment of interests can also be achieved by measures complementary to the retention rate, such as ensuring transparency. In this regard, very significant progress has been achieved since the crisis through the introduction of loan level data in the ECB's collateral framework and, more recently, through the requirements of Article 8b of the Credit Rating Agency (CRA) Regulation,[63] which made disclosure of loan level data to investors mandatory. Moreover, the STS framework, through its various criteria requiring securitisations to have certain simplicity, transparency and standardisation features will further improve the governance of a major part of the European securitisation markets.

59 This package refers to a regulation on securitisation that would create an overarching framework for all securitisations, including STS securitisation (COM(2015) 472 final), as well as a CRR amendment implementing preferential treatment for STS securitisations in EU prudential regulation, together with the new Basel securitisation framework (COM(2015) 473 final).

60 See the joint paper by ECB and Bank of England The impaired securitisation market: causes, roadblocks and how to deal with them, 27 March 2014; the joint discussion paper by ECB and Bank of England, The case for a better functioning securitisation market in the European Union, May 2014; and the joint response by ECB and Bank of England to the consultation document of the European Commission: "An EU framework for simple, transparent and standardised securitisation", 27 March 2015.

61 See Opinion of the European Central Bank (CON/2016/11).

62 The retention rate refers to the requirement that one of the parties to a securitisation retain a net exposure to the securitisation that is equal to or higher than 5% of the risk of the securitised assets.

63 Article 8b of the CRA regulation (Regulation (EC) No 1060/2009) mandated the European Securities and Markets Authority (ESMA) to develop regulatory technical standards (RTS) on the information that investors should receive regarding the quality and performance of the assets underlying securitisations they invest in. A key element of the RTS was a mandatory requirement for disclosure of loan level data to investors. The Commission adopted the RTS via Delegated Regulation (EU) 2015/3 of 30 September 2014 supplementing Regulation (EC) No 1060/2009 of the European Parliament and of the Council with regard to regulatory technical standards on disclosure requirements for structured finance instruments.

The mandatory disclosure of loan level data for European securitisations should be preserved in future.[64] The STS framework, which should remain aligned with international standards, is expected to be successfully adopted by the market, and therefore to contribute to the revitalisation of the European securitisation markets in a prudent manner.

Market infrastructures

Efficient and resilient market infrastructures are key elements of well-functioning capital markets and are important facilitators of cross-border investment in the EU. In the context of the CMU Action Plan, the European Commission has set up the European Post Trade Forum (EPTF)[65] with the aim to "*undertake a broader review on progress in removing Giovannini barriers to cross-border clearing and settlement, following the implementation of recent legislation and market infrastructure developments*". The ECB and the T2S Advisory Group are participating and actively contributing to the EPTF's work. These contributions cover, among other things, issues of conflict of laws regarding securities' ownership, withholding tax procedures and diverging national procedures for equity registration. The outcome of the EPTF's work, including proposals to the European Commission for further actions, will be subject to a public consultation during the first half of 2017. The ECB strongly welcomes the upcoming priorities of the CMU agenda in this area, including the legislative initiatives on the conflict of law issue, as announced in the Commission's communication on accelerating the CMU.

T2S – a simplified, universal platform used to settle securities transactions in central bank money – is replacing the fragmented post-trade infrastructure supporting capital markets. Launched in 2015, T2S is a central part of the broader European integration of market infrastructures and is operated by the Eurosystem. It offers a single point of access to all participating markets and so not only facilitates the exchange of securities across borders, but also has the potential to enable European businesses to reach a larger investor base. Aiming to reduce cross-border settlement costs to domestic levels and increase competition among providers of post-trading services in Europe, T2S is an essential ingredient for the creation of a single market for financial services in the EU. Two migration waves during 2016 and another wave on 6 February 2017 brought the total number of CSDs connected to T2S to 18, covering 16 European markets. A daily average of around 500,000 transactions is now settled on the platform. This is 90% of the total volume of securities transactions expected to be processed on the platform by the time the final two CSDs join it in September 2017.

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64 In its March 2016 Opinion, the ECB recommended amendments that would enable a distinction to be made between disclosure to investors in public transactions and disclosure to investors in private and bilateral transactions, and would show how the loan level requirements should be applied in the context of asset-backed commercial papers.

65 See the European Commission's website for information on the EPTF.

Table 1

Eurosystem and ECB activities for financial integration

Advising on the legislative and regulatory framework for the financial system

Activity	Explanation	Relevance for financial integration	Position and contribution
EDIS	The European Commission has made a proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 806/2014, in order to establish a European Deposit Insurance Scheme (CON/2016/26).	An EDIS will support the European single market for banking. It will contribute to financial integration by facilitating banks' cross-border operations, and enhance its resilience by limiting destabilising capital flows. By reducing the link between banks and their sovereigns it will also restrict some other contagion channels.	The ECB welcomes the aim of the proposed regulation to achieve a uniform system of deposit insurance that restricts the link between a bank and its home sovereign. At the same time, the ECB also fully supports risk reduction measures to reduce moral hazard and limit transfers from impaired legacy exposures.
Review of the EU macro-prudential policy framework	The European Commission carried out a public consultation to gather evidence and stakeholder feedback in order to analyse possible framework improvements, reflecting on: (i) the general approach and scope of the review, (ii) the macroprudential instruments, in particular with regard to the interactions of tools and procedures, and (iii) the institutional setting and governance.	The review will contribute to financial integration by simplifying and increasing the coherence of the notification and activation procedures for capital buffers and other macroprudential instruments. It aims to ensure that macroprudential authorities have a consistent set of tools, disentangle the responsibilities of the microprudential and macroprudential authorities for the different instruments, and adapt the macroprudential framework for the creation of the banking union.	The ECB supports a review of the macroprudential framework to (i) reflect the new institutional landscape resulting from the creation of the banking union; (ii) ensure that responsibilities are clearly allocated to the various authorities; (iii) broaden the toolkit to ensure that authorities can address existing and upcoming risks; and (iv) simplify and streamline procedures to make the framework more efficient.
Review of the SSM Regulation	The SSM Regulation entered into force in 2013 and European banking supervision started in 2014. As required by the Regulation, the European Commission is preparing to publish a report on its application, with special emphasis on monitoring its potential impact on the smooth functioning of the Internal Market.	The SSM Regulation review will contribute to an integrated single financial market by ensuring that an even more harmonised set of rules and supervisory policies will be applied within the banking union.	The review should contribute to a further strengthening of European banking supervision. The ECB is contributing to the preparations for the review.
ONDs	On 24 March 2016 the ECB published a Regulation as well as a guide on how the exercise of options and discretions in banking supervision is to be harmonised.	Financial integration should be furthered by reducing risks in the banking sector, specifically by ensuring that the same rules apply everywhere in the banking union for the same business and the same risks. The harmonisation will also make a further contribution to the consistent functioning of the SSM.	This work on the options and discretions was initiated by the ECB during the preparatory phase of the SSM in order to enable European banking supervision to operate more efficiently and form a perspective that is truly single. The ECB is now also seeking to achieve further harmonisation for banks that are supervised by national competent authorities.
Insolvency frameworks	The Insolvency Regulation provides a minimally harmonised procedure at EU level for the insolvency of legal entities established in the EU. However, many issues of substance, such as determining priority (i.e. the ranking of claims), remain anchored in national insolvency law, while recognised in the EU as a whole under EU law.	As long as insolvency law remains national in character, it will be difficult for cross-border investors to properly evaluate the risks they take on when they invest in equities or bonds issued by legal entities in other EU jurisdictions. Financial markets will, therefore, remain fragmented in that respect.	The procedural efficiency of insolvency needs to be addressed to ensure that firms have more efficient debt restructuring and insolvency regimes, which vary widely between Member States at present. In that regard, the ECB has contributed to work by the Eurogroup on agreeing best practices. Further legislative and non-legislative measures in this area should be explored.
Common rules on securitisation	The ECB issued an opinion on the European Commission's proposal for a European framework for securitisation,[66] which includes differentiated prudential treatment for STS securitisation.	As a form of asset-based financing with the capacity both to channel flows of credit to the real economy and to transfer risk, securitisation is of particular significance to the transmission mechanism of monetary policy and, therefore, to the integration of EU financial markets.	The ECB welcomes the objectives of the proposed regulations with regard to the integration of EU financial markets, the diversification of funding sources and the unlocking of capital for sound lending to the real economy.

Catalyst for private sector activities

Activity	Explanation	Relevance for financial integration	Position and contribution
Reduction of NPLs	In September 2016 the ECB launched a public consultation on guidance to banks regarding best practices for dealing with NPLs. In addition, a stocktake of national practices concerning NPLs was published.	The NPL guideline will serve the Joint Supervisory Teams as a basis for evaluating banks' handling of NPLs, as part of the regular supervisory dialogue that takes place in a harmonised manner across the banking union. The stocktake shows differences in supervisory practices and legal frameworks related to NPLs.	The efforts by ECB Banking Supervision to address high levels of NPLs will need to be complemented by regulatory and policy action at EU and national level. Active measures are therefore needed to remove the external impediments to NPL resolution, such as improving the efficiency of judicial systems, increasing access to collateral, and creating fast out-of-court procedures. Moreover, it is necessary to develop markets for distressed assets and facilitate sales of troubled loans to non-bank investors. Last but not least, the improvement of data quality is relevant for all stages of the process of resolving NPLs.

[66] See Opinion of the European Central Bank (CON/2016/11).

Activity	Explanation	Relevance for financial integration	Position and contribution
ECB Advisory Group on Market Infrastructures (AMI)	The AMI merges the T2S Advisory Group and the ECB's Contact Group on Euro Securities Infrastructures (COGESI) into a streamlined ECB advisory body. AMI has two components: AMI SeCo (securities and collateral, as these topics are closely intertwined) and AMI Pay (payments) [67]	The ECB has establishes the AMI (SeCo and Pay) in order to continue and foster its catalyst role in the area of post trade (securities and collateral) as well as payment infrastructures, in an efficient and coherent way.	The AMI groups will be chaired and administered by the ECB. AMI SeCo will also fulfil the role and tasks of the T2S Advisory Group[68] as defined in the T2S Framework Agreement.[69]
T2S Harmonisation Agenda	The harmonisation workstream[70] of the T2S community of stakeholders (NCBs, CSDs and market participants) has been the key driver in the creation of a single rulebook for post-trade processes in T2S markets (20 EU markets plus Switzerland). The workstream includes, among other things, the ISO 20022 communication standards (Giovannini Barrier – GB1), corporate action standards (GB3), a single schedule of cut-off times (GB7), settlement cycles (T+2) etc.	T2S harmonisation contributes to the financial integration initiatives in the securities settlement and collateral management services. This work also feeds into the CMU agenda of the European Commission via the work of the European Commission's EPTF.	The ECB Governing Council has supported this work since the start of the T2S project and receives a periodic progress report. The ECB Market Infrastructure Board (MIB) monitors the work on T2S harmonisation activities and decides on measures to address the non-compliance of the T2S markets. The ECB contributes to the T2S harmonisation governance structures (T2S Advisory Group and T2S Harmonisation Steering Group).[71]
ESCB and T2S contribution to the EPTF	In the context of the CMU Action Plan, the European Commission has established the EPTF in order to support the action of reviewing developments in post-trading, including collateral management services. The aim is to promote more efficient and resilient market infrastructures in the EU. [72]	Efficient and resilient post-trade infrastructures are recognised by the CMU Action Plan as key elements of well-functioning capital markets and as important for facilitating cross-border investment in the EU.	The ESCB has an observer status, which is covered by the ECB, while the T2S community (NCBs, CSDs and users in the T2S Advisory Group) has a member status in the forum which is covered by a member of the MIB. The Eurosystem, the COGESI and the T2S Advisory Group have supported the CMU actions planned in the area of post-trade services covering, among others, withholding tax procedures, the conflict of laws on securities rights and registration procedures.
Euro Retail Payments Board (ERPB)	The ERPB, established in 2013, replaces the SEPA Council and brings together, on an equal basis, representatives from the demand and supply side of the payments industry.[73]	The ERPB will help foster the development of an integrated, innovative and competitive market for retail payments in euro in the European Union. In November 2016, the European Payments Council finalised a scheme for pan-European instant payments, which also lays the groundwork for innovative payment solutions such as person-to-person mobile payments.	The ERPB is set up by the ECB and is chaired by one of its Executive Board members.
Committee on Payments and Market Infrastructures (CPMI)	As a global standard-setting body the CPMI promotes the safety and efficiency of payment, clearing, settlement and related arrangements, thereby supporting financial stability and the wider economy. [74]	The CPMI has an important role in promoting common understanding, and developing policy advice or common policies for central banks. Its work in establishing and promoting global standards and recommendations for the regulation, oversight and practices covered by its mandate is helping to take financial integration forward at global level and, in doing this, also supports financial integration in Europe.	The CPMI is chaired by an ECB Executive Board member and CPMI work is therefore of high priority for the ECB, which has taken an active role in its work on financial integration.
CSPP	On 10 March 2016 the ECB decided to establish the CSPP for investment-grade euro-denominated bonds issued by non-bank corporations established in the euro area. [75]	Along with the third covered bond purchase programme, the asset-backed securities purchase programme and the PSPP, the CSPP is intended to further enhance the transmission of monetary policy and facilitate the harmonisation of financial conditions for corporates. It therefore also contributes to reducing financial fragmentation in the euro area.	

Knowledge about the state of financial integration

Activity	Explanation	Relevance for financial integration	Position and contribution

67 See the ECB's website for information on AMI-pay and AMI-SeCo.

68 See the ECB's website for information on the T2S Advisory Group.

69 See the T2S Framework Agreement.

70 See the ECB's website for information on the T2S harmonisation objectives.

71 See the ECB's website for work on T2S harmonisation.

72 See the European Commission's website for information on the EPTF.

73 See the ECB's website for information on the ERPB.https://www.ecb.europa.eu/paym/retpaym/euro/html/index.en.html

74 See the BIS website for information on the CPMI.

75 See the ECB's press release ECB adds corporate sector purchase programme (CSPP) to the asset purchase programme (APP) and announces changes to APP, 10 March 2016.

Activity	Explanation	Relevance for financial integration	Position and contribution
AnaCredit	AnaCredit will create a common granular analytical credit database, which will provide a harmonised database with detailed information on individual bank loans in the euro area to support the ECB in its tasks, particularly with regard to monetary policy and macroprudential supervision. The relevant Regulation was adopted by the Governing Council on 18 May 2016; the first reporting will take place in mid-November 2018 with reference data for September 2018.	At present, the differences across existing granular credit datasets in terms of coverage, attributes and data content are often substantial, pointing to a need for the harmonisation of concepts and definitions, as well as convergence in data coverage and content. For example, the availability of harmonised information on credit will further support the cross-country analysis of economic prospects and the appetite for investment in the euro area.	
Implementation of ECB Regulation ECB/2014/50 on statistical reporting requirements for insurance corporations	Regulation ECB/2014/50 allows NCBs to obtain the necessary statistical information, as much as possible, from data reported for supervisory purposes under the EU's Solvency II framework.	The harmonised data permit a more detailed country analysis of the insurance corporation sector to be carried out, and also improve the comparability of country-level data.	Following the adoption of Regulation ECB/2014/50, the harmonised data were published for the first time in February 2017.
Proposal for a Prospectus Regulation (PR)	The PR, which has been conceived as a recast of the existing Prospectus Directive, aims to provide different types of issuers with disclosure rules which are tailored to their specific needs. It also makes the prospectus a more relevant tool for supplying potential investors with necessary information.	The ECB has recommended the mandatory use by prospectuses of the International Securities Identification Number (ISIN) and the global Legal Entity Identifier (LEI) of the issuer/offeror/guarantor, as these are internationally agreed standards which allow for the unique identification of both the security and the issuer.[76]	In addition, the ECB has also recommended that the online storage mechanism that is expected to be set up by ESMA should present the information contained in the prospectuses in a machine-readable manner. This means using metadata, at least for certain key attributes, such as the identification of the securities, issuers, offerors and guarantors.
Publication of new data on adjusted loans	The ECB has published data on adjusted loans, providing a better view of lending to the real economy by euro area MFIs. The adjusted loans include an adjustment for sales and securitisation, as well as an adjustment for the impact of "notional cash pooling" positions that result from cash management services provided by certain banks to corporate groups.	Data on adjusted loans give a better indication of underlying developments in credit to euro area borrowers and improve the comparability of country-level data.	
MMSR	On 1 July 2016 the ECB began collecting transaction-by-transaction data on the following money market segments: secured, unsecured, foreign exchange swaps and euro overnight index swaps. The data collection is based on Regulation (EU) No 1333/2014 of the European Central Bank concerning statistics for the money markets, which was adopted on 26 November 2014 (ECB/2014/48).	Daily money market data at an extremely granular level will facilitate a better understanding of how money markets work and evolve, their changing patterns and, in particular, banks' funding in different segments. Moreover, this dataset will improve the comparability of loan and lending data, not only at country but also at credit institution level.	
Research on financial integration	New indicators measuring the quality of financial integration have been developed and are included in this report. One indicator captures the extent to which cross-country consumption risk sharing is present in EMU by measuring the statistical correlation between country-specific consumption growth and country-specific GDP growth (see Chart S7 in the Statistical annex). The other indicator captures the contribution of four factors (taxes and transfers, capital markets, credit markets, and relative prices) to cross-country consumption risk sharing in the EMU (see Chart 2 in Chapter 1).	The quality of financial integration is assessed to capture its economic benefits, of which cross-country risk sharing is one of the most important. This means the extent to which a euro area country's domestic shocks can be smoothed via economic insurance mechanisms with other euro area countries. Particularly relevant mechanisms for this are via capital and credit markets.	
	The ECB is conducting research on the relationship between financial integration, capital market development and risk sharing in a monetary union. The three main objectives of the research are (i) to further evaluate the extent of consumption risk sharing in EMU, (ii) to explore the extent to which cross-country private financial risk sharing in EMU can be improved, and (iii) to study the policy measures, notably financial sector reforms, that would be conducive to exploiting the full risk sharing potential in EMU.	The discussion paper contributes to the understanding and quantification of the benefits of financial integration in Europe. It aims to provide information regarding the design of policy initiatives such as the CMU or the completion of the banking union.	

Sources: ECB.
Notes: The Eurosystem and ECB activities listed in this table may be primarily geared towards a policy objective other than financial integration.

[76] See Opinion of the European Central Bank (CON/2016/15).

Special feature: Cross-border bank consolidation in the euro area[77]

Despite the common currency, a single passport for financial services and much recent progress made with the European banking union, the cross-border penetration of banking within the euro area – apart from interbank lending and in a few relatively small countries – remains fairly limited. Given that several countries in Europe are probably "over-banked", stronger consolidation is desirable – including across borders. However, mergers and acquisitions (M&As) in the euro area tend to be overwhelmingly domestic in an environment where growth is low and with some countries still experiencing crisis legacy problems. Even though comparisons between a group of countries that is still heterogeneous (in terms of taxation of the banking sector, legal systems and other factors) and an individual nation state should be treated cautiously, the situation stands in contrast, for example, to the more thoroughly integrated banking market of the United States, in which cross-state M&As and banks play an important role.

These facts should be seen against a number of economic benefits of cross-border consolidation identified by the literature. Cross-border consolidation could be expected to foster retail credit market integration, which would contribute to resilient cross-country risk sharing, thereby improving the functioning of Monetary Union. More pan-European banks could achieve scale economies (which could also enhance their ability to compete globally and strengthen European capital markets) and better diversify risks. Moreover, cross-border M&As could contribute to banking sector consolidation without creating competition problems in local loan and deposit markets and could, in addition, make a valuable contribution to resolving NPL problems. These potential benefits should be considered alongside possible costs – the early literature on domestic bank M&As in the United States only found limited evidence of efficiency gains. By contrast, large acquirers in cross-border M&As seem to have a somewhat better record, and recent studies also find more evidence of economies of scale. The new Single Supervisory and Single Resolution Mechanisms, as well as the post-crisis regulatory framework, are designed to address financial stability concerns related to large cross-border institutions, e.g. related to their resolvability, fears of renewed too-big-to-fail problems, and a greater risk of cross-border contagion. On balance, an increase in the number of pan-European banks seems to be an integral part of the single banking market, although each M&A operation should be assessed on its own merits.

There are a number of avenues that could be pursued to reduce the number of obstacles to cross-border bank M&As in the euro area. Again, progress in completing

[77] Prepared by P. Hartmann, I. Huljak, A. Leonello, D. Marqués, R. Martin, D. Moccero, S. Palligkinis, A. Popov and G. Schepens.

the banking union would be helpful. Other financial sector policy measures could include removing ONDs in European banking regulation, considering the euro area as a single jurisdiction for calculating the Basel surcharges for systemic institutions, harmonising taxation and insolvency laws and consumer protection, streamlining supervisory merger review procedures and coordinating these with competition reviews, and addressing legacy NPL problems. Since low growth and political uncertainty create an unfavourable environment for banking consolidation, broader measures to improve these aspects could also make an important difference.

The introduction of the single currency in 1999 (which eliminated currency risk) and the lifting of legal barriers to European banking integration accelerated financial integration in the euro area, including in the form of an increasing number of cross-border M&As. The period prior to the international financial crisis saw an increasing number of cross-border M&As within the euro area and in Europe more generally. However, since the start of the crisis in 2008, cross-border M&A activity in the euro area banking sector has declined significantly. As a result, the euro area banking sector still appears to be considerably more fragmented than, for example, the banking systems of nation states such as the United States and the United Kingdom.

This special feature addresses the question of why cross-border M&A activity remains relatively subdued in the euro area, and looks at the merits of further cross-border consolidation as well as ways in which it could be stimulated. Section 1 offers an overview of M&A activity in the euro area and the United States, and compares the presence of foreign banks in the banking sectors of the euro area, the United States and the United Kingdom. Section 2 discusses the costs and benefits of cross-border bank consolidation from both a theoretical and an empirical perspective, in the context of the single European banking market and with a focus on the implications for the euro area's economy. Finally, Section 3 identifies key economic, legal, regulatory and supervisory obstacles that may induce banks to abstain from cross-border M&A transactions in the euro area, and mentions some policy options for reducing these barriers.

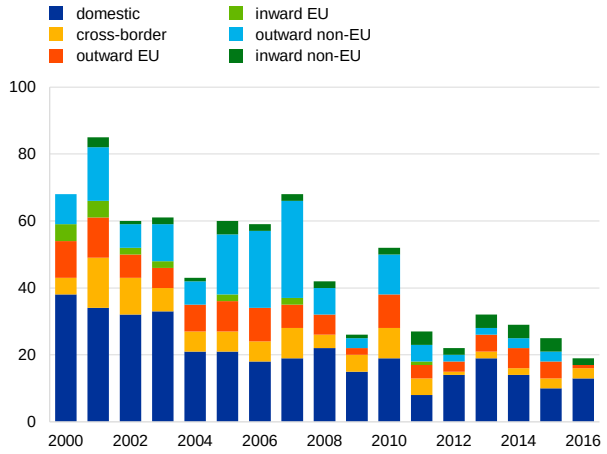
1 Mergers and acquisitions and the structure of the euro area banking system

Total M&A activity in the euro area banking sector has shown a declining trend since 2007, both in terms of the number and the value of transactions (see

Charts 1 and 2).[78] In 2016, the value of transactions recorded was the lowest since 2000.[79]

Chart 1

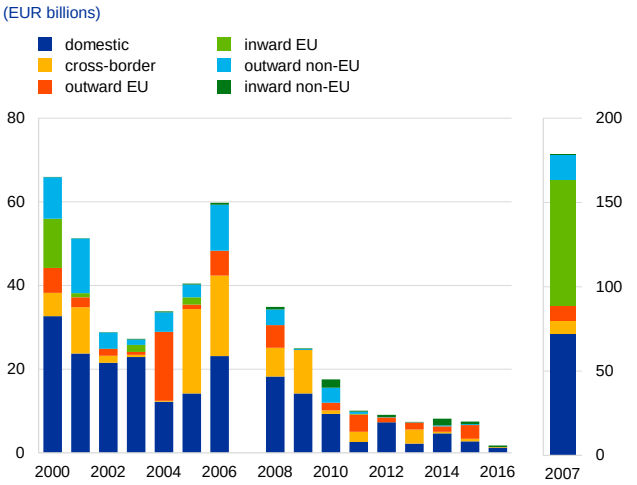
Bank M&As in the euro area – number of transactions



Source: Dealogic.
Notes: "M&As" refers to transactions where the acquired stake is more than 20% of the target bank. The data do not cover participation by governments or special legal entities in the restructuring or resolution of credit institutions. Transactions whose amounts are not reported are excluded. "Domestic" refers to transactions that take place within the national borders of euro area countries. "Cross-border" M&As involve euro area targets and non-domestic euro area acquirers. "Inward" refers to M&As by non-EU or non-euro area EU banks in the euro area, while "outward" indicates M&As carried out by euro area banks outside the euro area.

Chart 2

Bank M&As in the euro area – value of transactions



Source: Dealogic.
Notes: "M&As" refers to transactions where the acquired stake is more than 20% of the target bank. The data do not cover participation by governments or special legal entities in the restructuring or resolution of credit institutions. Transactions whose amounts are not reported are excluded. "Domestic" refers to transactions that take place within the national borders of euro area countries. "Cross-border" M&As involve euro area targets and non-domestic euro area acquirers. "Inward" refers to M&As by non-EU or non-euro area EU banks in the euro area, while "outward" indicates M&As carried out by euro area banks outside the euro area.

Domestic M&As have consistently outweighed cross-border euro area transactions, a situation which has become even more pronounced in recent years. Domestic transactions account for a large part of both the number of transactions and their value, while cross-border M&As have shown more muted activity for most of the years since 2000. From the start of the crisis in 2008, the number of domestic transactions followed a downward trend, in spite of short-lived recoveries in 2010 and 2013. These domestic M&As included intragroup transactions in Germany and Italy and the restructuring of the banking sectors in (previous) EU/IMF programme countries. The number and value of cross-border and outward non-EU M&As has also declined notably since 2010.[80]

78 The transaction value peak in 2007 reflected both domestic (the merger of Sanpaolo IMI and Banca Intesa) and cross-border activities (acquisition of ABN Amro by the consortium of Royal Bank of Scotland, Fortis and Santander). The value of transactions is affected by several factors, including bank market capitalisation. See the ECB's Report on financial structures, October 2016.

79 Charts 1 and 2 refer to M&As where the acquirer is another bank. However, it should be emphasised that financial investors (such as private equity firms, hedge funds or sovereign wealth funds) have also been active acquirers in recent years, especially in the case of smaller banks. Since the start of European banking supervision, acquisitions of qualifying holdings in credit institutions have to a significant extent been driven by acquisitions of both minority and majority stakes by such financial investors, which are often characterised by a complex corporate structure, a short-term investment horizon and sometimes the use of extensive leveraged funding.

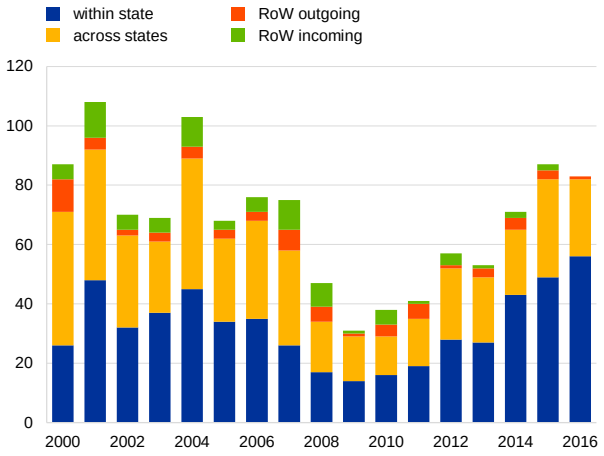
80 The dynamics of outward non-EU M&As were driven in the 1990s and in the 2000s by the purchase of US and UK-based investment banks to expand European banks' business models. See Danthine et al. "The Future of European Banking", *Monitoring European Integration*, No. 9, CEPR, 1999.

The recent decrease in the total value of cross-border transactions has been particularly severe. Cross-border M&As accounted for only 9% of total transactions in 2016, against 15% for the period 2000 to 2015, despite the progress made in creating the banking union, including the launch of the SSM in late 2014.[81]

The share of cross-border bank M&As in the euro area tends to be much more limited than, for example, that for cross-state M&As in the United States (both as percentages of total bank M&As; see Charts 3 and 4). Chart 3 shows that cross-state M&A transactions in the United States represented between 31% and 52% of the total number of transactions between 2000 and 2016.[82] The equivalent share in the euro area was between 5% and 19% over the same time period.

Chart 3

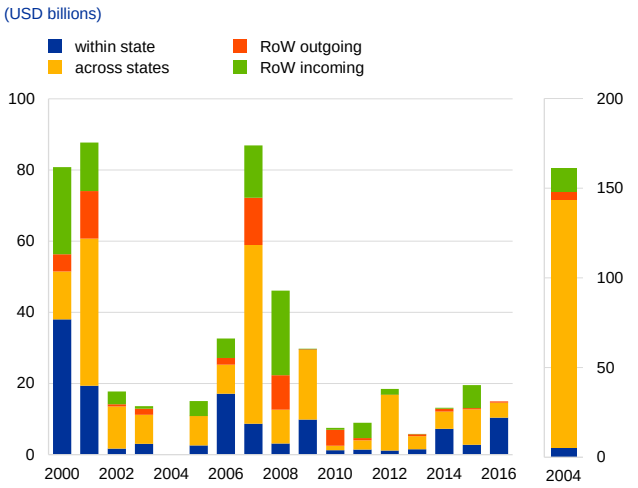
Bank M&As in the United States – number of transactions



Source: Dealogic.
Notes: "M&As" refers to transactions where the acquired stake is more than 20% of the target bank. The data do not cover participation by governments or special legal entities in the restructuring or resolution of credit institutions. Transactions whose amounts are not reported are excluded for consistency. "Within state" M&As are transactions within the same state. "Across states" refers to M&As between states. RoW stands for "rest of the world". "RoW outgoing " indicates M&As carried out by US banks outside the United States while "RoW incoming" refers to banks outside the United States acquiring shares in banks in the United States.

Chart 4

Bank M&As in the United States – value of transactions



Source: Dealogic.
Notes:" M&As" refers to transactions where the acquired stake is more than 20% of the target bank. The data do not cover participation by governments or special legal entities in the restructuring or resolution of credit institutions. "Within state" M&As are transactions within the same state. "Across states" refers to M&As between states. RoW stands for "rest of the world". "RoW outgoing " indicates M&As carried out by US banks outside the United States while "RoW incoming" refers to banks outside the United States acquiring shares in banks in the United States.

The trans-Atlantic discrepancy is also reflected in the value of transactions (between 17% and 86% in the United States, compared with 0% to 50% in the euro area), and the fact that cross-state M&As frequently represent the largest share for

81 The last large cross-border transactions (above €500 million) in the euro area involving a change in ownership took place in 2011 (BNP Paribas's acquisition of Findomestic Banca SpA, Banco Santander's acquisition of SEB AG retail banking business, and Crédit Agricole S.A.'s acquisition of Centea SA).

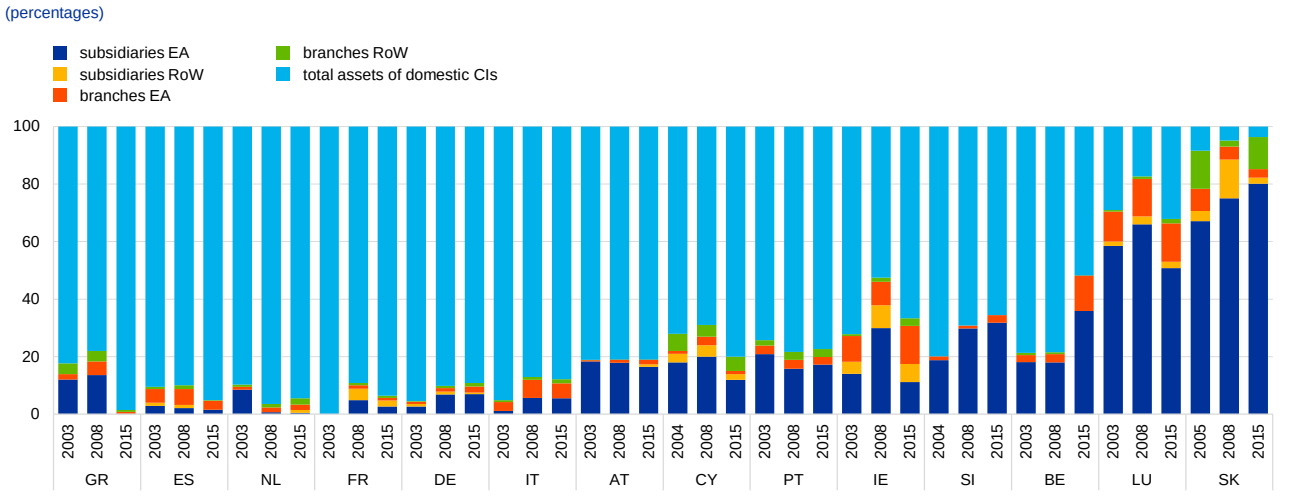
82 Since the Great Depression the US banking system has been subject to heavy regulatory limits to consolidations involving banks. Bank M&As accelerated, however, in the 1990s, for example, because the barriers to cross-state branching dating from the 1927 McFadden Act started to weaken, and the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 formally dismantled them. The Gramm–Leach–Bliley Act (Financial Services Modernisation Act) of 1999 then repealed parts of the Glass-Steagall Act of 1933 that had prohibited the combination of commercial banks with investment banks or insurance companies. This also stimulated consolidation between banks and other financial services firms. See, for example, Saunders, A. and Cornett, M. M., *Financial Markets and Institutions: A Modern Perspective* (6th edition), McGraw-Hill/Irwin, 2014.

the United States. It is also noticeable that the financial crisis has limited the number of cross-border transactions in the euro area, while there is no clear pattern for cross-state transactions in the United States. There are many reasons behind these divergent trends, including, for example, the generally higher cross-state penetration of US banking relative to European cross-country penetration (see further below), the faster recapitalisation of US banks in response to the crisis, the different economic performances of both economic regions since 2009 and, in particular, the obstacles discussed in Section 3.

While it may be overly ambitious to expect the euro area to reach the level of banking integration of a full nation state without some kind of fiscal or political union, the United States is still a useful benchmark. There is no other economic and monetary union of comparable size or development in the world, for otherwise sovereign states, that can compare with the euro area's banking integration and cross-border bank merger activities. The euro area shares a common currency and the Single Market, including, for example, a single passport for financial firms and the option to form a Societas Europaea. It has recently made very significant progress with the banking union, introducing a single bank supervisory authority for participating Member States in 2014 as well as, most recently, a SRM. It is therefore less appropriate to compare the euro area with groups of entirely independent nation states than with an economy like the United States that has a similar size, economic and financial development, a single currency and federal bank supervisory and resolution authorities.

Chart 5

The composition of banking sector assets in euro area countries by type of credit institution in 2003, 2008 and 2015



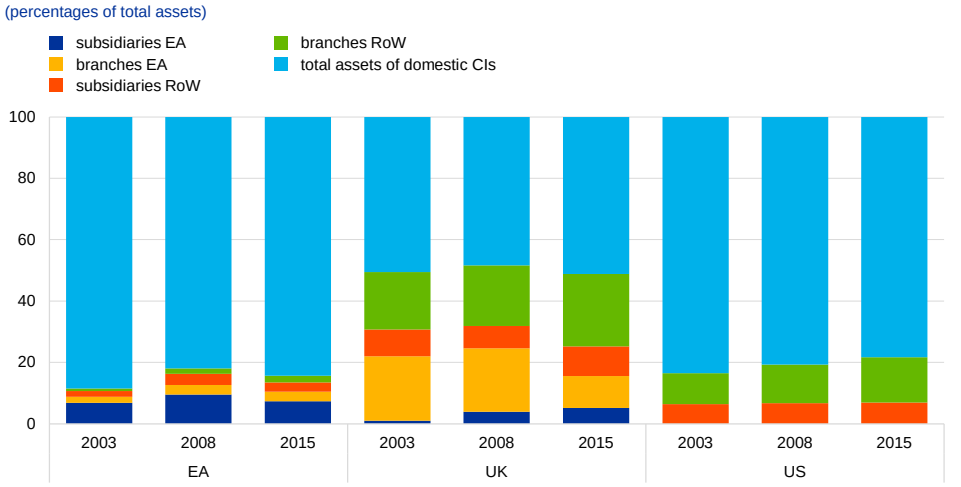
Sources: ECB and ECB calculations, Central Bank of Cyprus.
Note: Data are not available for all countries before 2003. Data are not available before 2009 for Estonia, Latvia, Lithuania and Malta and Finland, and are available since 2004 for Cyprus and Slovenia, and since 2005 for Slovakia. Countries are ordered according to their share of domestic credit institution assets in 2015. EA stands for "euro area", RoW for "rest on the world" and CIs for "credit institutions".

The subdued cross-border M&A activity within the euro area should also be seen against a background of limited cross-border penetration of the largest

and core country banking systems (see Chart 5).[83] The share of assets of foreign euro area branches and subsidiaries in countries such as France, Germany, Italy, the Netherlands and Spain is still very low. It is only large in a few smaller Member States. Looking at the period from 2008 to 2015, the relative weight of domestic banking assets increased further mainly in countries that were or still are subject to EU/IMF financial assistance programmes, such as Greece and Cyprus. In Ireland, the presence of foreign banks has decreased considerably since 2008 due to the widespread restructuring of the banking sector. Finally, cross-border bank lending (see Chart S28 in the Statistical annex) in the euro area and cross-border deposit holdings, both with non-banks, also remain very low.

Chart 6

The composition of banking sector assets in the euro area, the United Kingdom and the United States by geographical origin of credit institutions in 2003, 2008 and 2015



Sources: ECB and Federal Reserve System.
Notes: EA stands for "euro area", RoW for "rest on the world" and CIs for "credit institutions". Euro area data refer to 14 euro area countries. The breakdown of foreign subsidiaries and branches by geographical region is not available for the United States. The share of foreign subsidiaries and branches for the United States in 2003 and 2008 is estimated based on Goulding, W. and Nolle, D.E., "Foreign Banks in the U.S.: A primer", *International Finance Discussion Papers*, No. 1064, Board of Governors of the Federal Reserve System, 2012. The share for 2015 in the United States is projected from the third quarter of 2011, the last available observation reported by Goulding and Nolle (2012).

The euro area ranks below the United States in an international comparison of external banking sector penetration (i.e. in the euro area's case, from outside euro area countries). Chart 6 compares the share of foreign branches and subsidiaries of total bank assets. Assets of foreign branches and subsidiaries accounted for 5% of total euro area banking sector assets in 2015, while in the United States the corresponding share was 22%. An additional 10% of euro area assets are cross-border holdings. In the United States, foreign branches account for a larger share than subsidiaries and the combined share of foreign-owned banks has been growing over time. In the euro area, however, subsidiaries play a more important role and the overall share of foreign assets has declined somewhat since 2008. Finally, foreign branches (from euro countries and the rest of the world) represent a large share of banking sector assets in the United Kingdom, reflecting

[83] For an analysis see the ECB's Report on financial structures, October 2016.

London's important role as a financial centre relative to the size of the domestic economy.

All in all, the evidence presented in this section suggests that, given the existence of EMU, the Single Market programme and the banking union, higher levels of foreign bank presence would be expected in the euro area. Instead, cross-border banking sector M&A activity within the euro area has remained subdued since the start of the international financial crisis and foreign bank penetration remains generally low in comparison with that in the United States and the United Kingdom.

2 Cross-border bank M&As in the euro area: A cost-benefit perspective

This section discusses the costs and benefits of bank consolidation from the perspective of the microeconomic and macroeconomic literature. The first subsection focuses on the efficiency and stability implications of both domestic and cross-border M&As for individual banks. The second subsection turns to the aggregate implications of cross-border M&As for private financial risk sharing in the Monetary Union, and contagion risk in the banking union. This discussion about whether more cross-border consolidation would have an overall positive effect on banks' efficiency and stability, as well as on macroeconomic stability, could inform policymakers as to whether it should be encouraged or not.

2.1 Implications of consolidation for competition, efficiency and individual bank stability

The limited banking consolidation observed in the euro area since 2003 has, nevertheless, resulted in a gradual increase in market concentration. This can be seen from Chart 7, which shows the five largest credit institutions' shares of total banking sector assets at country level, for the euro area.[84] The level of concentration tends to be higher for smaller countries and lower for larger countries.[85] In terms of changes over time, the banking sector has tended to become more concentrated mainly in countries undergoing deep banking sector restructuring processes, such as Greece and Spain. Some concentration can also be observed in Germany, Italy (although these two countries still have the lowest concentration levels in the euro area), Lithuania and Malta. Conversely, banking sector concentration in Belgium, Estonia and Finland has decreased over time. The level of banking concentration in some of the largest euro area countries is still lower than in the United States,

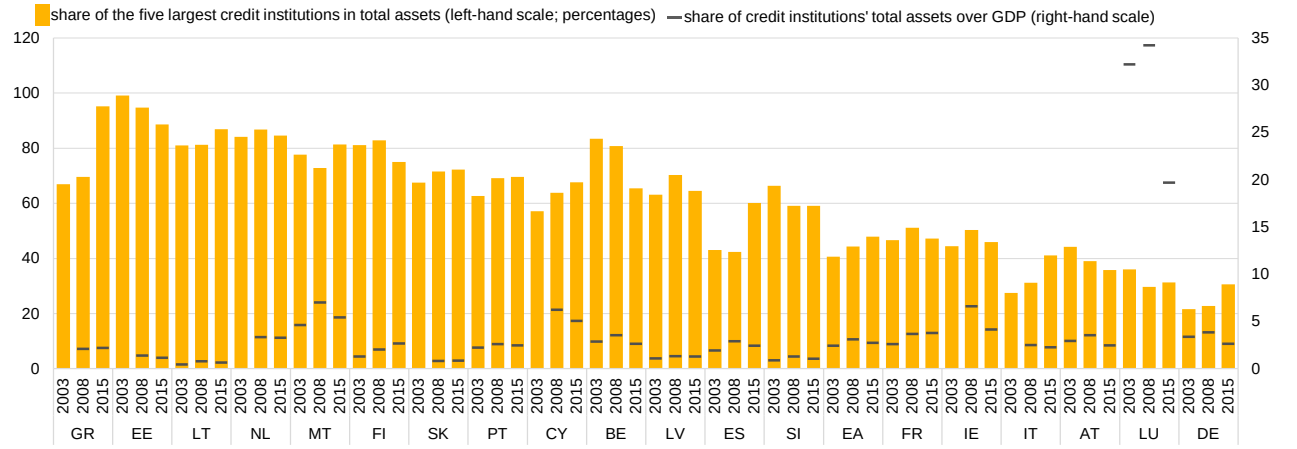
[84] It should be borne in mind that the relevant market, from a competition policy perspective, can be very different for different banking services. For some capital market services, for example, it may be Europe-wide or even global, whereas for retail credit or deposit services it could be national or even regional within countries.

[85] The level of concentration would be different for some countries if consolidated rather than unconsolidated data were used.

indicating that further concentration could be expected as progress is made in completing the banking union. The gradual increase in concentration in the euro area took place in a context where the (relative) size of the banking sector was shrinking (from 3.1 times to 2.7 times GDP between 2008 and 2015).

Chart 7

Concentration and size of the banking sector



Sources: ECB and ECB calculations.
Note: Figures are reported on an unconsolidated basis. The share of the five largest credit institutions for the euro area is computed as the weighted average of the country values. The share of credit institutions in GDP refers to the difference between MFI total assets (including NCBs) and NCB assets. Data for the share of credit institutions in GDP are not available for 2003 for Estonia, Ireland, Greece, Italy, Cyprus, the Netherlands and Slovakia.

The Lerner index, a standard indicator for assessing firms' market power, suggests that banks' market power has increased recently in comparison with the crisis and pre-crisis periods for the euro area as a whole and in most (but not all) Member States (see Chart 8).[86] The index is based on the difference between price markups and marginal costs. The recent developments are mainly the result of a fall in the marginal costs of providing banking services, due to efficiency gains and lower costs of bank funding. By contrast, price markups have remained broadly unchanged, and the results are consistent with somewhat reduced banking competition in the euro area. At the same time, the continuing low profitability of many European banks is not indicative of excessive market power.[87]

One advantage of cross-border M&As over domestic M&As is that, ceteris paribus, they do not enhance concentration or reduce competition. If a foreign bank takes over a domestic bank, the domestic market shares remain unchanged, while a domestic merger, in contrast, typically causes some concentration. This should be more of a concern in countries where the domestic market is already

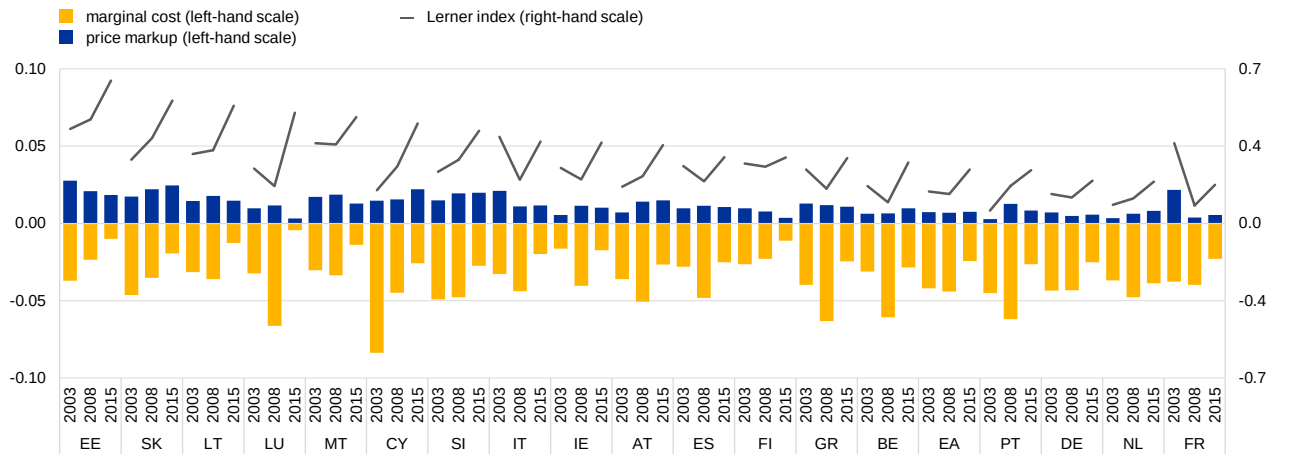
86 The Lerner Index overcomes a standard criticism of concentration measures as proxies for competition, namely that banks do not necessarily exercise more market power after increasing their market share.

87 See also the ECB's Report on financial structures, October 2016.

relatively concentrated (see Chart 7).[88] As long as the foreign acquirer is not less competitive than the domestic target, national or local competition should not decrease.

Chart 8

Lerner index and its components



Sources: ECB calculations based on Bankscope.
Note: The Lerner Index captures market power via the difference between price and marginal cost (price markup), expressed as a percentage of price. The price is approximated as the ratio of total bank revenue to assets while marginal costs are calculated taking the first derivative of total costs from an estimated trans-log cost function. The Lerner index varies from 0 to 1, with 0 indicating that price and marginal cost are equal ("perfect competition" case) and 1 indicating the price a monopoly would charge over marginal cost. The Lerner Index for each country is computed as the weighted average of the bank level indices, using the respective market shares of total assets as weights. The Lerner Index for the euro area is computed as the weighted average of the country values. Countries are ordered according to the value of the Lerner index in 2015. The marginal cost is expressed in negative values to facilitate readability.

Analyses of the effects of banking sector consolidation on efficiency focus on subsequent changes in the prices and quantities of banking services. This has implications for loan and deposit rates, the availability of credit for SMEs, as well as the availability and quality of payment and liquidity services to retail depositors.[89]

The net effects of M&As on efficiency can be explained with reference to two competing paradigms with opposite implications – the structure-conduct-performance paradigm and the efficient-structure paradigm.[90] According to the former, increasing concentration allows banks to impose their pricing on competitors,

[88] A different case is when the acquirer takes over a failing bank. In competition policy this is known as "failing firm defence". Under the assumption that without such a merger the failing firm would disappear from the market, even a domestic merger would not result in concentration. For example, evidence from the failure and resolution of US commercial banks during the recent financial crisis suggests that the acquisitions of failed banks by competitors typically had a very small effect on the concentration of local banking markets. See Wheelock, D., "Have Acquisitions of Failed Banks Increased the Concentration of U.S. Banking Markets?" *Federal Reserve Bank of St. Louis Review*, May/June, 2011, pp. 155-168; and Wheelock, D., "Banking Industry Consolidation and Market Structure: Impact of the Financial Crisis and Recession", *Federal Reserve Bank of St. Louis Review*, November/December 2011, pp. 419-438.

[89] For a comprehensive review of the early literature on the effect of bank consolidation on efficiency, see Carletti, E., Hartmann, P., and Spagnolo, G., "Implications of the Bank Merger Wave for Competition and Stability", *Risk Measurement and Systemic Risk, Proceedings of the Third Joint Central Bank Research Conference* (Board of Governors of the Federal Reserve System, Bank of Japan, European Central Bank), 2002, pp. 38–50.

[90] For the former, see Bain J. S., *Barriers to New Competition: Their Character and Consequences in Manufacturing Industries*, Harvard University Press, 1956. For the latter, see Demsetz H., "Industry Structure, Market Rivalry, and Public Policy", *Journal of Law and Economics*, 16(1), 1973, pp. 1-9 and Peltzman, S., "The gains and Losses from Industrial Concentration", *Journal of Law and Economics*, 20(2),1977, pp. 229-263.

which translates into higher lending rates, lower deposit rates and higher profits for banks, but results in lower consumer welfare. However, according to the latter paradigm, a more concentrated market reflects the superior efficiency of some banks. In this case, consolidation is associated with lower lending rates and higher overall efficiency (i.e. higher profits for banks and higher consumer welfare). Depending on which of these two effects dominates, M&As can have net positive or negative effects on efficiency.

Early empirical evidence concerning the efficiency effects of domestic bank M&As is quite negative for the United States and more favourable for European countries. A large number of early United States studies focusing on domestic mergers found that potential efficiency gains rarely materialised,[91] although, in contrast, some early European studies analysing mergers showed an improvement in performance for the majority of domestic mergers.[92]

The evidence on cross-border bank M&As seems to be more favourable. Assuming that there are efficiency differences across countries and that acquirers come from the more efficient countries, it might be expected that cross-border M&As would achieve larger efficiency gains than domestic deals – a view that is supported by the literature. Several studies have observed that acquirers in cross-border takeovers tend to be large, efficient banks[93] and that takeover targets tend to be banks in concentrated markets[94] that are struggling in terms of profitability and efficiency.[95] Additionally, a number of papers have documented the positive impact of bank consolidation on the creation of new firms and on access to credit for financially constrained firms.[96]

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91 Berger, A.N., Demsetz, R.S., & Strahan, P.E., "The consolidation of the financial services industry: Causes, consequences, and implications for the future", *Journal of Banking & Finance*, 23(2), 1999, pp. 135-194; Berger, A.N., DeYoung, R., Genay, H., and Udell, G.F., "Globalization of Financial Institutions: Evidence from Cross-Border Banking Performance," *Brookings-Wharton Papers on Financial Services*, No 1, 2000, pp. 23-120.

92 Altunbaş, Y., and Marqués, D., "Mergers and acquisitions and bank performance in Europe: The role of strategic similarities", *Journal of Economics and Business*, 60(3), 2008, pp. 204-222.; Cybo-Ottone, A., and Murgia, M., "Mergers and shareholder wealth in European banking", *Journal of Banking & Finance*, 24(6), 2000, pp. 831-859.

93 See Focarelli, D., Panetta, F., & Salleo, C., "Why do banks merge?", *Journal of Money, Credit, and Banking*, 34(4), 2002, pp. 1047-1066; Buch, C.M., and DeLong, G., "Cross-border bank mergers: What lures the rare animal?", *Journal of Banking & Finance*, 28(9), 2004, pp. 2077-2102; Berger, A.N., "International Comparisons of Banking Efficiency", *Financial Markets, Institutions & Instruments*, 16(3), 2007, pp. 119-144; and Correa, R., "Cross-border bank acquisitions: Is there a performance effect"?, *Journal of Financial Services Research*, 36, 2009, pp. 169-197.

94 See Hernando, I., Nieto, M., and Wall, L., "Determinants of domestic and cross-border bank acquisitions in the European Union", *Journal of Banking & Finance*, 33(6), 2009, pp. 1022-1032; and Molyneux, P., Schaeck, K., and Zhou, T.M., "'Too systemically important to fail' in banking – Evidence from bank mergers and acquisitions", *Journal of International Money and Finance*, 49, 2014, pp. 258-282.

95 Beitel, P., Schiereck, D., and Wahrenburg, M., "Explaining M&A success in European banks", *European Financial Management*, 10(1), 2004, pp.109-139.

96 See Cetorelli, N., "Real Effects of Bank Competition", *Journal of Money, Credit, and Banking*, 36(3), 2004, pp. 543-558; Cetorelli N. and Gambera, M., "Banking Market Structure, Financial Dependence and Growth: International Evidence from Industry Data", *Journal of Finance*, Vol. 56, No 2, 2001, pp. 614-648; Cetorelli, N. and Strahan, P., "Finance as a Barrier to Entry: Bank Competition and Industry Structure in local U.S. markets" *Journal of Finance*, 61(1), 2006, pp. 437-461; and Kerr, W. and Nanda, R., "Democratizing entry: Banking deregulations, financing constraints, and entrepreneurship", *Journal of Financial Economics*, 94(1), 2009, pp. 124-149.

New evidence also supports the presence of scale economies for large banking institutions. The early literature, based mostly on US data as indicated above, did not find evidence of scale economies in banking except for below a very small size threshold. In contrast, however, recent work also finds evidence of scale economies for large banks. Part of the discrepancy between earlier and more recent findings relates to changes in the production function of banks, including a more intensive use of information technologies. It is also due to the measurement of scale economies using more sophisticated econometric techniques that incorporate banks' risk management.[97]

Another benefit deriving from the higher number of large pan-European banks resulting from M&As is that they should be able to compete more effectively at global level as well as offer better support to the development of European capital markets. Although the recent crisis has somewhat halted the process of globalisation, euro area banks also compete with a number of large players from the United States, the United Kingdom and East Asia, which often also benefit from a large domestic base. Sizeable pan-European players – which are relatively rare – could be better placed to develop their international distribution networks and capital market activities, allowing them to operate on a par with their competitors, both at home and abroad. Since a certain scale is also an important pre-condition for a number of capital market services, cross-border bank M&As could also make a valuable contribution to efforts aimed at strengthening European capital markets, as illustrated by the important CMU project (see Chapter 2).

Moving beyond efficiency, analyses of the costs and benefits of banking sector M&As should consider their possible impact on the stability of the new corporate entity or entities. In fact, in contrast to many other sectors, bank M&As are subject to a supervisory review in addition to the usual competition review, and this should ensure that the new corporate structure(s) is/are sound. In terms of the outcome, however, studies on the interaction between concentration, competition and stability in banking have not produced sufficiently comparable and conclusive results.[98] This is due to the use of very different measures for risk and competition, as well as different data samples.[99]

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97 Hughes, J., Mester, L., and Moon, C-G., "Are scale economies in banking elusive or illusive? Evidence obtained by incorporating capital structure and risk taking into models of bank production", *Journal of Banking & Finance*, 25, 2001, pp. 2169-2208; Wheelock, D.C., and Wilson, P.W. "Do Large Banks Have Lower Costs? New Estimates of Returns to Scale for U.S. Banks", *Journal of Money, Credit and Banking*,44(1), 2012, pp. 171-199.; Hughes, J. P., and Mester L.J., "Who said large banks don't experience scale economies? Evidence from a risk-return-driven cost function", *Journal of Financial Intermediation*,22(4), 2013, pp. 559-585.

98 For reviews of the literature see Carletti, E., and Hartmann, P., "Competition and Stability: What's Special about Banking?" in Mizen, P. (ed.), *Monetary History, Exchange Rates and Financial Markets: Essays in Honour of Charles Goodhart*, Vol. 2, Cheltenham: Edward Elgar, 2003, pp. 202-229; Carletti E., and Vives, X., "Regulation and Competition Policy in the Banking Sector", in Vives, X. (ed.), *Competition Policy in Europe, Fifty Years on from the Treaty of Rome*, Oxford University Press, 2009, pp. 260–283; and Carletti E., "Competition, Concentration and Stability in the Banking Sector," Background Note, in OECD Competition Committee *Roundtable on Competition, Concentration and Stability in the Banking Sector*, DAF/COMP(2010)9, Paris, 2010, pp. 13-37.

99 See, for example, Beck, T., Demirgüç -Kunt, A., and Levine, R., "Bank Concentration, Competition and Crises: First Results," *Journal of Banking & Finance*, 30, 2006, pp. 1581-1603.

Cross-border consolidation could make a valuable contribution to resolving NPLs, which are mainly concentrated in specific countries.[100] Reducing the high level of NPLs that have accumulated through the financial crisis and the subsequent long period of low growth is an important ongoing task. If the European consolidation process takes place mainly through the merger of small or medium-sized fragile banks, then the resulting institutions will simply be larger fragile banks. However, if consolidation also happens via the acquisition of weaker banks by stronger banks, then such M&As may help to resolve the NPL problems of the targets.[101] In this context, cross-border M&As may help to expand the number of potential buyers, raising the probability of a stronger bank purchasing a weaker bank.

In an environment of low bank profitability that could add to financial stability risks, a mixture of domestic and cross-border M&As could make a valuable contribution to stabilising profitability without creating competition problems in local loan and deposit markets. Undoubtedly, removing over-banking in some countries will require both significant domestic and cross-border consolidation. Domestic consolidation will, partly, strengthen the market power of some domestic players, helping them to re-establish their profitability, although this does also incur two risks. First, competition could fall to a low level in the loan and deposit markets of smaller countries or in the local markets of larger countries. Second, reduced competition could limit incentives to keep costs in check. These are risks that tend not to occur for cross-border mergers. Therefore, ensuring a degree of balance between competition-neutral cross-border mergers and profitability-supporting domestic mergers would be helpful in reducing over-banking while respecting both competition and stability objectives.

In the theoretical literature there are several channels through which consolidation, and thus increased concentration, can affect bank stability.[102] A starting point could be to focus on the impact of the potentially higher profits accrued by the merging banks on their risk-taking decisions. A number of contributions argue that higher profits induce banks to behave more prudently and take fewer risks, as they have a more valuable charter to lose in the case of default – this is the "charter value hypothesis".[103] Consolidation leads to greater stability to the extent that it is accompanied by enhanced market power that increases profitability. Moreover, higher profits that are not fully distributed to shareholders also imply more resilient

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100 See "Addressing market failures in the resolution of non-performing loans in the euro area", Financial Stability Review, ECB, November 2016. See also "Resolving Europe's NPL burden: challenges and benefits", speech by Vítor Constâncio, Vice-President of the ECB, 3 February 2017.

101 Stronger banks may provide new tools and a greater ability to implement solutions (including timely write-offs) to NPLs in weaker banks. Therefore, it is not necessarily a negative sign if acknowledged NPLs and impairment charges increase in the years following an M&A deal, because this may reflect the active resolution of such problems the target may have.

102 Note that in the theoretical literature, competition and concentration often refer to the same concept. In most of the contributions cited here, unless otherwise specified, high concentration refers to a low degree of competition and vice versa.

103 See, among others, Keeley, M., "Deposit Insurance, Risk and Market Power in Banking", *American Economic Review*, 80(5), 1990, pp. 1183-1200; Allen, F. and Gale, D., "Competition and Financial Stability", *Journal of Money, Credit and Banking*, 36(3), 2004, pp. 453-480; Hellmann, T.F., Murdock, K.C. and Stiglitz, J.E., "Liberalization, Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough? ", *American Economic Review*, 90(1), 2000, pp. 147-165; and Repullo, R., "Capital Requirements, Market Power, and Risk-Taking in Banking", *Journal of Financial Intermediation*,13(2), 2004, pp. 156-182.

and less vulnerable banks.[104] At the same time, a reasonably competitive environment is a pre-condition for market discipline that maintains incentives for efficient and resilient banks in the long term.

The effect of M&As on competition, and thus on loan and deposit rates, is also relevant for assessing the impact on bank stability. Boyd and De Nicoló[105] suggest that increased market power in the form of higher loan rates has a negative impact on stability, as it induces borrowers to take on more risk and banks become more fragile as a consequence, although if the higher rates curtail real investment then risk should not increase.[106] On the liability side, changes in market power also affect banks' exposure to run risk and their incentives to take risks. A number of theoretical studies have argued that lower deposit rates lead to more stability by ameliorating the coordination failures among depositors that can lead to runs.[107] However, this argument may be of limited practical relevance as long as there is a well-designed deposit insurance system. A reduction in funding costs could also lead to higher bank leverage and increased risk-taking.[108] Given that the literature has reported that larger efficiency gains tend to result from cross-border M&As than from domestic M&As and since, ceteris paribus, the former do not change concentration, many of these effects seem to be less of a concern in cross-border consolidation.

Regarding the effect of consolidation on the functioning of the interbank market, some studies have found that market power reduces banks' incentives to hold large amounts of liquidity and thereby impede the flow of liquidity between banks, thus potentially increasing the risk of individual and systemic liquidity shortfalls.[109] A related study by Carletti, Hartmann and Spagnolo separates the impact of consolidation on aggregate demand and the supply of liquidity, and argues that consolidation is more likely to produce adverse liquidity effects when it involves large banks and when the ratio of interbank to deposit funding costs is high.[110] Given

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104 This mechanism is in play in Martinez-Miera, D. and Repullo, R., "Does Competition Reduce the Risk of Bank Failure?", *Review of Financial Studies*, 23(10), 2010, pp. 3638-3664.

105 Boyd, H.J., and De Nicoló, G., "The Theory of Bank Risk Taking and Competition Revisited", *Journal of Finance*, 60(3), 2005, pp. 1329-1343.

106 Koskela, E., and Stenbacka, R., "Is there a tradeoff between bank competition and financial fragility?", *Journal of Banking & Finance*, 24(12), 2000, pp. 1853-1873.

107 The increase in banks' vulnerability to runs due to an increase in the face value of deposits emerges, among others, in Matutes, C., and Vives, X., "Competition for Deposits, Fragility and Insurance", *Journal of Financial Intermediation*, 5(2), 1996, pp.184-216; Rochet, J.C., and Vives, X., "Coordination Failures and Lender of Last Resort: Was Bagehot Right After All?," *Journal of the European Economic Association*, 2(6), 2004, pp. 1116-1147; Goldstein, I., and Pauzner, A., "Demand-Deposit Contracts and the Probability of Bank Runs", *Journal of Finance*, 60(3), 2005, pp. 1293-1327; and Vives, X., "Strategic Complementarity, Fragility and Regulation", *Review of Financial Studies*, 27(12), 2014, pp. 3547-3592.

108 This is closely related to the risk-taking channel of monetary policy. See, Jiménez, G., Ongena, S., Peydró, J.-L. and Saurina, J., "Hazardous Times for Monetary Policy: What Do Twenty-Three Million Bank Loans Say About the Effects of Monetary Policy on Credit Risk-Taking?", *Econometrica*, vol. 82(2), Econometric Society, 2014, pp. 463-505; Altunbas, Y., Gambacorta, L. and Marques-Ibanez, D., "Does Monetary Policy Affect Bank Risk?", International Journal of Central Banking, Vol. 10(1), pp. 95-136, March 2014; and Dell'Ariccia, G., Laeven, L. and Marquez, R., "Real interest rates, leverage and bank risk-taking", *Journal of Economic Theory,* Vol. 149, issue C 2014, pp. 65-99.

109 See Acharya, V., Gromb, D., and Yorulmazer, T., "Imperfect Competition in the Interbank Market for Liquidity as a Rationale for Central Banking?" *American Economic Journal: Macroeconomics*, 4(2), 2012, pp. 184-217 and Carletti, E., and Leonello, A., "Credit market competition and liquidity crises", *Working Paper Series*, No 1932, ECB, 2016.

110 Carletti, E., Hartmann, P., and Spagnolo, G., "Bank Mergers, Competition and Liquidity", *Journal of Money, Credit and Banking*, 39(5), 2007, pp. 1067-1105.

the size of the euro interbank market and its (so far) relatively limited consolidation, it is not clear that the emergence of new pan-European banks would adversely affect its functioning.

A general review of the literature suggests a certain ambiguity in the theoretical relationship between competition and stability in banking. Whether the relationship turns out to be positive or negative for specific M&A transactions is therefore an empirical question and will depend on circumstances.

Box A presents an exploratory analysis of the relationship between cross-border euro area M&As and banks' efficiency, stability and business strategy. The box examines the performance of both the acquired and the acquiring banks compared with other euro area banks for cross-border M&As that took place between 2005 and 2015, i.e. a period that was very unfavourable for realising efficiency or stability gains in the years directly following the deals. The empirical evidence presented in the box suggests that relatively large and profitable banks took over or acquired stakes in smaller, less profitable banks. The M&A transactions seemed to affect acquirers and targets in somewhat different ways. While target banks' stability and efficiency indicators tended to improve, the stability and efficiency of acquiring banks appears to have worsened somewhat. This may, however, be due to the very adverse economic and financial environment and the fact that some of the benefits for acquiring banks take longer to materialise.

Box A

Assessing the relationship between cross-border M&As and banks' stability, efficiency and business strategy in the euro area

This box presents an exploratory analysis of how key indicators of the stability, efficiency and strategy of banks involved in cross-border M&As within the euro area changed before, during and after the deals. The analysis is limited in scope and should therefore be considered as illustrative and preliminary.

To conduct the analysis below we initially identified 70 cross-border bank M&As within the euro area during the period 2005 to 2015. However, several M&A deals were subsequently excluded owing to their particularities (e.g. purchases due to divestments required by the government, intra-group operations, purchases where the buyer was not a bank). The remaining sample covered 39 target banks and 42 acquiring banks.

Overall the sample suggests that relatively large and profitable banks took over or acquired stakes in smaller, less profitable banks. The M&A transactions seem to have affected acquirers and targets in somewhat different ways. While target banks' stability and efficiency indicators tended to improve, the stability and efficiency of acquiring banks appears to have worsened somewhat. This may be due to the fact that some of the benefits for acquiring banks take longer to materialise. In addition, most of the sample period was characterised by a very adverse economic and financial environment.

Looking at the results in more detail, Tables A and B show various indicators of the stability, business strategy and efficiency of the target and the acquiring banks, respectively, for the five years before and after the M&A deal. Each entry represents the percentage point difference

between the median value of the respective indicator for all target or acquiring banks (Tables A and B, respectively) and the median for all euro area banks in one particular year. Year 0 is the time of the M&A transaction. For an assessment of the economic significance of these values, the last column on the right shows the (absolute) median values of the indicators in the year of the deal for the target and the acquiring banks.

Table A

Performance of targeted banks relative to euro area banks

(in percentage points, unless stated otherwise)

	Year relative to the M&A deal completion											Absolute median value of variable in M&A deal year for the target banks
	-5	-4	-3	-2	-1	0	1	2	3	4	5	
Number of banks in sample	*22*	*25*	*29*	*36*	*42*	*40*	*37*	*34*	*33*	*31*	*26*	
Bank stability												
Return on equity	3.07	2.10	2.17	1.46	-0.54	0.26	-0.69	-2.01	1.89	0.70	-0.48	4.29
Equity to assets	-1.99	-1.97	-1.69	-2.05	-1.66	-1.07	-1.31	-1.83	-0.31	-0.53	-1.18	5.85
NPL ratio	-2.55	-2.08	-1.26	-0.64	0.00	0.61	0.91	1.92	1.81	3.16	3.39	5.14
Net interest margin	-0.81	-0.88	-0.82	-0.87	-0.82	-0.68	-0.31	-0.28	-0.24	-0.48	-0.46	1.46
Business strategy												
Asset growth	1.58	-0.34	2.13	-3.10	-5.62	-5.08	0.43	-3.49	-3.06	-5.20	-1.36	15.47
Customer deposit funding	-1.54	-9.23	-8.55	-11.08	-6.84	-9.30	-20.34	-16.83	-15.76	-17.28	-25.05	63.28
Market share	0.14	0.19	0.16	0.21	0.72	1.48	2.68	2.44	1.33	1.16	2.48	2.24
Loan to assets	-28.57	-23.26	-18.69	-13.89	-5.80	5.07	0.72	5.38	6.77	5.56	4.86	69.10
Securities to assets	14.87	9.47	8.94	1.17	-3.14	-6.76	-3.37	-5.06	-6.33	-5.47	-7.54	12.57
Efficiency												
Cost of debt	-0.11	-0.05	-0.13	0.19	0.04	0.14	0.13	0.20	0.41	0.35	0.46	1.84
Cost to income	11.37	11.54	4.42	0.04	8.44	11.14	4.66	-0.44	-6.60	-5.53	-4.41	76.71
Cost to assets	0.03	-0.07	-0.24	-0.18	-0.18	-0.02	-0.02	0.02	0.01	-0.04	-0.05	0.85
Income to assets	0.82	0.61	-0.60	-0.60	-0.19	-0.12	0.18	0.21	0.16	0.01	0.22	4.80

The indicators reported in Tables A and B provide some tentative insights into why banks enter into M&A deals. Before the deals, acquirers had a return on equity that was higher than the median for euro area banks. They also had lower cost-to-income ratios, as well as relatively low customer deposit bases. Targets tended to be more fragile, with higher NPL and cost-to-income ratios than the median for euro area banks. This is consistent with the interpretation that large, profitable and cost-efficient banks targeted weaker banks whose cost structures they could improve while, at the same time, strengthening their own depositor base.

After the deals many of the indicators develop in different ways for targets and acquirers. Target banks' capital levels and net interest margins increase, supported by an increase in the ratio of loans to total assets. By contrast, acquiring banks' return on equity, capitalisation and net interest margins tend to decline. Moreover, targets manage to increase their domestic market shares while decreasing their cost to income ratio. Acquirers also manage to reduce their cost to income ratio, but their loan to asset and customer funding ratios do not increase. Finally, both targets and acquirers reduce asset growth after the transaction – the former move away from securities while the latter keep their already high share of securities on their balance sheets.

Table B

Performance of acquiring banks relative to euro area banks

(in percentage points, unless stated otherwise)

	Year relative to the M&A deal completion											Absolute median value of variable in M&A deal year for the acquiring banks
	-5	-4	-3	-2	-1	0	1	2	3	4	5	
Number of banks in sample	20	20	24	30	34	38	39	37	34	33	31	
Bank stability												
Return on equity	2.09	1.96	1.52	0.78	2.18	2.51	2.79	1.46	-0.18	-0.55	0.02	7.57
Equity to assets	-1.92	-1.84	-2.09	-2.34	-2.36	-1.84	-2.26	-2.41	-2.64	-3.23	-3.52	5.01
NPL ratio	0.09	-0.12	0.33	-0.14	0.54	0.00	-0.10	0.06	0.00	0.85	1.77	4.41
Net interest margin	-0.68	-0.95	-1.02	-0.93	-0.87	-0.86	-0.91	-0.93	-1.04	-1.13	-1.14	1.09
Business strategy												
Asset growth	2.21	-2.80	0.41	1.07	-0.73	2.11	-2.18	-0.89	-1.98	-2.83	-4.02	7.39
Customer deposit funding	-23.21	-22.60	-24.34	-25.21	-25.27	-25.03	-26.57	-30.80	-32.56	-45.15	-44.89	37.21
Market share	11.53	11.47	15.42	12.43	15.83	17.73	16.68	16.23	15.72	14.78	15.55	18.59
Loan to assets	-19.20	-25.17	-18.44	-22.38	-21.93	-21.91	-22.09	-20.64	-16.28	-21.66	-19.19	41.35
Securities to assets	14.44	12.49	10.02	11.61	14.95	11.13	12.85	9.65	8.60	9.06	18.13	31.78
Efficiency												
Cost of debt	0.48	0.31	0.22	0.29	0.36	0.12	0.21	0.15	0.45	0.23	0.04	2.25
Cost to income	-3.10	-1.74	0.13	-1.15	-2.16	-1.68	-0.10	-3.50	-5.30	-2.26	-5.93	62.28
Cost to assets	-0.15	-0.13	-0.15	-0.15	-0.04	-0.05	-0.01	-0.13	-0.07	-0.10	-0.06	0.83
Income to assets	-0.76	-0.83	-0.55	-0.74	-0.65	-0.70	-0.40	-0.38	0.00	-0.99	-1.12	3.54

Source: ECB calculations based on S&P Global.
Notes:
1. The tables report the difference between the median values of each indicator for target/acquiring banks and the median value for banks in the euro area. “0” refers to the time of the takeover. The absolute value of the variable in the M&A deal year includes targets and acquiring banks.
2. Market share refers to the market share in the domestic/local country.
3. Owing to the fact that banks can be multiple targets or buyers, the number of banks in the sample can be higher than the number of target and acquiring banks from the M&A database.

A number of caveats and clarifications should be noted. First, as mentioned above, the sample period 2005 to 2015 was characterised by a very unfavourable environment for cross-border M&As. Second, the analysis does not consider domestic M&As, so that cross-border transactions cannot be benchmarked against domestic transactions. Third, the post-transaction data on the right-hand side of Table A only cover targets that continued to operate as legally independent entities. Fourth, the right-hand side of Table B shows data for the merged companies/stakes in the partially acquired firms. Hence there is some overlap between the right-hand sides of the two tables. Fifth, the analytical method used in this box does not allow causality between M&A transactions and the performance of the indicators to be tested for. Sixth, no tests were conducted to show the statistical significance of changes to the performance indicators, partly owing to the low number of observations.

Tracking selected key performance indicators for acquiring and target banks involved in euro area cross-border M&As over time is a way to illustrate some of the starting conditions for the banks involved and their development following the transaction. However, further analyses addressing the above-mentioned caveats to the extent possible are needed to obtain more detailed and robust results.

Banking sector consolidation tends to affect supervision in two ways – the reduction in the number of banks simplifies it over time, but if mergers lead to large and complex banks then assessing banking stability risks may become even more difficult.[111] The establishment of the SSM, however, has significantly improved the supervision of large cross-border banks in the participating Member States, i.e. the current euro area.

Even though consolidation among medium-sized and large banks may increase the number of systemically important banks, the significant progress made with the European banking union and the post-crisis regulatory framework includes measures that should significantly reduce too-big-to-fail problems.[112] A number of empirical studies indicate that the increases in size or other determinants of "systemic-ness" associated with domestic bank mergers lead to premia in purchase prices, lower returns on bank bonds or reductions in failure insurance premia embedded in options.[113] This is widely interpreted as evidence of a too-big-to-fail safety net subsidy that increases for banks which grow through mergers. Similar results are found for bank size in the absence of any analysis of whether this results from mergers or internal growth.[114] It has even been suggested that this evidence might imply that internal or external growth may be stimulated by the gaining of too-big-to-fail status. Evidence for cross-border mergers is, however, scarce. In a recent paper, Hagendorff, Hernando, Nieto and Wall find special bank merger premiums for domestic deals in Europe, although they find no conclusive evidence of such premiums in cross-border deals.[115] Moreover, the implementation of the BRRD and the establishment of a European Resolution Mechanism reduce the too-big-to-fail problem and enhance the ability of the authorities to resolve even large banks within and across Member States.

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111 Stronger regulatory requirements for large-sized institutions (such as the other systemically important institution (O-SII) or global systemically important institution (G-SII) buffers) should help prevent the too-big-to-fail problem occurring, thereby helping banking supervision to achieve financial stability (see also Subsection 3.2).

112 See, among others, Claessens, S., Herring, R., Schoenmaker, D., and Summe, K.A., "A Safer World Financial System: Improving the Resolution of Systemic Institutions", International Center for Monetary and Banking Studies, 2010.

113 See, among others, Molyneux, P., Schaeck, K., and Zhou, T.M., "'Too systemically important to fail' in banking – Evidence from bank mergers and acquisitions", *Journal of International Money and Finance*, 49, 2014, pp. 258-282; Brewer, E., and Jagtiani, J., "How Much Did Banks Pay to Become Too-Big-To-Fail and to Become Systemically Important?", *Journal of Financial Services Research* 43(1,) 2013, pp. 1-35; Penas, M.F., and Unal, H., "Gains in bank mergers: Evidence from the bond markets", *Journal of Financial Economics*, 74(1), 2004, pp. 149-179; and Benston, G.J., Hunter, W.C., and Wall, L.D., "Motivations for bank mergers and acquisitions: Enhancing the deposit insurance put option versus earnings diversification", *Journal of money, credit and banking*, 27(3), 1995, pp. 777-788.

114 Recently, for example, Kelly et al., "Too-Systemic-to-Fail: What Option Markets Imply about Sector-Wide Government Guarantees", *American Economic Review*, No. 106(6), 2016, pp. pp.1278-1319, who look at US data during the crisis. See also Kane, E.J., "Incentives for banking megamergers: What motives might regulators infer from event-study evidence?", *Journal of Money, Credit and Banking*, 32, 2000, pp. 671-701; Kane, E.J., "Extracting nontransparent safety net subsidies by strategically expanding and contracting a financial institution's accounting balance sheet", *Journal of Financial Services Research*, 36, 2009, pp.161-168; and Brewer, E., and Jagtiani, J., "How Much Did Banks Pay to Become Too-Big-To-Fail and to Become Systemically Important?", *Journal of Financial Services Research*, 43(1), 2013, pp. 1-35.

115 Hagendorff, J., Hernando, I., Nieto, M.J., and Wall, L.D.," What do premiums paid for bank M&As reflect? The case of the European Union", *Journal of Banking & Finance*, 36(3), 2012, pp. 749-759.

2.2 Implications of cross-border consolidation for macro risk sharing, diversification and systemic risk

So far the analysis has mainly focused on the costs and benefits associated with bank mergers in general, whether domestic or cross-border, taking a primarily microeconomic perspective. However, cross-border mergers and acquisitions also have macroeconomic implications and there are also other implications that are more specific to cross-border deals.

A potential major macroeconomic benefit deriving from greater cross-country penetration of banking markets in the euro area could be a stimulus given to private financial risk sharing that would improve the functioning of Monetary Union. The risk sharing literature has found that, after cross-regional or cross-border equity holdings, cross-regional or cross-border credit is the second most effective private mechanism for economic agents to insure against domestic shocks.[116] In particular, retail lending to firms and households is both a better and a more resilient mechanism than interbank lending.[117] However, as Chart 5 above and Chart S28 in the Statistical annex illustrate, cross-border retail credit remains extremely low in the euro area. Since significant increases in "remote" lending are not very realistic and de novo entries into foreign banking markets are challenging in terms of information disadvantages as well as legal, taxation, cultural and language barriers, even in a banking union, the only realistic pathway to increase the cross-border penetration of credit markets over a reasonably short period of time seems to be through M&As. In the absence of much public risk sharing via fiscal policies, the additional private financial risk sharing that this could entail would lead to a greater ability of households and NFCs to smooth out over time the shocks that are asymmetric across euro area countries.[118]

Another important benefit of cross-border banking sector consolidation is the improved risk diversification that it entails. By acquiring a foreign bank a domestic institution becomes less exposed to domestic shocks both on the liability and on the asset side. On the liability side the benefits of cross-border consolidation come, for example, from having an additional stable retail deposit funding base abroad, which will often be affected by shocks that are different to those impacting home-country depositors.

The diversification that cross-border consolidation brings can stabilise banks' asset side and weaken the adverse sovereign-bank nexus. Cross-border diversification is likely to lead to lower asset volatility and, in turn, to a lower probability of default, as well as lower lending volatility in the domestic market. This

[116] For example, Asdrubali, P., Sorensen, B., and Yosha, O.,"Channels of interstate risk sharing: United States 1963-1990", *The Quarterly Journal of Economics,* 111(4), 1996, pp. 1081-1110, or Hepp, R., and von Hagen, J., " Interstate risk sharing in Germany: 1970-2006. *Oxford Economic Papers* 65(1), 2012, pp. 1-24.

[117] Fecht, F., Grüner, H.P., and Hartmann, P., "Welfare effects of financial integration", *CEPR Discussion Paper*, 6311, May 2007.

[118] For a broader discussion of how financial integration and capital market development can make a contribution to euro area cross-country risk sharing, see Beck, R., Dedola, L., Giovannini, A. and Popov, A., "Financial integration and risk sharing in a monetary union", Financial integration in Europe 2016, ECB, pp. 80-98.

is because banks that invest abroad are less exposed to adverse domestic shocks while, in addition, cross-border integration may contribute to more stable lending. When domestic banks experience funding constraints due to supply-driven domestic shocks, borrowers can switch to foreign banks and, in fact, De Haas and Van Lelyveld have found that the foreign subsidiaries of multinational banks can increase their lending independent of host country shocks, unlike local banks.[119] Finally, as banks expand across euro area borders they will normally hold a smaller proportion of domestic government bonds. So, unsustainable fiscal policies in a particular country will be less likely to endanger such banks.

Expanding activities abroad also allows banks to reap the benefits of increased lending specialisation. In a recent paper Fecht, Grüner, and Hartmann suggest that cross-border financial integration allows banks to lend more to industries in which they have a comparative advantage.[120] The extra individual risk they take by concentrating in specific sectors is shared in the interbank market, which, however, adds contagion risk. The net welfare effects are positive as long as the additional revenues banks earn from financing the more profitable projects in which they specialise are larger than the costs of contagion.

Cross-border consolidation can, however, also give rise to new forms of financial stability risk. For instance, intra-group exposures are often exempted from large exposure limits, following the exercise of supervisory or Member State discretion. Therefore, interbank exposures could be replaced as a conduit for cross-border contagion by intra-group exposures. Moreover, the improved risk-return trade-off from greater diversification may induce banks to readjust their portfolios and take on more risk. In that case, a risk-reduction effect may no longer be the predominant result of diversification.[121] Finally, if diversification progresses very far, then banks may ultimately hold similar portfolios, which could increase their common vulnerability to aggregate shocks.[122]

Host-country lending to the real economy by large, internationally active banks could decline significantly in periods of crisis, although it should still be more stable than interbank lending. Peek and Rosengren, for example, have found that the significant problems encountered by Japanese banks in their home market during the late 1980s reduced the supply of credit from these banks to borrowers in the United States.[123] This channel has received significantly more attention since the

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119 De Haas, R., and Van Lelyveld, I.," Internal capital markets and lending by multinational bank subsidiaries", *Journal of financial Intermediation*, 19(1), 2010, pp. 1-25.

120 Fecht, F., Grüner, H.P., and Hartmann, P., "Financial integration, specialization, and systemic risk", *Journal of International Economics*, 88(1), 2012, pp. 150-161.

121 See e.g. Demsetz, R. and Strahan, P. E., "Diversification, size, and risk at bank holding companies", *Journal of Money, Credit, and Banking*, Vol. 29, Issue 3, 1997, pp. 300-313. For a detailed review of the literature on the interaction between consolidation, greater portfolio diversification and overall riskiness, see Carletti, E., Hartmann, P., and Spagnolo, G., "Implications of the Bank Merger Wave for Competition and Stability", *Risk Measurement and Systemic Risk, Proceedings of the Third Joint Central Bank Research Conference,* Board of Governors of the Federal Reserve System, Bank of Japan, European Central Bank, 2002, pp. 38–50.

122 Wagner, W., "Diversification at financial institutions and systemic crises", *Journal of Financial Intermediation*, Vol. 19, Issue 3, 2010, pp.373-386.

123 Peek, J. and Rosengren, E.S., "The international transmission of financial shocks: The case of Japan", *America Economic Review*, 87(4), 1997, pp. 495-505.

2007-2009 financial crisis and many studies have observed similar reductions when a bank experiences a shock in its domestic market. [124]

For all these reasons, it is important that mechanisms are in place to ensure that the benefits of cross-border bank consolidation for euro area risk sharing are not offset by new financial stability risks. One important development in this regard is the establishment of the SSM. Given the existence of national banking supervision, cross-regional financial stability risks are covered and are rarely used as an argument against cross-regional bank mergers within countries. The same principle can now be applied to cross-border mergers among countries participating in the SSM. That said, the size, complexity and likely interconnectedness, i.e. the "systemic-ness", that truly pan-European banks could have emphasise the need for the strict macroprudential supervision exercised by the SSM.

3 Obstacles to cross-border bank consolidation in the euro area

Whereas the above review suggests that cross-border banking consolidation among SSM countries is likely to be beneficial in a number of aspects, there are several reasons for the subdued activity seen in cross-border banking M&As in the euro area since 2007. While progress is being made in completing the banking union, other factors may play an important role. These include business obstacles, regulatory and supervisory hurdles, and political uncertainty. A number of policy options have emerged from these impediments and could facilitate further cross-border consolidation in the euro area.

3.1 Business obstacles

The current environment of relatively timid economic growth is likely to have an adverse effect on cross-border M&A activity in the euro area banking sector. As in any other industry, M&As in banking imply sizeable risks for the companies involved. Acquirers commit an important part of their capital and resources to the completion of the transactions and to making them a business success. As a result, M&A activity is cyclical and tends to flourish during periods of strong economic performance, when companies attach a higher probability to M&As generating positive returns.[125]

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[124] See, e.g., Cetorelli, N., and Goldberg, L.S.," Global Banks and International Shock Transmission: Evidence from the Crisis", *IMF Economic Review*, 59(1), 2011, pp. 41-76; Giannetti, M., and Laeven, L., "Flight Home, Flight Abroad, and International Credit Cycles", *American Economic Review*, 102(3), 2012, pp. 219-224; Cetorelli, N., and Goldberg, L.S., " Follow the money: Quantifying Domestic Effects of Foreign Bank Shocks in the Great Recession", *American Economic Review*, 102(3), 2012, pp. 213-218; Popov, A., and Udell, G. F.," Cross-border banking, credit access, and the financial crisis", *Journal of International Economics*, 87(1), 2012, pp. 147-161; and De Haas, R., and Van Horen, N., "Running for the Exit? International Bank Lending During a Financial Crisis", *Review of Financial Studies*, 26(1), 2012, pp. 244-285.

[125] Martynova, M. and Renneboog L., "A century of corporate takeovers: What have we learned and where do we stand?", *Journal of Banking & Finance*, 32(10), 2008, pp. 2148–2177.

This mechanism is aggravated by the fact that several EU countries are often seen as "over-banked".[126] The size of the sector (as a percentage of GDP) is much larger than that of the USA or Japan.[127] This suggests that the process of the shrinking and deleveraging of the sector might continue for some time. As a result, many banks are currently focusing on (re-)building their capital base, partly due to increasing regulatory requirements, instead of pursuing cross-border M&A strategies in a shrinking market.

Moreover, many euro area banks are suffering from high levels of NPLs, whose quality is difficult to assess for potential acquirers and whose regulatory treatment is, at the moment, under review. Large stocks of NPLs and low bank profitability place a burden on bank stock prices, but even in a context of low purchase prices they could complicate price setting in potential M&As: an acquisition might not take place due to the current shareholders being reluctant to see their stakes diluted.[128]

Other important obstacles to successful M&As include differences across member countries in language and business culture. The literature generally finds that cultural differences are sometimes responsible for the failure of major M&As in other business sectors.[129] This may contribute to explaining, together with other factors, why mergers within the euro area are less frequent than in individual countries such as the United States (see Section 1).[130] Although large multinational companies have the means to address these issues, language and cultural barriers may be difficult to overcome, even over extended periods of time.

Therefore, policies that would improve the business environment for cross-border M&As in the euro area include supply and demand-side policies that stimulate growth, policies that support the completion of the European bank restructuring process and policies that resolve NPL problems.

3.2 Regulatory, supervisory and political obstacles

The primary regulatory challenge to M&As in the euro area banking sector appears to be uncertainty over future regulatory developments. This applies in particular to the finalisation of the Basel reforms and uncertainties related to the capital needs of banks. In addition, although in this case for good reasons, the increase in the size and complexity of banks resulting from consolidation can lead to additional capital requirements, since the macroprudential aspects of the post-crisis regulatory framework capture the potentially greater systemic risks caused by

126 See "Is Europe Overbanked?", Reports of the Advisory Scientific Committee, ESRB, June 2014.

127 Several factors may help explain the differences in size of the national banking sectors, including different economic structures, leading banks to serve different clients, and differences in the financial systems per se (e.g. the presence of financial institutions that perform bank-like functions).

128 Fell, J.,Grodzicki, M., Martin R. and O'Brien, E., "Addressing market failures in the resolution of non-performing loans in the euro area", Financial Stability Review, ECB, November 2016.

129 See Weber, R. A. and Camerer, C.F., "Cultural Conflict and Merger Failure: An Experimental Approach", *Management Science* 49(4), 2003, pp. 400-415.

130 See Buch, C.M., and DeLong, G., "Cross-border bank mergers: What lures the rare animal?", *Journal of Banking & Finance*, 28(9), 2004, pp. 2077-2102

merged institutions, via O-SII or even global systemically important bank (G-SIB) buffers, i.e. the increased levels of such buffers. These buffers (together with a host of other features of the new regulatory framework) also "lean against" the too-big or too-systemic-to-fail safety net subsidies that have been discussed in Subsection 2.1. Another issue, however, is the fact that the SSM countries cannot, at present, be treated as a single jurisdiction for the purposes of the calculation of G-SIB buffers. For euro area cross-border banks this could lead to higher capital requirements than, for example, those for US cross-state banks, despite the existence of a European banking union and the SSM.[131] Moreover, uncertainty as to the translation of stress test results into capital requirements/capital guidance should be avoided as much as possible, as this could potentially deter M&As. All in all, as long as long-term bank capital planning is perceived as challenging, taking strategic decisions for possible cross-border mergers will be even more difficult than normal.[132]

Turning more directly to supervisory M&A reviews, bank M&As generally imply numerous complex and challenging procedures and processes for all parties involved. One requirement is that a merged entity will be obliged to follow procedures with its supervisor ensuring, e.g. the reliability and continuity of its risk modelling approaches and its resolution and recovery plans – the latter can become considerably more complex as a result of the merger. In addition, a review will be required of the system of checks and balances with regard to the management bodies of the institution as well as its owners. Even within the SSM, this process can easily result in a treble-digit number of proceedings.[133] The above are needed, in essence, to ensure the safety and soundness of the new entity, but the key point is whether some of the procedures and processes could be made lighter without increasing the risk of threats to stability.

The need to apply national laws and a lack of harmonisation in the legal and regulatory basis governing supervisory M&A reviews in the countries participating in the SSM may further increase the costs of cross-border M&As in banking. The implication of this is that the benefits of the transaction must be even more sizable to offer a valid business case. The prudential assessment of acquisitions that follow the qualified holdings procedure must follow national laws, which are, however, highly harmonised, while the final approval is under the jurisdiction of the SSM.[134] However, the national laws that govern mergers (in a legal sense), e.g. mergers by absorption, tend to be more heterogeneous.[135] Moreover,

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131 For the ECB's contribution to the debate over measures to improve the resilience of EU credit institutions, see the Opinion of the European Central Bank of 19 November 2014 on a proposal for a regulation of the European Parliament and of the Council on structural measures improving the resilience of EU credit institutions (CON/2014/83).

132 Bank Competition and Bank Supervision, speech by Ignazio Angeloni, Member of the ECB Supervisory Board, Barcelona, 4 July 2016.

133 The complexity and effort is further enhanced when banks from outside the euro area or the EU are involved.

134 See Joint Consultation Paper on Draft Joint Guidelines on the prudential assessment of acquisitions and increases of qualifying holdings in the financial sector, EBA, European Insurance and Occupational Pensions Authority (EIOPA) and ESMA, (JC/CP/2015/003).

135 For instance, banking mergers do not require prior approval from the national competent authority (Art. 2 (2) Council Regulation (EU) No. 1024/2013) in Germany while in other countries this is required (e.g. in Belgium, Spain, Italy, Latvia, Lithuania, the Netherlands, Austria and Slovakia).

the ECB is competent for these only in cases where a major institution is involved. This heterogeneity may potentially discourage acquirers from creating single entities at euro area level.

The EU's prudential framework does not yet provide a completely level playing field for domestic as opposed to pan-euro area banks, even among SSM countries. The CRD and CRR contain a number of ONDs.[136] These options and discretions are the result of differences in the financial systems of different Member States and are exercised differently at national level. They make it difficult to ensure a consistent overall level of regulatory capital across Member States and to fully compare the capital positions of banks. They can also prevent a pan-euro area bank from being able to fully pool liquidity and from applying large exposure limits at aggregate level.[137]

Some fundamental financial laws, as well as tax systems, and regulations that support the functioning of financial systems, remain diverse in the EU and in euro area. Insolvency laws, for example, still vary across the EU and the debate about their harmonisation, to which the European Commission and the Eurosystem (in the context of the CMU) are contributing, is still ongoing.[138] Taxation of the banking sector also remains diverse in euro area countries and should be aligned to the extent possible. In this regard, the European Commission's relaunched proposal for a common consolidated corporate tax base (CCCTB) is generally welcome. It would be an important means to reduce red tape and compliance costs and would make it less costly to operate cross-border activities. Clear and consistent transposition and implementation of the Directive defining a common system of taxation applicable to mergers of financial institutions in the EU would also help considerably to reduce legal uncertainty regarding cross-border mergers of financial institutions.[139] Simplifying administrative procedures related to the tax treatment of mergers and removing inconsistencies in the treatment of tax loss carry-forwards in national tax law would be important. Moreover, consumer protection in respect of financial services is regulated by national authorities, which vary across countries in terms of their number (from one in Malta to six in Finland) and specialisation.[140] Other obstacles may stem from the legal status of some banks and their specific

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136 Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC and Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012.

137 For a more detailed discussion, see Special feature B entitled "National options and discretions in the prudential regulatory framework for banks", Financial Integration in Europe 2016, ECB.

138 See, for example, the European Commission Proposal for a directive of the European Parliament and of the Council on preventive restructuring frameworks, second chance and measures to increase the efficiency of restructuring, insolvency and discharge procedures and amending Directive 2012/30/EU (COM(2016) 723 final). Also: Building a Capital Markets Union – Eurosystem contribution to the European Commission's Green Paper, ECB, 2015.

139 See Council Directive 2009/133/EC on the common system of taxation applicable to mergers, divisions, partial divisions, transfers of assets and exchanges of shares concerning companies of different Member States and to the transfer of the registered office of an SE or SCE between Member States.

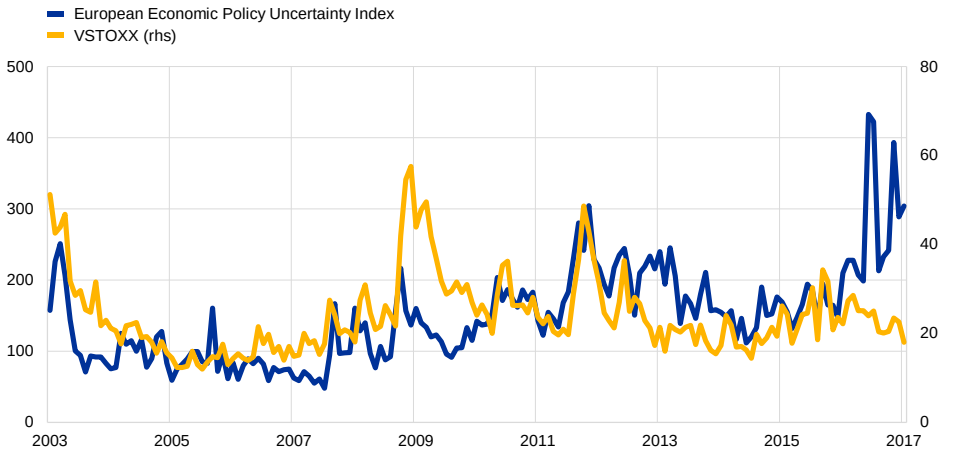
140 See the European Banking Authority's website for information on national competent authorities for consumer protection.

governance and ownership structures (e.g. in the case of some public or cooperative banks) or preference shares they have issued.

Finally, the slowdown in euro area banking sector M&As discussed above should be viewed against a background of heightened political uncertainty in recent years. The EU Economic Policy Index has increased since the start of the international financial crisis in 2008/09 and has remained at elevated levels (Chart 9). Increased political uncertainty does not bode well for cross-country purchases of bank stocks which, after showing a downward trend from 2012 to 2014, resumed an upward trend, reaching peaks in the second half of 2016, around the time of the UK referendum and the time of the presidential elections in the United States.[141] With regard to the repercussions of the UK referendum for the EU banking sector, many banks are currently considering whether and how to change their corporate structures and location policies in response to the United Kingdom's decision to leave the European Union.

Chart 9

European Economic Policy Uncertainty Index and VSTOXX



Sources: www.policyuncertainty.com, Datastream and ECB calculations.
Notes: The European Economic Policy Uncertainty Index is a GDP-weighted average of national economic policy uncertainty indices for five European countries: Germany, Spain, France, Italy and the United Kingdom. The policy uncertainty index has been re-normalised to a mean of 100 from 2003 to January 2017.
Latest observations: January 2017.

The obstacles to cross-border M&As discussed in this subsection give rise to a number of targeted financial sector policies that offer options for facilitating market initiatives to pursue such transactions. This would include removing OND s in European banking regulation; allowing the euro area to be considered as a single jurisdiction for calculating the Basel surcharges for systemic institutions; harmonising taxation, insolvency laws and consumer protection; and streamlining supervisory merger review procedures, harmonising their legal and regulatory basis and coordinating them with competition reviews.

[141] In a context of high political uncertainty and relatively weak economic performance, some banks may also find it more attractive to invest in fintech opportunities rather than in peer banks with legacy issues.

Statistical annex: Financial integration indicators 2017

1 Composite indicators of financial integration in Europe

The price and quantity-based financial integration composite indicators aggregate the data from a selection of market-specific indicators, thereby offering a comprehensive overview of financial integration in the euro area.

1.1 Price-based financial integration composite indicator

The price-based financial integration composite indicator is constructed from a selection of price-based indicators that cover the four main market segments: the money, bond, equity and banking markets.

The first step is to homogenise the indicators for aggregation by applying a transformation based on the indicator's empirical cumulative distribution function (CDF), which involves the computation of order statistics. For a time series of T observations of an indicator x = (x1, x2, …, xT), the data are ranked in ascending order, i.e. $x_{[1]} \leq x_{[2]} \leq \cdots \leq x_{[T]}$, where $x_{[1]}$ $x_{[1]}$represents the sample minimum (min(x)) and $x_{[T]}$ the sample maximum (max(x)). The transformation of the series requires the calculation of the empirical CDF, F(x), which is equal to the number r of observations not exceeding a particular value x, divided by the total number T of observations in the sample:

$$F(x) := \begin{cases} \frac{r}{T} & for\ x_{[r]} \leq x < x_{[r+1]},\ r = 1,2,\dots,T-1 \\ 1 & for\ x \geq x_{[T]} \end{cases}.$$

If a value for x occurs more than once, the ranking number assigned to each of the observations is set to the average of the ranks covered.

All the input series used for the price-based financial integration composite indicator measure price dispersion. Higher values of price dispersion tend to indicate a lower degree of financial integration. However, since we want higher values of the indicator to signal a higher level of financial integration, we transform each of the dispersion indicators by computing 1 - F(x). After transformation, all input series are unit-free and, approximately, uniformly distributed within a range of zero to one.

We still face the problem of how to relate the transformed input series to a theoretical state of perfect integration – each indicator can only provide information concerning the relative degree of financial integration achieved over its specific period of observation. For instance, a (transformed) indicator might display a trend increase for its data sample, signalling that financial integration has improved. However, despite this trend increase, the actual state of integration might still be low compared with other market segments or with a state of perfect integration.

We now define a theoretical (ideal) benchmark value of zero for all dispersion measures of financial integration and construct a sample-dependent scaling factor

$$\theta^P(x) := \frac{\max(x)-\min(x)}{\max(x)-0},$$

where the superscript p differentiates the price-based scaling factor from that applied to the quantity-based financial integration composite indicator.

The factor scales down each transformed series by the percentage of the realised range of dispersion (the historical maximum minus the minimum dispersion) to the ideal dispersion range (the historical maximum minus the theoretical benchmark of zero). Since there is no theoretical upper bound for price dispersion, its highest observed value is set as the benchmark for the lowest degree of financial integration. The series 1 - F(x) is multiplied by $\theta^P(x)$ to produce the final indicator z^P, which is used as an input series in the computation of the price-based financial integration composite indicator:

$$z_t^P = [1 - F(x_t)]\theta^P(x).$$

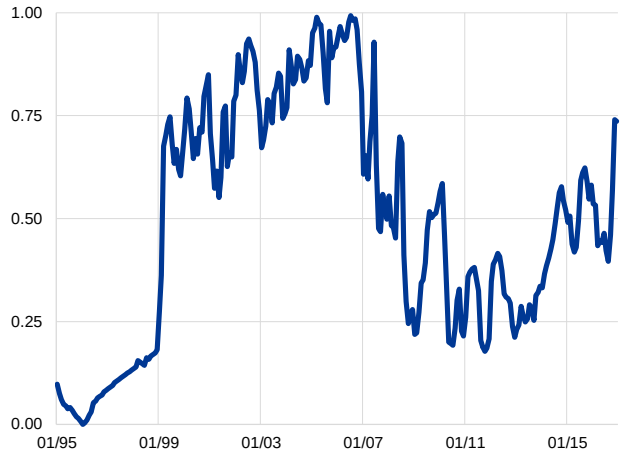
All available indicators z^P are aggregated into sub-indices s_i^P for the four markets. The sub-index for each market segment is computed as the arithmetic average of its N_i constituent integration indicators after transformation:

$$s_{i,t}^P = \frac{1}{N_i}\sum_{n=1}^{N_i} z_{n,t}^P, \quad for\ i = 1, \dots, 4.$$

Chart S1

Sub-index for the money market

(monthly data, Jan. 1995 – Dec. 2016)



Sources: ECB and ECB calculations.
Note: Indicator entered into the sub-index: the cross-country standard deviation of unsecured interbank overnight lending rates. Greek data are not included since they would distort the information content of the indicator.

Chart S2

Sub-index for the bond market

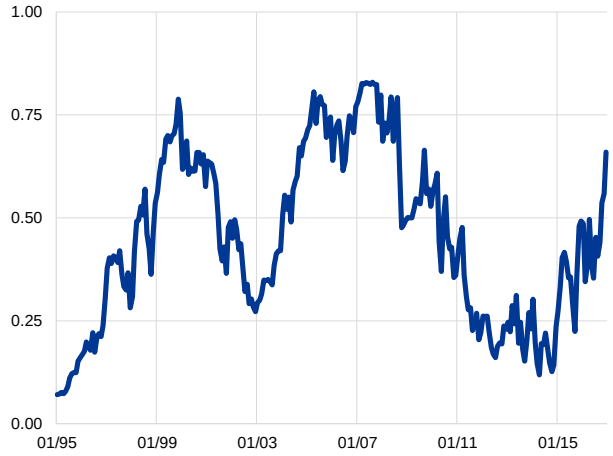
(monthly data, Jan. 1995 – Dec. 2016)

Sources: ECB and ECB calculations.
Note: Indicators aggregated into the sub-index: the cross-country standard deviations of two- and ten-year sovereign bond yields (data on Greece are not included), and the cross-country standard deviation of bond yields of uncovered corporate bonds issued by NFCs (data are aggregated at country level).

Chart S3

Sub-index for the equity market

(monthly data, Jan. 1995 – Dec. 2016)

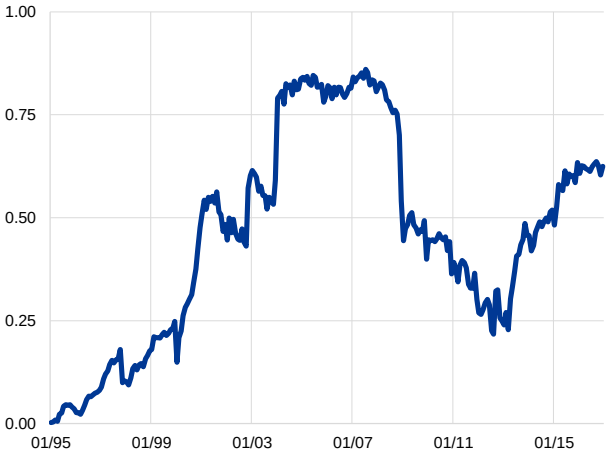


Sources: ECB and ECB calculations.
Note: Indicators aggregated into the sub-index: the segmentation index, and the absolute value of the difference between the cross-sectional dispersions in sector and country index returns.

Chart S4

Sub-index for the banking market

(monthly data, Jan. 1995 – Dec. 2016)



Sources: ECB and ECB calculations.
Note: Indicators aggregated into the sub-index: the cross-country dispersions of interest rates on new loans to households (for consumer credit and total loans) and NFCs, and the cross-country dispersions of deposit rates for households and NFCs on deposits with agreed maturity.

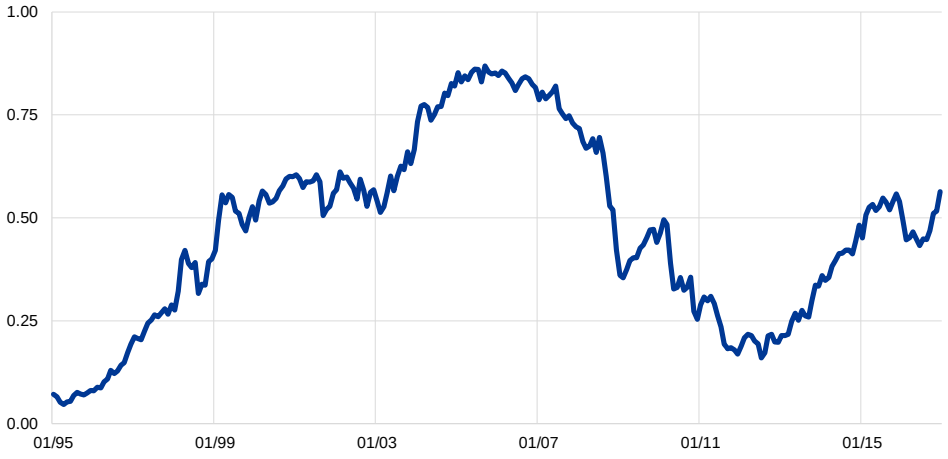
The sub-indices are further aggregated into the price-based financial integration composite indicator by computing weighted averages using size weights that reflect the relative size of the underlying financial market segment:

$$I_t^P = \sum_{i=1}^{4} w_i^P s_{i,t}^P.$$

Chart S5

Price-based financial integration composite indicator

(monthly data, Jan. 1995 – Dec. 2016)



Source: ECB and ECB calculations.

The size weights are computed as the relative average amounts outstanding (taken from the aggregated euro area financial accounts) for the base period 1997-2014,

yielding the following constant weights w_i^P: money markets 17%, bond markets 36%, equity markets 15% and banking markets 32%.

1.2 Quantity-based financial integration composite indicator

The quantity-based financial integration composite indicator is constructed in a similar manner to that used for the price-based composite indicator described above. The main difference is the definition of the input indicators and the scaling factor. The indicators used are intra-euro area cross-border holdings expressed as a percentage of euro area total holdings.[142] A simple portfolio perspective is adopted to derive the scaling factor, which is based on the theoretical benchmark for the share of cross-border securities holdings. To this end, it is assumed that, in a perfectly integrated market, all agents invest in the market portfolio. This implies that all investors should hold a portfolio whose assets are proportional to the total supply of assets in the economy. Accordingly, each country's share of the total amount outstanding is computed for the relevant market segment. If country k represents a share $\omega_{k,t}$ of the total amount outstanding of a given asset class at time t, the portfolio of domestic investors should have a cross-border share of $1 - \omega_{k,t}$. Therefore, one can compute a time-varying benchmark for a given market segment with K countries as:

$$BM_t = \sum_{k=1}^{K} \omega_{k,t}(1 - \omega_{k,t}) \;\; for \;\; t = 1, \dots, T.$$

This yields the following sample-dependent, time-varying scaling factor:

$$\theta^Q(x_t) := \frac{\max(x)}{BM_t},$$

where max(x) represents the sample maximum of the time series of an indicator $x = (x_1, x_2, \dots, x_T)$.

The transformed and scaled indicators z^Q are defined as:[143]

$$z_t^Q = F(x_t)\theta^Q(x_t).$$

These are further aggregated into three sub-indices: interbank markets, which include the money and banking markets, bond markets and equity markets:

$$s_{i,t}^Q = \frac{1}{N_i}\sum_{n=1}^{N_i} z_{n,t}^Q, \quad for\ i = 1, \dots, 3.$$

Finally, the quantity-based financial integration composite indicator is calculated as the weighted average[144] of the sub-indices:

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142 The total is calculated as the sum of intra-euro area cross-border and domestic quantities.

143 For the quantity-based indicators, higher values of *F(x)* signal higher levels of integration.

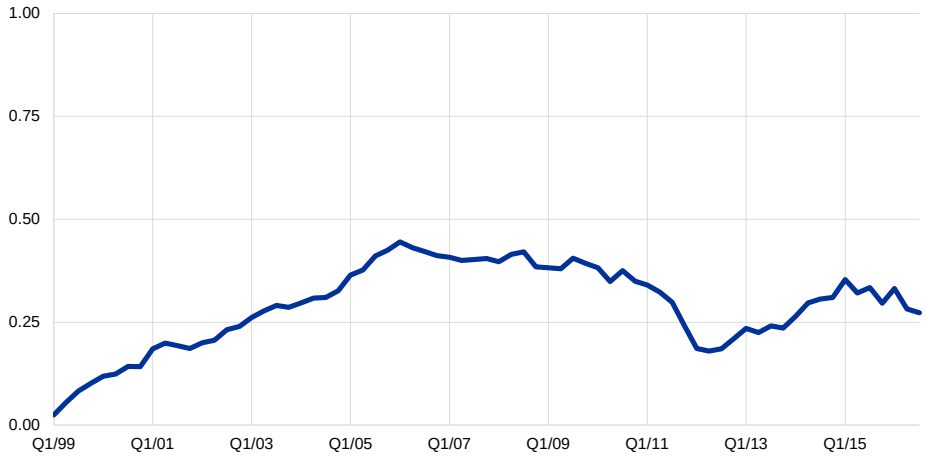
144 As for the price-based indicators, the weights are determined using aggregated euro area financial accounts. Since money markets represent the largest part of interbank markets, only these are considered for the weighting. Thus, the initial shares of the money, bond and equity markets are used to recalculate weights that add up to 100%. This yields the following weights w_i^Q: interbank markets 23%, bond markets 54% and equity markets 23%.

$$I_t^Q = \sum_{i=1}^{3} w_i^Q s_{i,t}^Q.$$

Chart S6

Quantity-based financial integration composite indicator

(quarterly data, Q1 1999 – Q3 2016)



Sources: ECB and ECB calculations.
Notes: Raw indicators: share of cross-border lending among MFIs of the euro area, MFIs' and investment funds' shares of cross-border holdings of debt securities of all maturities issued by euro area governments and NFCs, and MFIs' and investment funds' cross-border holdings of equity issued by euro area residents. Holdings of debt securities and equities by investment funds from Luxembourg are excluded.

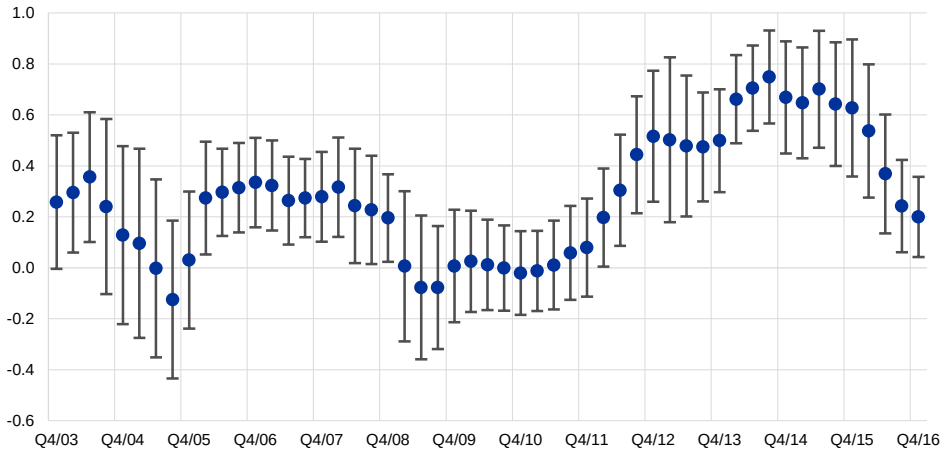
1.3 Additional information

The analysis is based on Hollo, D., Kremer, M. and Lo Duca, M., "CISS – A composite indicator of systemic stress in the financial system", *Working Paper Series*, No 1426, ECB, March 2012; and Hoffmann, P., Kremer, M. and Zaharia, S., "Financial integration in Europe through the lens of composite indicators", mimeo 2015.

2 Indicator of risk sharing

Chart S7

Correlation between consumption and output across euro area countries



Sources: ECB and ECB calculations.
Notes: The chart plots point estimates (dots) and confidence intervals (bars) from a panel regression of changes in country per capita consumption on changes in country per capita GDP, controlling for changes in relative prices (the ratio of the respective country consumer price index relative to the euro area consumer price index), using a twelve-quarter rolling window. The data sample comprises the original 12 euro area countries and runs from Q1 2001 to Q4 2016. Each point and bar is estimated for data from the twelve quarters preceding the time indicated on the horizontal axis (rolling window). Ireland is currently excluded from the calculation of the indicator owing to unusually large revisions in the country's GDP growth figure for 2015 that were made in July 2016.

2.1 Additional information

The indicator measures the extent to which changes in domestic consumption co-move with changes in domestic GDP, controlling for changes in relative prices. The chart plots the estimated coefficient and the confidence intervals of the following regression:

$$\Delta logC_{it} = \beta_y \Delta logY_{it} + \beta_{rer} \Delta RER_{it} + \varphi_i + \eta_t + \varepsilon_{it}$$

where $\Delta logC_{it}$ is the percentage change of domestic consumption for each country i and each quarter t, $\Delta logY_{it}$ is the percentage change of domestic GDP for each country i and each quarter t, ΔRER_{it} is the percentage change in relative prices for each country i and each quarter t, expressed as the ratio of the relevant country consumer price index to the euro area consumer price index, and φ_i and η_t are country and time-fixed effects respectively.[145]

Under the hypothesis of perfect risk sharing, domestic consumption does not co-move with domestic output, and the coefficient for the change of domestic output should be equal to zero: $\beta_y = 0$.

[145] This approach is based on Lewis, K. (1996), "What can explain the apparent lack of international risk-sharing?", *Journal of Political Economy 104*, pp. 267—297, and has been augmented to account for the role of relative price adjustments across countries.

3 Explanation of the country groupings

In this year's financial integration report, as in previous issues, some financial integration indicators show not only statistical measures across all euro area countries, but also differences between groups of countries. This is because some financial integration phenomena can only be presented effectively when the financial market developments of country groups are compared. Indicators calculated across all countries could, in fact, mask or blur important developments in financial integration.

The euro area countries are, accordingly, split into two groups. One of these includes all euro area countries that have experienced a significant deterioration in their long-term credit rating since the onset of the financial crisis, while the other contains the remaining euro area countries. A significant deterioration in credit rating is defined in this context as a downgrade, by two or more credit quality steps, on the Eurosystem's harmonised ratings scale[146] between the end of 2008 and the end of 2015, according to at least one of the three credit rating agencies which cover all euro area sovereigns.

This criterion, which is a simplification and should thus be interpreted with due caution, leads to the following country groups:

- Group A – euro area countries that have not experienced a significant deterioration in their credit rating since the end of 2008: Belgium, Germany, Estonia, France, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Austria, Slovakia and Finland;
- Group B – euro area countries that have experienced a significant deterioration in their credit rating since the end of 2008: Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia.

Some financial integration indicators, broken down according to this country grouping, do not include all the countries mentioned above, due to data availability. Where this is the case, the countries actually included are given.

[146] See the ECB's website for more information on the Eurosystem credit assessment framework (ECAF) and the Eurosystem's harmonised rating scale: https://www.ecb.europa.eu/paym/coll/risk/ecaf/html/index.en.html. Any rating below the first three credit quality steps of the Eurosystem's harmonised rating scale is allocated to a generic "fourth" credit quality step.

4 Standard indicators

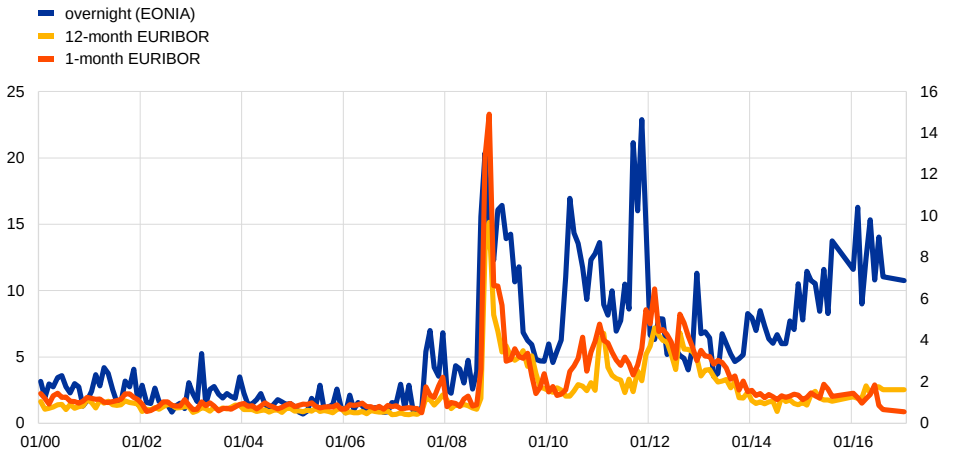
4.1 Money market indicators

4.1.1 Price-based indicators

Chart S8

Interquartile range of euro area countries' average unsecured interbank lending rates

(average interquartile range per maintenance period, in basis points)



Sources: EMMI and ECB calculations.

Non-technical description

The analysis of the dispersion of interbank rates across countries contributes to an assessment of the state of integration and segmentation of markets. However, an increase in the interquartile range of rates cannot be automatically interpreted as a sign of decreasing financial integration, given that other factors, such as market liquidity and the interplay with sovereign debt markets, also have an impact on the interquartile range.

Description

The EONIA and the EURIBOR contributions are collected, at business frequency by the European Money Market Institute (EMMI) from panels of individual banks, with the aim of reflecting pricing in the unsecured short-term interbank market.

$r_{t,c}$ is the weighted average rate in the case of EONIA contributions and the simple average in the case of EURIBOR contributions for country c=1,…,C, on day t=1,…,T, where T is the number of days in the maintenance period (MP). IQR_j is the average interquartile range over the maintenance period j=1,…,J, where J is the number of

MPs: $\mathrm{IQR_j} = \frac{1}{\mathrm{T}}\sum_{t=1}^{\mathrm{T}} \mathrm{Q_{3,t}} - \mathrm{Q_{1,t}}$, where $\mathrm{Q_{x,t}}$ is the $\mathrm{x}/4 * (\mathrm{C}+1)$ –th term among the ascendingly ranked $r_{t,c}$ terms across countries at date t.

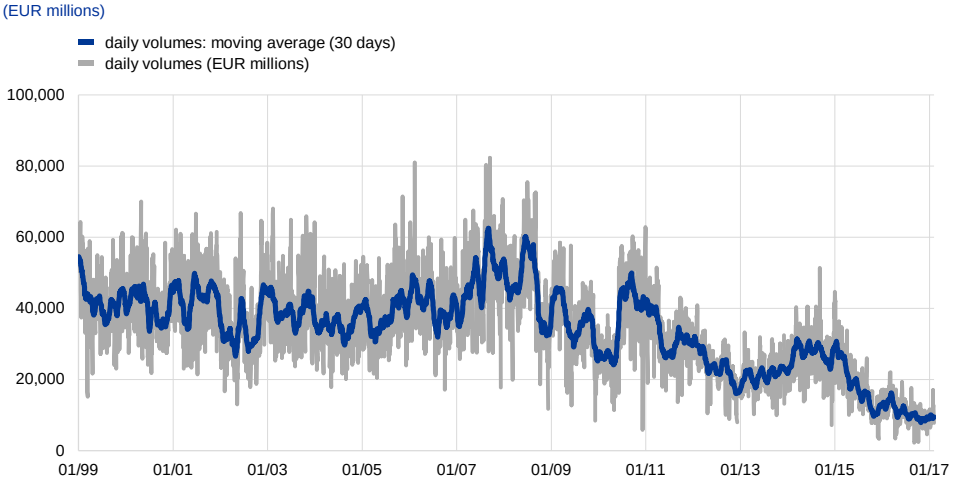
Reported rates $r_{t,c}$ are considered to relate to a country if the reporting bank is located there. However, the counterparty of the transactions is not known, and the reported rate could, therefore, potentially refer (in part) to transactions with a bank in another country.

Additional information

The EONIA is the effective overnight reference rate for the euro. The EURIBOR is the rate at which euro interbank term deposits are offered by one prime bank to another within the euro area. The banks contributing to the EONIA panel are not necessarily the same as those on the EURIBOR panel.

Chart S9

Daily volumes and 30-day moving average for the EONIA panel



Sources: EBF and ECB calculations.

Non-technical description

In addition to possibly indicating increased market fragmentation, a lower daily number of banks trading in the EONIA interbank market will affect the value of the indicators calculated above.

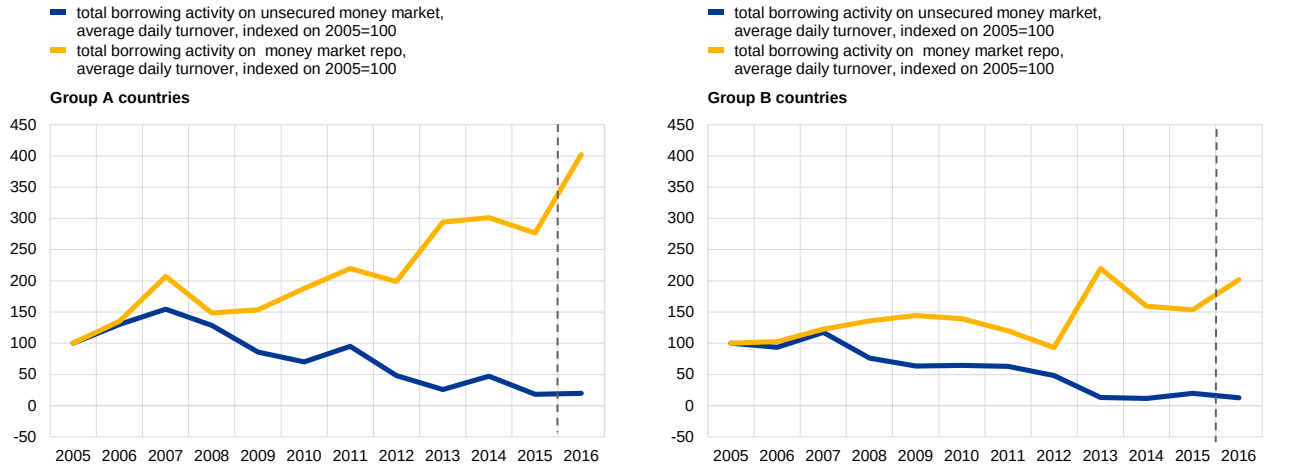
Description

This chart shows the daily volumes of transactions by banks that are on the EONIA panel. The centred 30-day moving average is also displayed.

4.1.2 Quantity-based indicators

Chart S10

Borrowing activity in euro area secured and unsecured markets



Sources: ECB's Euro Money Market Survey and money market statistical reporting (MMSR).
Note: Data refer to the second quarter of each year. Data for 2016 are taken from the MMSR (third quarter) for those reporting banks that were also part of the Money Market Survey panel. These data are still subject to potential revision.

Non-technical description

This indicator shows the development of borrowing activity in the euro area, divided into unsecured and secured money markets, and country groups. Following the onset of the financial crisis, some segments of the money market developed differently to others. Several indicators show that, overall, the secured/repo market fared much better during the financial crisis than other segments of the interbank market such as, in particular, the unsecured market. This result is not surprising given the fact that the collateralised nature of repo transactions means they are more resilient than unsecured transactions to heightened credit risk concerns. The two charts show that as counterparty and liquidity risks increased significantly, there is more activity in the secured money market than in the unsecured market. As expected, the negative trend shown by Group B countries in the unsecured segment has been more pronounced than that for Group A countries. It is also worth noting that the transfer to secured markets started well before the onset of the financial crisis in 2007. This may reflect the fact that collateralised transactions involve more complex legal and settlements issues, and that today's Group A countries were sufficiently sophisticated in early 2000 to execute transactions of this type.

Description

Up to end-2015 the data for these charts related to the Euro Money Market Survey, conducted annually by the ECB with panel banks which report their activity in the different segments of the money market. Data for 2016 are taken from the money

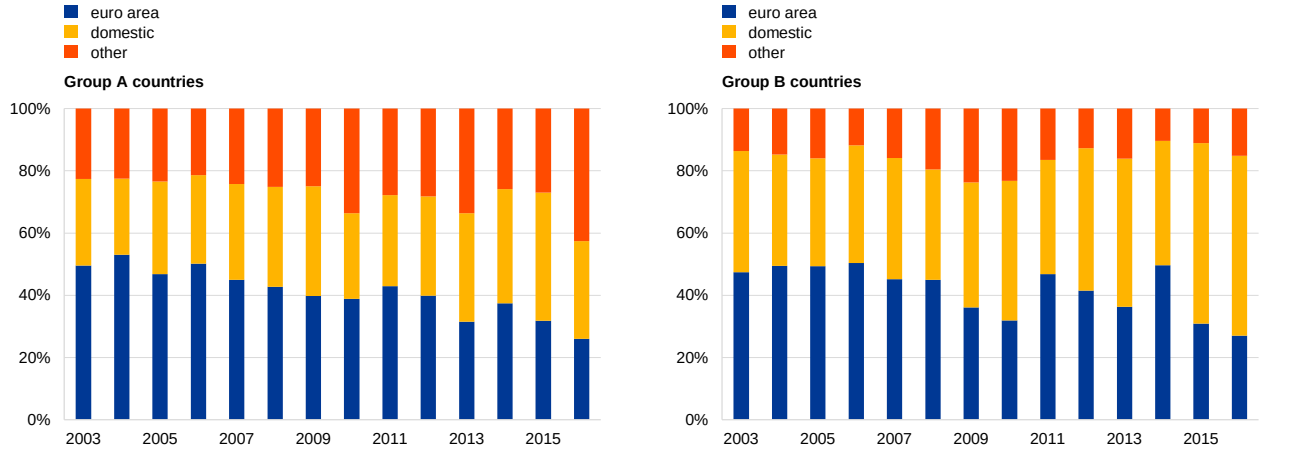
market and statistical reporting (MMSR) for those reporting banks that were also part of the Money Market Survey panel. These data are still subject to potential revision.

To compute the data, banks were first divided into two sub-panels: Group A and Group B countries. Then, for each sub-panel, the total borrowing activity on unsecured markets and the total borrowing activity on repo markets were summed. The initial numbers correspond to the average daily turnover in the second quarter of each year, with 2002 as the base year. The Group B country category comprises Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia, while the other euro area countries are in Group A.

Chart S11

Geographical counterparty breakdown for secured and unsecured transactions

(percentages of total transactions)



Sources: ECB's Euro Money Market Survey and MMSR.
Note: Data refer to the second quarter of each year. Data for 2016 are taken from the MMSR (third quarter) for those reporting banks that were also part of the Money Market Survey panel. These data are still subject to revision.

Non-technical description

The charts display the shares, in percentage points, of counterparties' different geographical locations in transactions in the money markets. Secured and unsecured transactions are combined, but development is mainly driven by secured transactions, as this market segment is larger than the unsecured market. The charts show that the share of domestic transactions is higher for Group B countries, while the share of transactions with other euro area countries is higher for Group A countries, which are able to conduct cross-border transactions more effectively. This highlights the financial fragmentation between the country groups. So, for example, the increased exposure in 2012 of both groups to domestic counterparties reflects continuing concerns over the sovereign debt crisis and its spillover into the respective banking systems.

Description

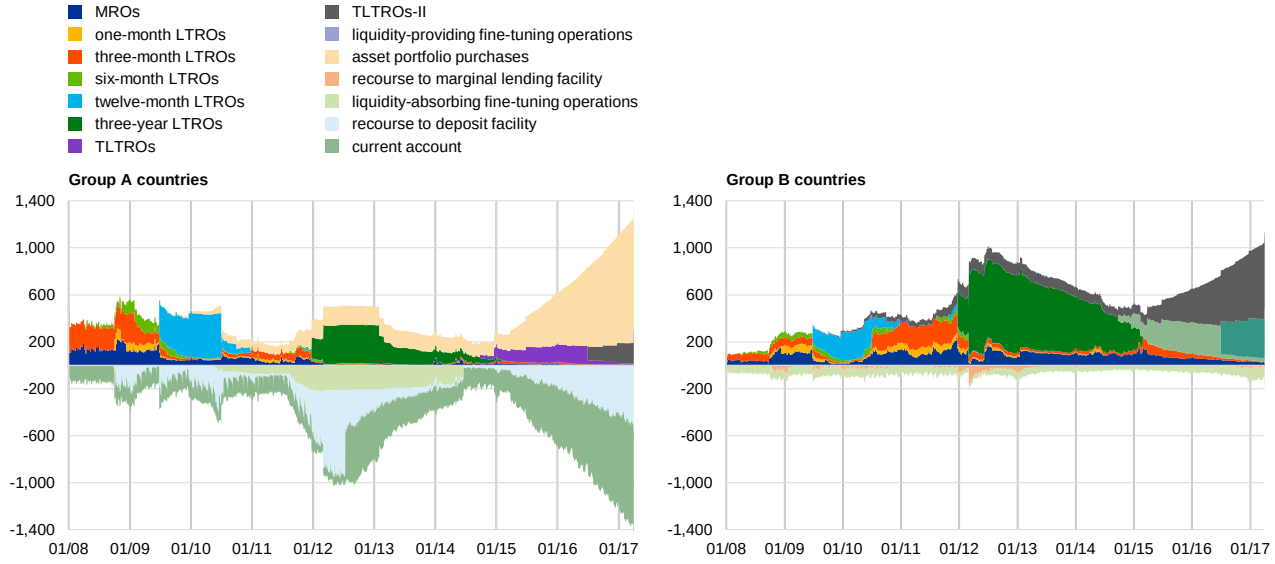
Until the end of 2015 data for these charts were obtained from the Euro Money Market Survey, conducted annually by the ECB through panel banks reporting their activities in the various segments of the money market. In the survey, the banks reported their activity in the secured and unsecured segments, as well as the nature of the counterparty: domestic, inside the euro area, or outside (other). These charts show the aggregation of the breakdown of the overall volumes with each counterparty. Secured transactions include transactions conducted through CCPs. Data for 2016 are taken from the MMSR for those reporting banks that were also part of the Money Market Survey panel. These data are still subject to revision.

The Group B country category comprises Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia, while the other euro area countries are in Group A.

Chart S12

Recourse to the ECB's market operations and standing facilities

(EUR billions)



Source: ECB.

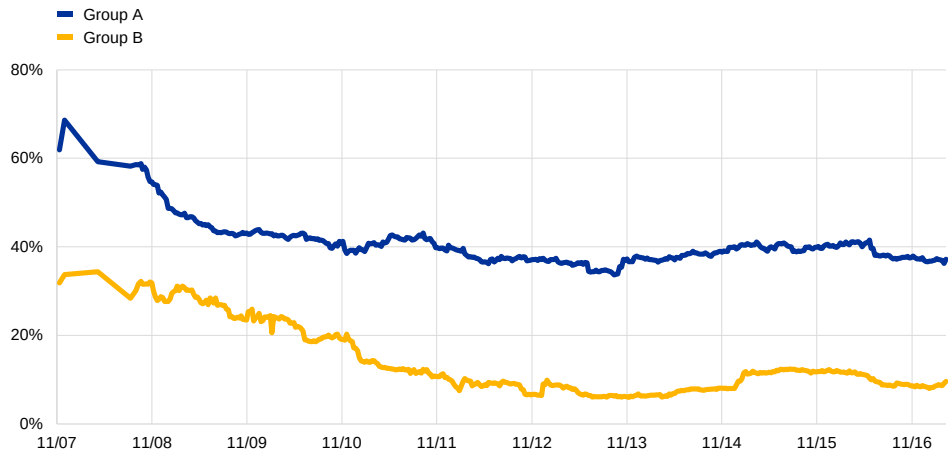
Description

The charts distinguish between Group A and Group B countries, using ECB daily data from the liquidity operations. For these two charts, data from one-month to six-month operations are combined, while data from the marginal lending facility are excluded.

Chart S13

Use of cross-border collateral in Eurosystem monetary policy operations

(percentages of total collateral use)



Source: ECB.

Non-technical description

Since the start of the financial crisis, there has been a trend away from posting cross-border collateral towards greater use of domestic collateral in Eurosystem liquidity-providing operations, particularly for Group B countries. This trend has intensified since the onset of the euro area sovereign debt crisis. The greater use of domestic collateral may be attributed both to an increasing home bias among investors and to an increase in the use of self-originated marketable assets as collateral.

Description

The chart distinguishes between Group A and Group B countries. It uses weekly data from the Use of Collateral Database (UCDB) and combines the residency information for the counterparty with that for the issuer of the asset.

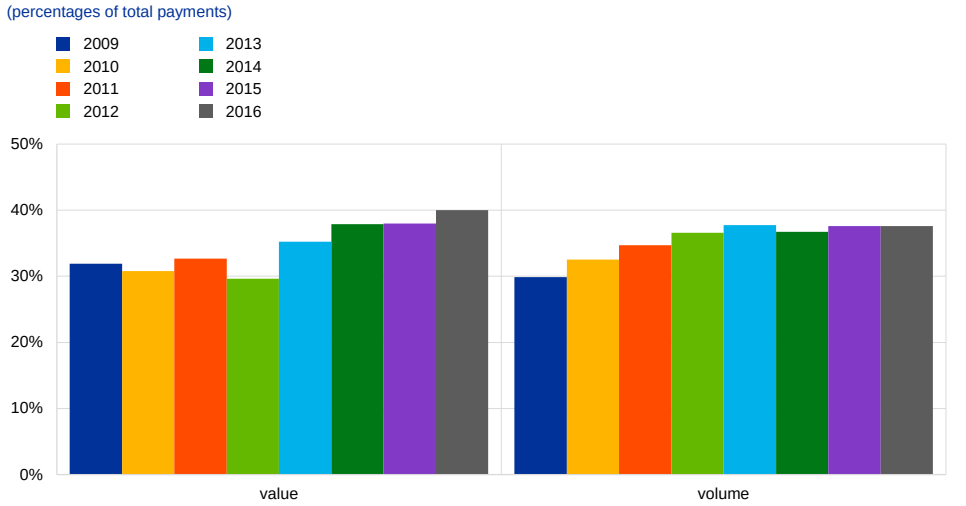
Additional information

An asset is regarded as being used on a cross-border basis when the issuer of the asset and the counterparty using it as collateral with the Eurosystem reside in different jurisdictions. Group A consists of Belgium, Germany, Estonia, France, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Austria, Slovakia and Finland, while Group B consists of Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia.

4.1.3 Other indicators

Chart S14

TARGET2's share of inter-Member State payments by value and by volume



Source: ECB.

Non-technical description

The chart shows the share of cross-border payments of the overall traffic settled in TARGET2 (by value and by volume).

The share of cross-border payments in volume terms grew following the launch of the TARGET2 single shared platform, as the new system offered banks further opportunities to centralise their payment processing. However, the share of cross-border payments in value terms has not grown at the same pace owing to restrained market activity following the financial crisis.

Description

The first indicator shows the share by value of payments between EU Member States (inter-Member State payments) of the total value of payments processed in TARGET2.

The second indicator shows the share by volume of payments between EU Member States (inter-Member State payments) of the total number of payments processed in TARGET2 – the chart shows a general increase in this indicator.

Before 2008, in the decentralised TARGET1 system, multi-country banks (or banking groups) had accounts in most countries in which they operated and, as a consequence, a large share of the traffic they generated was treated as "domestic". In TARGET2, these banking groups concentrate their intraday liquidity management and their payment processing in one account, usually with the national central bank

of the country in which they have their head office. For that reason, a higher share of their payment traffic is currently “cross-border”.

Even though both indicators include transactions related to monetary policy operations, the impact of these on the trend may be viewed as negligible. In principle, since such transactions are treated as “domestic”, they would typically increase the value of domestic payments, thereby reducing the cross-border share. However, the impact of these operations is extremely limited compared with the average daily turnover of TARGET2 (see, for reference: TARGET2 Annual Report). Even the amounts settled by the PSPP do not significantly alter the overall picture, as the value they generate in TARGET2 on one specific day is marginal when spread over an entire year.

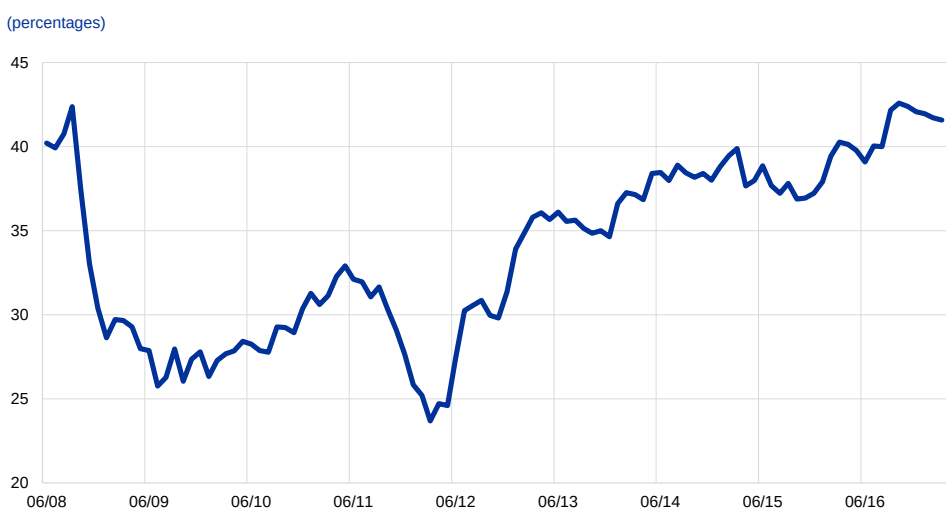
Additional information

TARGET2 is the real-time gross settlement system for the euro, and is a second-generation system operating on a single shared platform. It was launched in November 2007 and fully replaced the former decentralised system in May 2008.

In TARGET2, an “inter-Member State payment” is a payment between counterparties that maintain accounts with different national central banks participating in TARGET2. An “intra-Member State payment” is a payment between counterparties that maintain accounts with the same national central bank.

Chart S15

Share of cross-border activity in TARGET2



Source: ECB.
Notes: The series shows the monthly cross-border share of the volume of all transactions carried out in euro in the TARGET2 system, as a percentage of total transactions (T2S and technical transactions excluded). The total transaction volume for 2016 amounted to an average of €1.7 trillion per day.

Non-technical description

This chart uses the transaction-level data in TARGET2 (all transactions except those of a technical nature or related to T2S). Cross-border activity is defined as a transaction between institutions holding accounts at different NCBs. Total volume is aggregated on a monthly basis.

Description

Cross-border activity in the TARGET2 payments system recovered further in 2016. Chart S15 shows the share of intra-euro area euro-denominated cross-border volume in TARGET2. This share declined rapidly after Lehman Brothers' bankruptcy in September 2008. It then recovered gradually, before again declining markedly when the sovereign debt crisis intensified between mid-2011 and the beginning of 2012. The subsequent gradual re-activation of the cross-border market, partly spurred by the Eurosystem's expanded asset purchase programme (APP), continued in 2016.

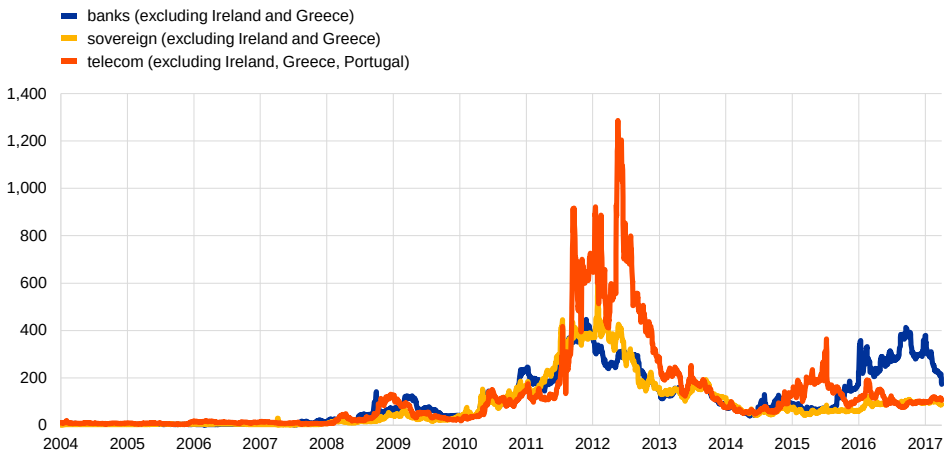
4.2 Securities market indicators

4.2.1 Price-based indicators

Chart S16

Dispersion in five-year CDS premia across the euro area

(daily data; basis points)



Sources: Thomson Reuters and ECB calculations.

Non-technical description

The dispersion of CDS premia for different sectors is regarded as showing the degree of dispersion of the cost of funding for different entities at the euro area level

(while the CDS premium primarily reflects the cost of insuring debt against default, it can also be regarded as a proxy for the cost of funding). The higher the industry-level dispersion across the euro area (after removing possible country-specific factors that could skew the dispersion), the lower the integration for the financing of these entities (sovereigns, banks and telecommunications companies).

Description

These indicators are computed as the standard deviation of five-year CDS premia for different sectors at the euro area level. The three sectors considered are sovereigns, telecommunications and banks, in order to create groups of homogeneous entities with comparable credit risk at the euro area level.

Additional information

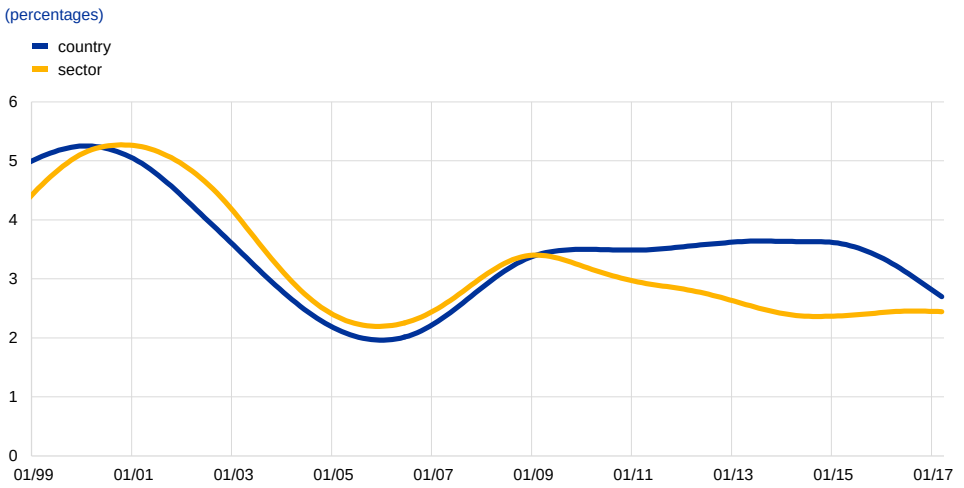
The sovereign and bank CDS premia data do not include Ireland and Greece given their very high premia. Ireland and Portugal are excluded from the telecommunications data owing to the very high CDS premia of their telecommunications companies.

“Sovereign” includes Germany, Spain, France, Italy, the Netherlands, Austria and Portugal. Banks include ABN AMRO (NL), Banca Monte dei Paschi di Siena (IT), Banca Popolare di Milano (IT), Banco Comercial Português (PT), Banco Sabadell (ES), Novo Banco SA (PT), Banco Santander Central Hispano (ES), Erste Bank der österreichischen Sparkassen (AT), Bayerische HypoVereinbank (DE), BNP Paribas (FR), Commerzbank (DE), Crédit Agricole (FR), Deutsche Bank (DE), Dexia Group (BE), Fortis NL (NL), Intesa Sanpaolo SPA (IT), Mediobanca (IT), Natixis (FR), Nordea Bank (FI), Société Générale (FR) and UniCredito Italiano (IT).

“Telecom” includes Deutsche Telekom (DE), Orange (FR), Hellenic Telecommunications Organization (GR), KPN (NL), Telecom Italia (IT), Telefónica (ES) and Telekom Austria (AT).

Chart S17

Country and sector dispersions in euro area equity returns



Sources: Thomson Reuters and ECB calculations.

Non-technical description

This chart shows the dispersion in equity returns, across sectors and across countries, in the euro area to reflect structural changes in the aggregate euro area equity market. Under full financial segmentation, the limited diversification opportunities cause investors to demand a high return for holding shares in undiversified firms, so cross-country dispersion (which reflects not only cross-border fragmentation, but also the different sectoral composition of each country's economy) should be high compared with cross-sectoral dispersion (which also reflects the differing performance of the underlying sectors). In contrast, in an integrated financial market there is no financial premium on sectoral or geographical diversification, and greater specialisation is affordable. This should reduce the gap between cross-country and cross-sectoral dispersions. Assuming that sectoral compositions and performances remained constant over the sample period, few periods stand out. In the pre-EMU period (not displayed on the chart) cross-country dispersion was significantly higher than cross-sectoral dispersion. In the pre-crisis EMU period after 1999, cross-country fragmentation was much lower and the two dispersion indicators moved closer, while during the crisis period fragmentation increased, as shown by the rise in both dispersion indicators in 2007, and country dispersion increased. Finally, during 2016 euro area countries' equity returns increasingly converged, indicating improved euro area equity market integration.

Description

This indicator is derived by calculating the cross-sectional dispersions in both sector and country index returns for euro area countries, which include (reinvested) dividends which are denominated in euro. The indicator is recorded on a monthly basis. The cross-sectional dispersions are filtered using the Hodrick-Prescott

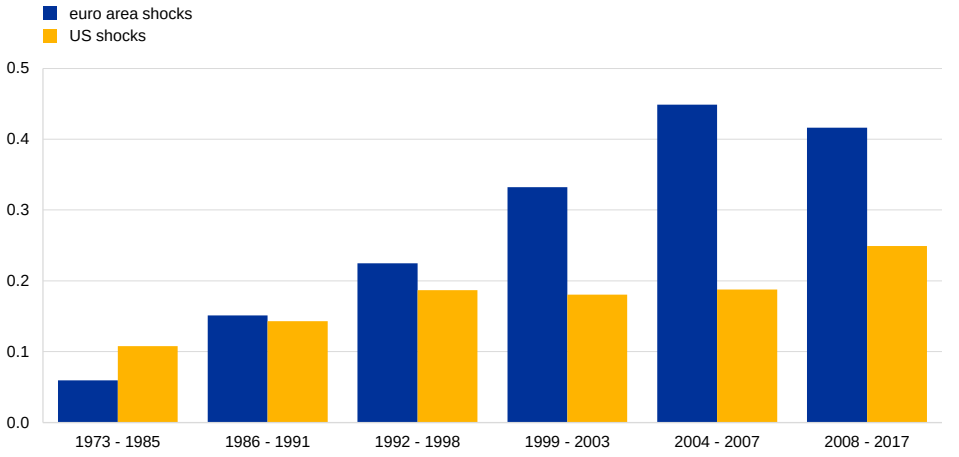
smoothing technique, which provides a smooth estimate of the long-term trend component of the series. The smoothing parameter λ is equal to 14,400.

Additional information

The indicator is based on an approach first presented by Adjaouté and Danthine; see Adjaouté, K. and Danthine, J.P., "European Financial Integration and Equity Returns: A Theory-based Assessment", in Gaspar, V. et al. (eds.), *Second ECB Central Banking Conference: The transformation of the European financial system*, ECB, May 2003.

Chart S18

Proportion of volatility of euro area country equity returns accounted for by euro area and US stock market shocks



Sources: Thomson Reuters and ECB calculations.
Note: Calculations are based on weekly equity market indices (1973-2017).

Non-technical description

This chart compares the extent to which local euro area equity markets are sensitive to US market and euro area-wide shocks. Over the last decade, euro area-wide volatility has been the main determinant of local stock market volatility, although the share of US volatility incorporated into local euro area equity market volatility has intensified. Between 2004 and 2007 only 17% of euro area local equity market volatility could be attributed to US volatility, but this reached around 25% between 2008 and 2017 after the collapse of Lehman Brothers.

Description

The chart shows the proportion of total domestic volatility of country equity returns accounted for by euro area and US shocks. To quote the original source,[147] the rationale of the analysis is as follows: “An important implication of integration is that asset prices should only react to commonly-shared news. If there are no barriers to international investment, purely local shocks can generally be diversified away by investing in assets from different regions. Local shocks should therefore not constitute a systematic risk.”

The source goes on to say: “For the purpose of examining integration in local euro area equity markets, we need to distinguish between global and euro area-wide effects on equity returns in the euro area. To this end, the return on US stock markets is used as a proxy for world news, while the return on a euro area-wide stock market index, corrected for US news, is used as the euro factor.”

Additional information

The variance ratio is derived by assuming that country-specific shocks are uncorrelated across countries and, similarly, that they do not correlate with euro area and US benchmark indices.

The influence of euro area shocks may have been greater in the most recent years.

For detailed calculations, see Baele et al. (2004).

To compare the relevance of euro area and US shocks for average changes in country returns, the indicators report the variance ratios, i.e. the proportions of total domestic equity volatility explained by euro area and US shocks respectively. The model-based indicator is derived by assuming that the total variance of individual country-specific returns is given by: $\sigma_{c,t}^2 = h_{c,t} + \left(\beta_t^{eu}\right)^2 \sigma_{eu,t}^2 + \left(\beta_t^{us}\right)^2 \sigma_{us,t}^2$

where $h_{c,t}$ is the variance of the local shock component. The euro area variance ratio is then given by: $VR_{c,t}^{eu} = \frac{\left(\beta_t^{eu}\right)^2 \sigma_{eu,t}^2}{\sigma_{c,t}^2}$ and the US variance ratio by a corresponding equation. The conditional variances are obtained using a standard asymmetric GARCH (1,1) model.

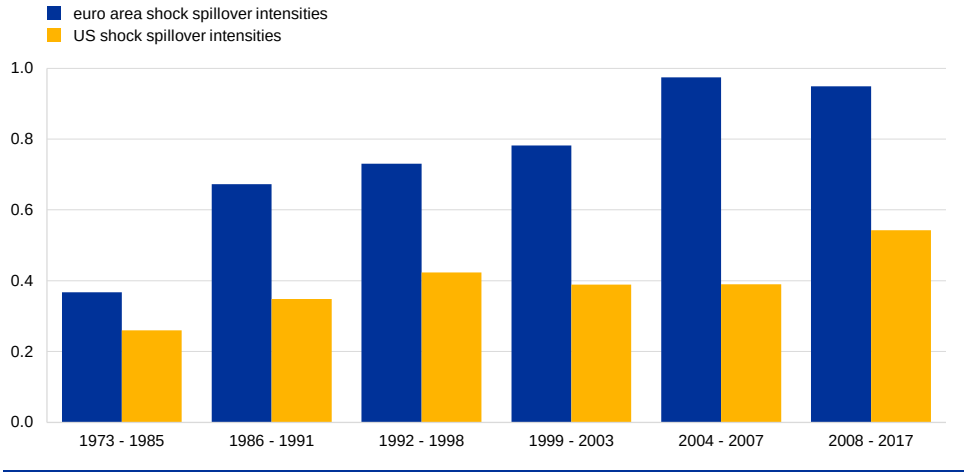
For each period, the indicators report the unweighted average of the relative importance of euro area-wide factors, excluding US equity market fluctuations, for the variance of individual euro area countries’ equity market indices (the “variance ratio”), and the unweighted average of the relative importance of US equity market fluctuations for the variance of euro area equity markets.

147 Baele, L., Ferrando, A., Hördahl, P., Krylova, E. and Monnet, C., *“*Measuring financial integration in the euro area*”, Occasional Paper Series*, No 14, ECB, April 2004.

Data refer to Datastream market indices, and have been calculated on a weekly basis since January 1973.

Chart S19

Euro area and US shock spillover intensity in individual euro area countries



Sources: Thomson Reuters and ECB calculations.
Note: Calculations are based on weekly equity market indices (1973-2017).

Non-technical description

This chart compares the extent to which local euro area equity markets are sensitive to US market shocks and euro area-wide shocks. Over the last decade, euro area-wide shocks have been transmitted almost one-to-one to local euro area equity markets, which can be interpreted as a sign of strong equity market integration among euro area countries. Transmission of US shocks (which can be seen as a proxy for global shocks) has intensified since the collapse of Lehman Brothers: between 2004 and 2007 almost 40% of US shocks were transmitted to euro area markets, but this has risen to almost 60% since Lehman Brothers' bankruptcy.

Description

Empirical evidence suggests that equity returns are driven mostly by global factors. For this reason, both euro area-wide shocks and US shocks (a proxy for global factors) are included in the assessment of commonly-shared news. To calculate the relative importance of euro area-wide and US stock market fluctuations for local stock market returns, the stock market returns of individual countries are modelled as having both an expected and an unexpected component, $\varepsilon_{c,t}$. The unexpected component is then broken down into a purely local shock ($e_{c,t}$) and a reaction to euro area news ($\varepsilon_{eu,t}$) and world (US) news ($\varepsilon_{us,t}$):

$$\varepsilon_{c,t} = e_{c,t} + \beta_{c,t}^{eu}\varepsilon_{eu,t} + \beta_{c,t}^{us}\varepsilon_{us,t}$$

The expected return is obtained by relating euro area and US returns to a constant term and to the returns in the previous period. The conditional variance of the error terms is governed by a bivariate asymmetric GARCH (1,1) model.

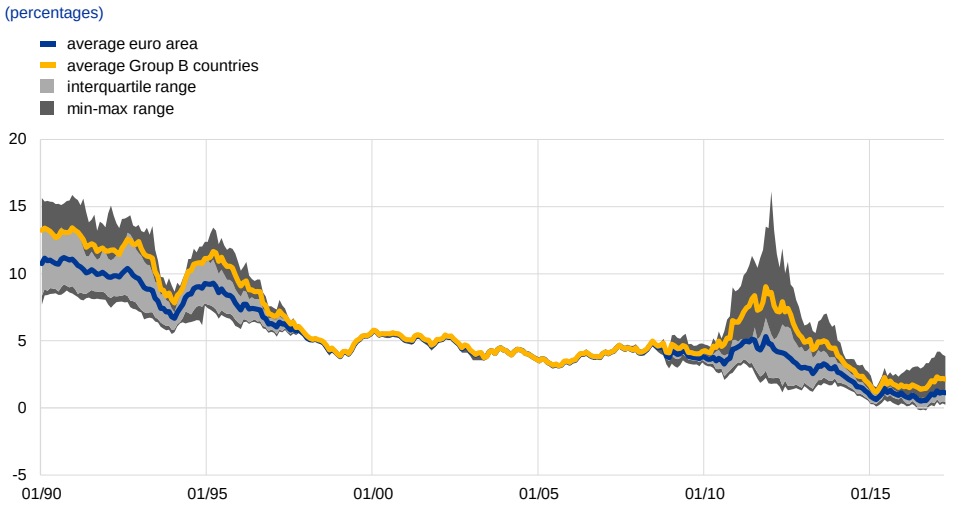
β represents the country-dependent sensitivity (of the unexpected component) to euro area or US market changes. The analysis is performed over the periods 1973-1985, 1986-1991, 1992-1998, 1999-2003, 2004-2007 and 2008-2017. The reported indicator is the cross-country unweighted average of country-specific sensitivities (betas). A reported beta close to one on the chart indicates that, on average, all euro area countries respond to the corresponding shock (from either the euro area or the US). In a well-integrated euro area, the beta associated with the euro area shock should be close to one.

Additional information

To distinguish between global shocks and purely euro area shocks, it is assumed that euro area equity market developments are partly driven by events in the US market. Furthermore, it is assumed that the proportion of local returns that is not explained by common factors is entirely attributable to local news.

Chart S20

Dispersion of euro area ten-year sovereign bond yields



Sources: Bloomberg and ECB calculations.

Non-technical description

The chart shows the average evolution and dispersion of euro area sovereign bond yields. In a well-integrated market there should be low dispersion, because investors will not demand such a high premium to compensate for the risk of idiosyncratic shocks, while in a fragmented market dispersion should be higher.

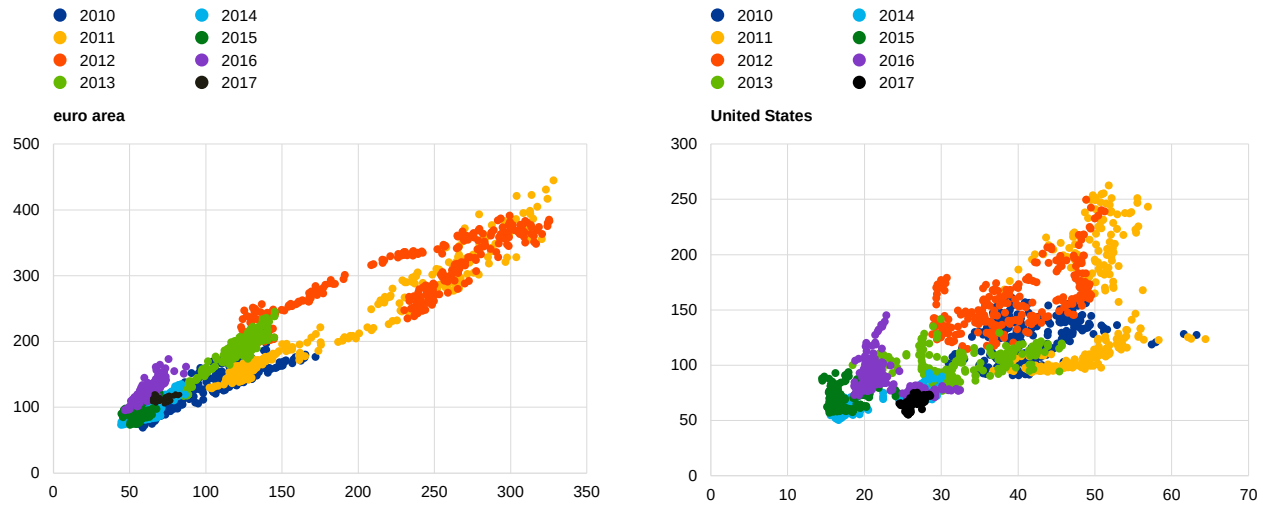
Description

The shaded areas represent the minimum-maximum range and the interquartile range of individual bond yields for the euro area countries. The yields for Estonia, Greece, Cyprus, Latvia, Lithuania, Malta, Slovenia and Slovakia are excluded owing to infrequent observations or a complete lack of observations. The Group B country category consists of Ireland, Spain, Italy and Portugal.

Chart S21

Sovereign and bank CDS premia – euro area and the United States

(basis points; 2010-17)



Sources: Thomson Reuters and ECB calculations.

Non-technical description

The close link between sovereign and bank creditworthiness is clearly shown by the high degree of correlation between sovereign CDS premia and bank CDS premia in euro area countries. This high correlation illustrates the self-reinforcing loop between bank and sovereign risks, with doubts over the solvency of sovereigns feeding doubts over the solvency of banks and vice versa. These dynamics are much weaker in the United States, where the CDS premia of sovereigns and banks are less correlated.

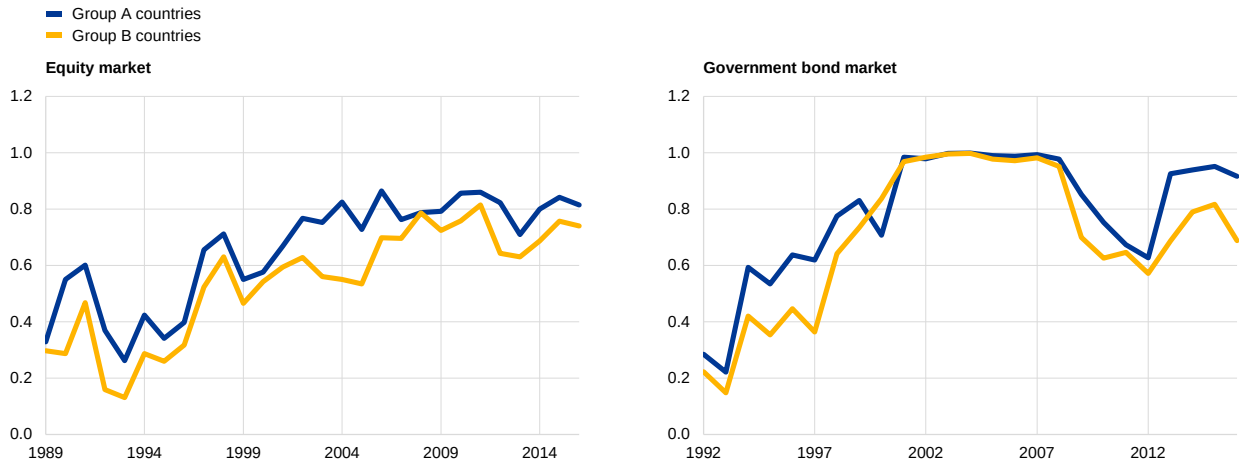
The self-reinforcing loop between bank and sovereign risks, characterised by tight bank-sovereign linkages (in particular in non-AAA-rated euro area countries), is one of the causes of the increasing heterogeneity of sovereign bond yields (particularly the divergence seen between AAA-rated countries and non-AAA-rated countries). This phenomenon (tight bank-sovereign linkages on the periphery) has an impact on bond market integration in the euro area (and consequently on the integration of the funding markets for corporates and banks).

Description

The euro area bank CDS premium is calculated as the weighted average of CDS premia for the main euro area banks (one bank per country weighted by the national capital key), and the euro area sovereign CDS premium is calculated as the weighted average of national sovereign CDS premia. For the US, the bank CDS premium is the median of the CDS premia for the eight largest US banks, and the sovereign CDS premium is the CDS premium for the US sovereign. All the CDS premia considered are at the five-year maturity. Each point on the chart represents one day, while each colour represents one year (from 2010 to 2017). Any point on the diagonal line would indicate a one-to-one relationship between bank and sovereign CDS premia.

Chart S22

Equity and government bond market integration based on common factor portfolios



Sources: Thomson Reuters and ECB calculations.
Note: Group A countries are Belgium, Germany, France, the Netherlands and Austria (and Finland only for equity market). Group B countries are Ireland, Spain and Italy (and Portugal only for equity market).

Non-technical description

This indicator measures integration in the euro area equity and government bond markets via the explanatory power of common factor portfolios. For each calendar year, these portfolios are formed on the basis of a principal component analysis and used in a simple regression framework to explain equity and bond market returns for each country. The measure is then computed as an average (median) R-squared across countries. In general, a higher measure indicates a more integrated market, where 1 implies perfect integration and 0 entails no integration.

Description

This measure of financial market integration for calendar year t is computed as the cross-sectional mean (median) R^2 that is obtained by estimating the following

regression separately for each country i: $R_{i,t,\tau} = \alpha_{i,t} + \sum_{k=1}^{K} \beta_{i,t}^{k} \theta_{i,t}^{k} + \varepsilon_{i,t,\tau}$ where $R_{i,t,\tau}$ $R_{i,t,\tau}$is the market return in country i on trading day τ in year t, and $\theta_{i,t}^{k}$ is the return on the k[th] common factor portfolio on the same day. The K common factor portfolios are obtained via principal component analysis, and it is assumed throughout that K=3. The weights (eigenvectors) for the factor portfolios in year t are calculated using data from year t-1.

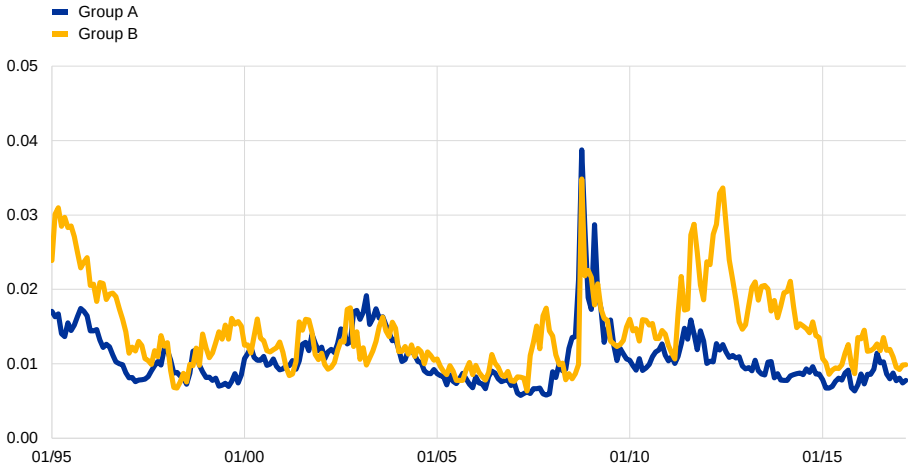
In order to obtain a measure that is comparable across years, we require daily return data (on broad equity market indices and ten-year benchmark bonds) to be available from the beginning of the sample.

Additional information

The analysis is based on Pukthuanthong, K. and Roll, R., "Global market integration: An alternative measure and its application", *Journal of Financial Economics*, Vol. 94, No 2, November 2009, pp. 214-232.

Chart S23

Equity market segmentation in Group A and Group B countries



Sources: Thomson Reuters and ECB calculations.
Note: Data cover the following countries: Group A: Belgium, Germany, France, the Netherlands, Austria and Finland; Group B: Ireland, Spain, Greece, Italy and Portugal.

Non-technical description

This indicator measures the segmentation (the opposite of integration) of euro area equity markets via industry-level valuation differentials across countries. For each calendar month and industry sector, the absolute difference between the stock market valuation level (based on analyst forecasts) of that sector for a given country, and the euro area average for the sector, is computed. The first step is to aggregate these absolute differences by calculating, for each country, the average of absolute differences, weighted by the share of each industry in the country's total stock

market capitalisation. The second step is to calculate the respective median values for the two groups of countries (Group A and Group B). A higher value indicates a higher level of market segmentation (i.e. a lower level of market integration), because in an integrated market industries in different countries would be expected to have similar business prospects and therefore similar valuations. A measure of zero implies perfect integration.

Description

The segmentation measure for country i is computed as:

$$Seg^i = \sum_{k \in K} \omega_k^i \left| EY_k^i - \overline{EY_k} \right|$$

where EY_k^i is the average earnings yield (the inverse of the price/earnings ratio) based on analyst forecasts for industry sector k in country i, $\overline{EY_k}$ is the respective euro area average, and ω_k^i is the share of sector k in the stock market capitalisation of country i.

Additional information

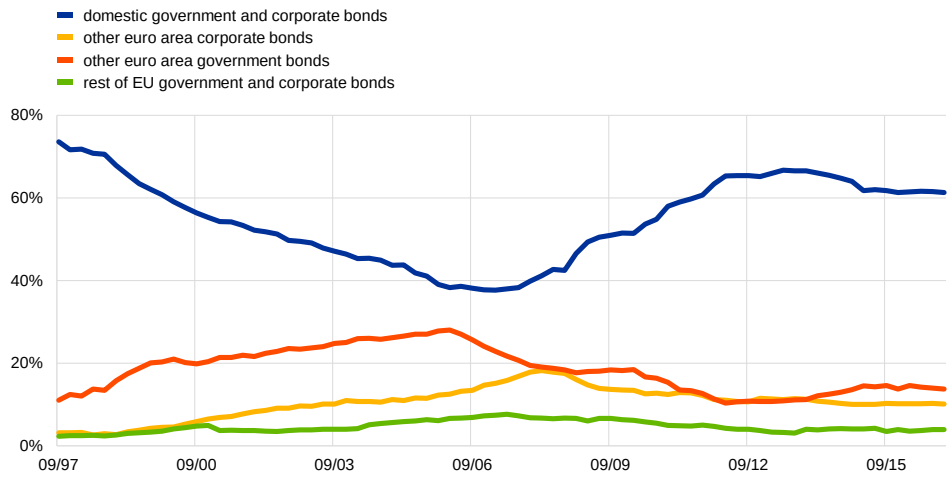
The analysis is based on Bekaert, G., Harvey, C.R., Lundblad, C.T. and Siegel, S., "What segments equity markets?", *Review of Financial Studies*, Vol. 24, No 12, October 2011.

4.2.2 Quantity-based indicators

Chart S24

Share of MFI cross-border holdings of debt securities issued by euro area and EU corporates and sovereigns

(percentages of total holdings, excluding the Eurosystem)



Source: ECB.

Non-technical description

Cross-border holdings by euro area MFIs of bonds issued by non-financial borrowers (sovereign and corporate) of other euro area countries are a relevant quantity-based indicator of financial integration. The indicator points to slightly increasing integration in these markets in recent years.

Description

See Charts S28 to S31 in the banking section.

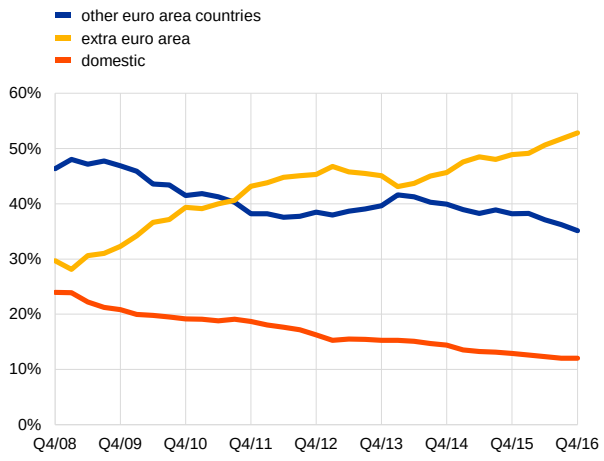
Additional information

See Charts S28 to S31 in the banking section.

Chart S25

Investment funds' holdings of debt securities

(percentages of total holdings of debt securities)

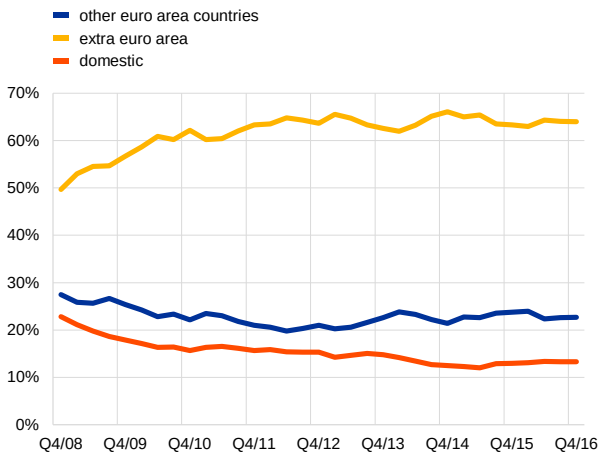


Source: ECB.

Chart S26

Investment funds' holdings of equity

(percentages of total holdings of equity)



Source: ECB.

Non-technical description

These two indicators are used to assess the contribution of institutional investors to financial integration in the euro area.

Description

The first indicator shows the share of euro area investment funds' total holdings of all securities apart from shares (including money market paper) issued by domestic residents, residents of euro area countries other than the country in which the investment fund is located, and non-domestic, non-euro area residents. The second indicator provides the same measure for the share of euro area investment funds'

combined holdings of all shares and other equity (excluding investment fund shares/units).

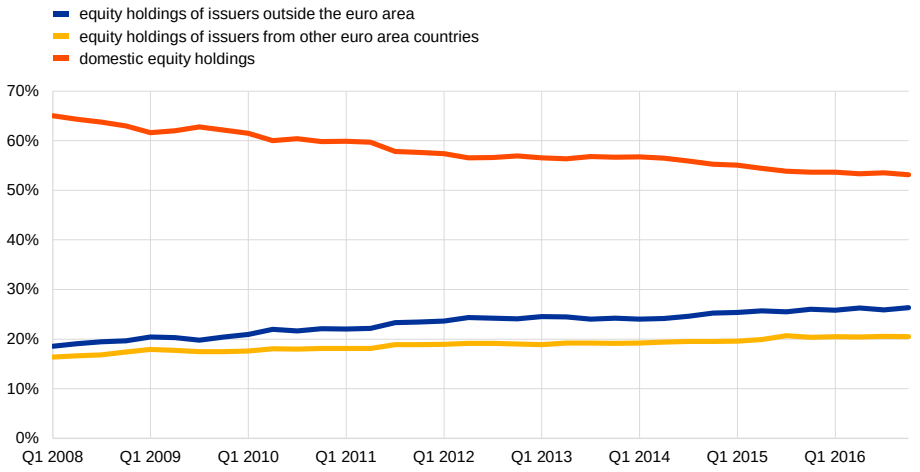
Additional information

These two indicators are constructed on the basis of the balance sheets of euro area investment funds (other than money market funds, which are included in the MFI balance sheet statistics). A complete list of euro area investment funds is published on the ECB's website, and further information on these investment fund statistics can be found in the "Manual on investment fund statistics". Since December 2008 harmonised statistical information has been collected and compiled on the basis of an ECB Regulation concerning statistics on the assets and liabilities of investment funds (ECB/2007/8 and recast ECB/2013/38).

Chart S27

Euro area holdings of equity (including investment fund shares and other equity) by geographical issuer counterparty

(percentages of the total euro area holdings of equities)



Source: ECB.

Description

The financial integration indicator for cross-border equity holdings is calculated by using Balance of Payments and International Investment Position statistics and euro area account data for the entire euro area economy. Equity holdings in Balance of Payments and International Investment Position statistics data are broken down by functional category (type of investment): foreign direct investment (FDI), portfolio investment (PI), other investment (OI) and reserve assets (RA). The equities included under RA are all issued by countries outside the euro area and the amounts are not particularly significant compared with those included in the other three types of investment. Balance of payments statistics provide a geographical breakdown for extra- and intra-euro area issuers. The total for equities held by the euro area (including domestic issuers) is taken from the euro area accounts. Balance of

Payments and International Investment Position statistics and euro area accounts definitions and coverage are consistent, enabling the euro area holdings on domestic issuers to be derived as the residual.

Equity holdings include listed and unlisted shares, investment fund shares (of any type of investment fund) and other equity including, among other things, participations in international organisations (e.g. the ECB or the European Stability Mechanism) and holdings of real estate outside the domestic economy.

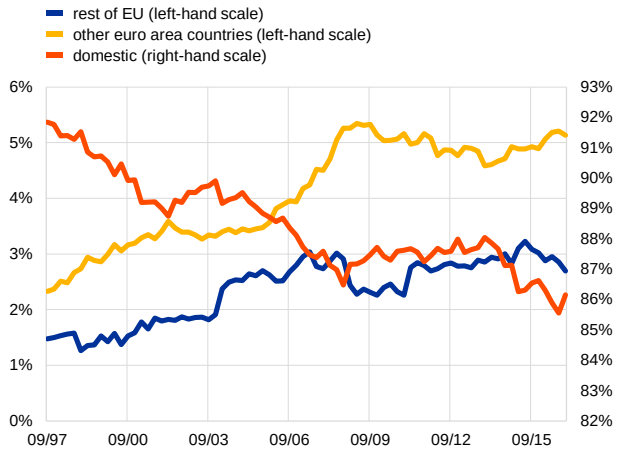
4.3 Banking market indicators

4.3.1 Quantity-based indicators

Chart S28

MFI loans to non-MFIs: outstanding amounts by residency of counterparty

(percentages of total lending excluding the Eurosystem)

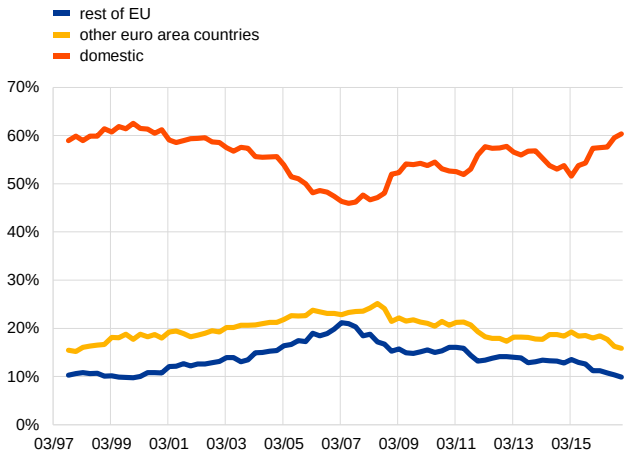


Source: ECB

Chart S29

MFI loans to MFIs: outstanding amounts by residency of counterparty

(percentages of total lending excluding the Eurosystem)

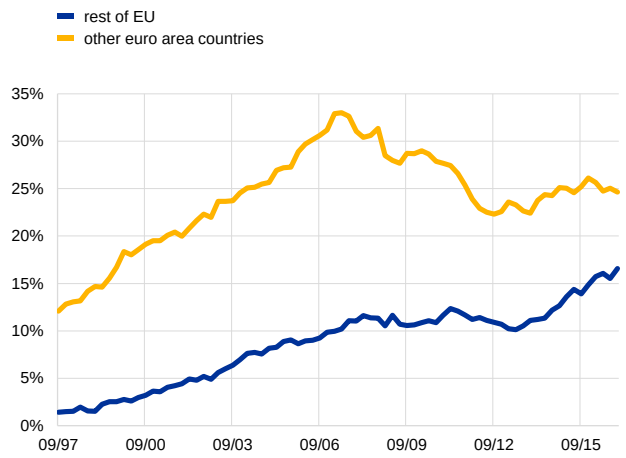


Source: ECB

Chart S30

MFI holdings of securities issued by MFIs: outstanding amounts by residency of counterparty

(percentages of total holdings)

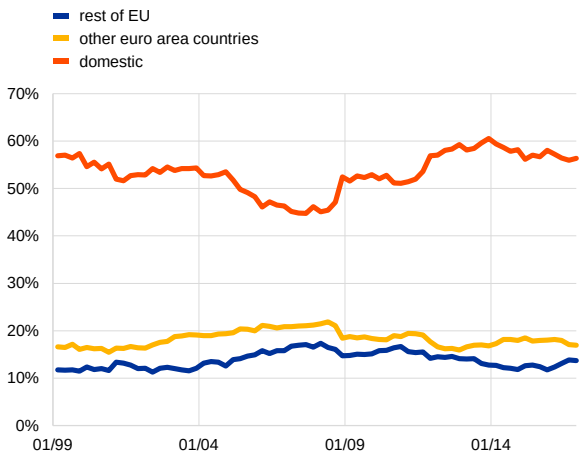


Source: ECB

Chart S31

MFI deposits from MFIs: outstanding amounts by residency of counterparty

(percentages of total deposits excluding the Eurosystem)



Source: ECB.

Non-technical description

This set of indicators displays the relevance of cross-border balance sheet connections for euro area MFIs. The indicators show that euro area wholesale banking markets are far more integrated than retail markets.

Description

Charts S28 and S29 show loans granted by euro area MFIs (excluding the Eurosystem) to non-MFIs and other MFIs, broken down by residency of counterparty. The compositions of the euro area and the rest of the EU are those applicable during the respective reference periods. Chart S30 shows a similar indicator for securities issued by euro area MFIs and held by euro area and other EU MFIs. Chart S31 shows an indicator for deposits placed in the euro area by MFIs. Inter-MFI borrowing and lending is also conducted through CCPs. In cases where these CCPs are not MFIs themselves, these volumes are not included in the inter-MFI loans and deposits in Charts S29 and S31 (for more information, see Box 3 of the September 2012 issue of the ECB's Monthly Bulletin). These indicators have a quarterly frequency.

Additional information

These indicators are constructed on the basis of the national aggregated MFI balance sheet data reported to the ECB at monthly and quarterly frequencies. These data cover the MFI sector excluding the Eurosystem, and include data on money market funds (MMFs). Consequently, as MMFs typically invest in inter-MFI deposits

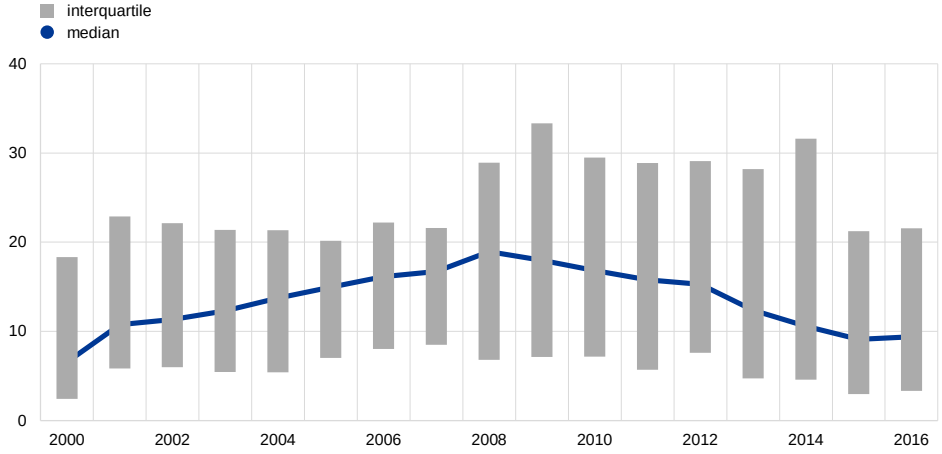
and short-term securities, the indicators providing data for these assets are, to some extent, affected by the MMFs' balance sheet items.

These balance sheet items are transmitted on a non-consolidated basis. This means that positions with foreign counterparties include those with foreign branches and subsidiaries.

Chart S32

Dispersion of the total assets of foreign branches and subsidiaries of euro area banks across euro area countries

(percentages of the total assets of the euro area banking sector)



Source: ECB.

Non-technical description

This indicator describes the share, over time, of the assets of foreign branches and subsidiaries of euro area banks within euro area countries other than the home country, of the total assets of the euro area banking sector, with a higher share implying higher cross-border activity. Overall, this share continues to be fairly limited across the majority of countries. However, it should be noted that the crisis has caused the median degree of cross-border penetration of banking institutions to fall in recent years.

Description

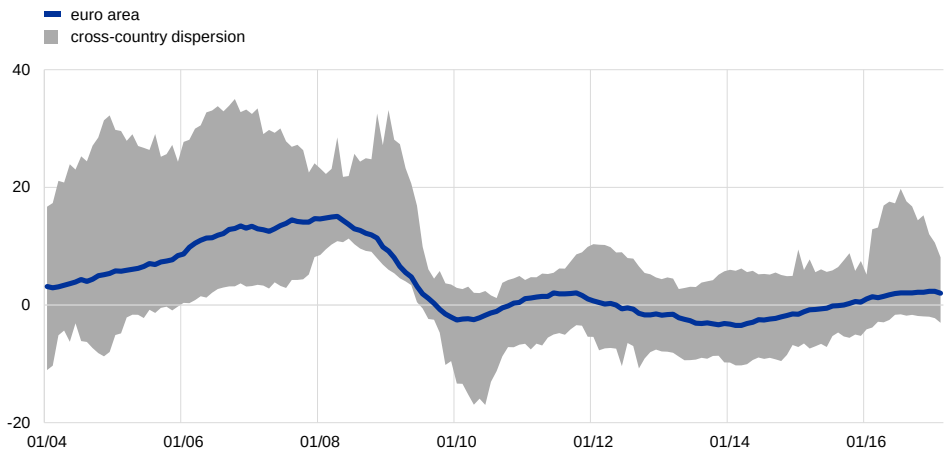
The share of total assets of foreign branches and subsidiaries of the total assets of the national banking system is calculated for each country of the euro area. Then, the level and dispersion of these country shares are described using the following measures: the first quartile (25th percentile), the median (50th percentile) and the third quartile (75th percentile).

These indicators are computed on an annual basis. The composition of the euro area is that which is applicable during the respective reference period.

Chart S33

MFI loans to NFCs

(annual loan growth; percentages)



Sources: ECB and ECB calculations. The cross-country dispersion displayed in the chart is the difference between maximum and minimum calculated for a fixed sample of 12 euro area countries (Belgium, Germany, Ireland, Greece, Spain, France, Italy, Luxemburg, the Netherlands, Austria, Portugal and Finland).

Description

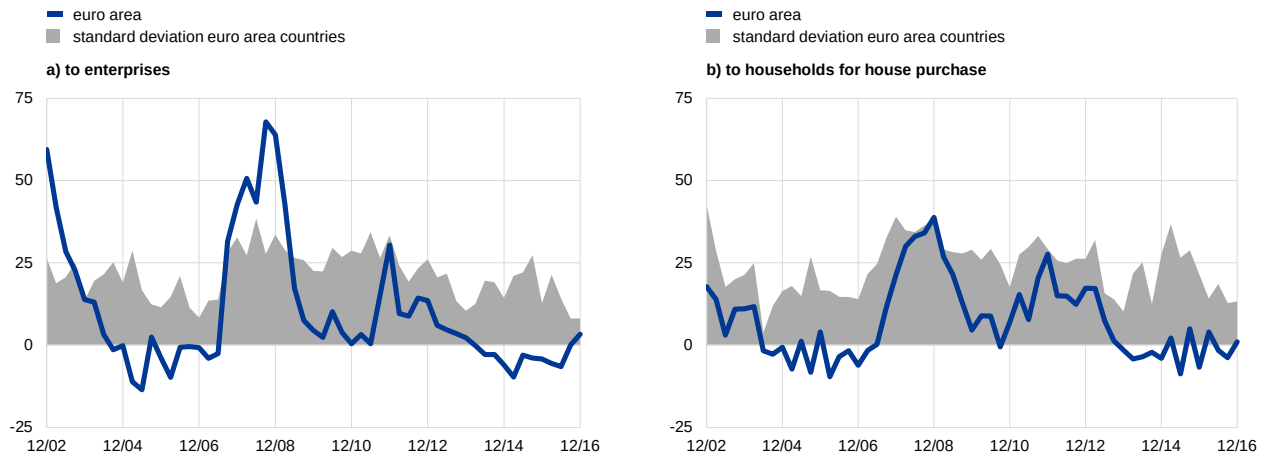
Annual percentage changes; adjusted for loan sales and securitisation from 2009 onwards.

4.3.2 Survey-based indicators

Chart S34

Changes in credit standards applied to the approval of loans or credit lines

(net percentages of banks indicating a tightening of standards)



Sources: Euro area bank lending survey and ECB calculations.

Non-technical description

The persistent divergence in the level of credit standards between countries suggests ongoing disparities in borrowers' access to credit across euro area countries.

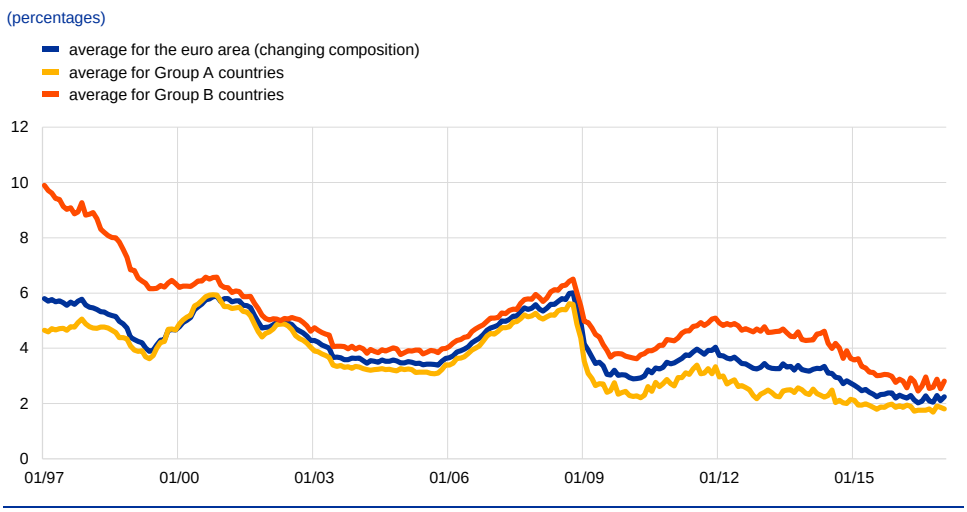
Description

Changes in credit standards are given as net percentages of replies, i.e. the percentage of banks indicating a tightening of credit standards minus the percentage of banks indicating an easing of credit standards. Country aggregate results are weighted by aggregate lending volumes.

4.3.3 Price-based indicators

Chart S35

Interest rates on new loans to euro area NFCs



Source: ECB.
Note: All euro area countries, changing composition.

Non-technical description

An important aspect of the benefits of increasing financial integration is that financing costs decreased, and reached a significant level of convergence across countries in the pre-crisis EMU period. The strong cross-country convergence of bank rates charged to NFCs for new loans is clearly visible for that period.

Description

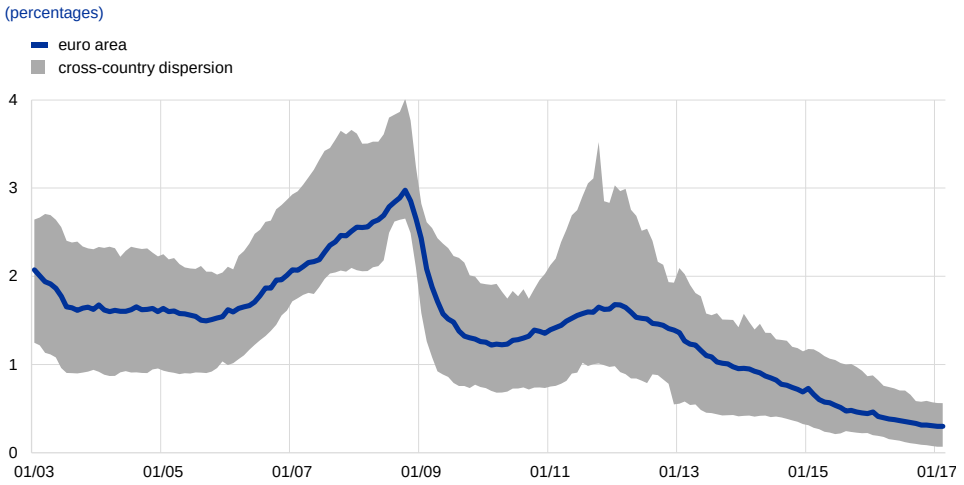
The indicator displays the average of MFI interest rates (MIRs) on new business reported to the ECB.

Additional information

These statistics are based on MIRs on new business reported to the ECB on a monthly basis since January 2003.

Chart S36

Interest rates on MFI deposits from households in the euro area



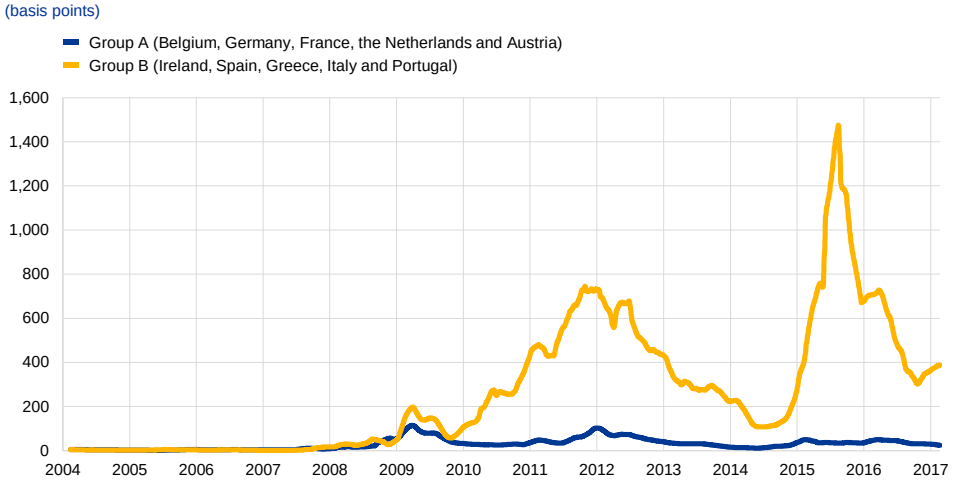
Sources: ECB and ECB calculations.
Note: The deposit rates are aggregated using outstanding amounts. The cross-country dispersion displayed in the chart is the difference between the maximum and minimum calculated for a fixed sample of 12 euro area countries (Belgium, Germany, Ireland, Greece, Spain, France, Italy, Luxemburg, the Netherlands, Austria, Portugal and Finland), excluding extreme values: Greece is excluded as a maximum, and as a minimum only the second-lowest minimum value is used.

Non-technical description

This chart shows the dispersion of deposit rates in the euro area. Increasing dispersion indicates increasing fragmentation of retail markets.

Chart S37

Standard deviation of banks' CDS premia by country group



Sources: Bloomberg, Thomson Reuters, Credit Market Analysis Ltd (CMA) and ECB calculations.
Note: Data cover the following countries: Group A: Belgium, Germany, France, the Netherlands and Austria; Group B: Ireland, Spain, Greece, Italy and Portugal.

Non-technical description

A decreasing cross-country variance of CDS premia charged by investors for bank debt provides an indication of increasing financial integration. It must, however, be borne in mind that CDS premia also depend on a range of other factors including credit risk, liquidity, and the correlation between CDS premia for banks and sovereigns.

Description

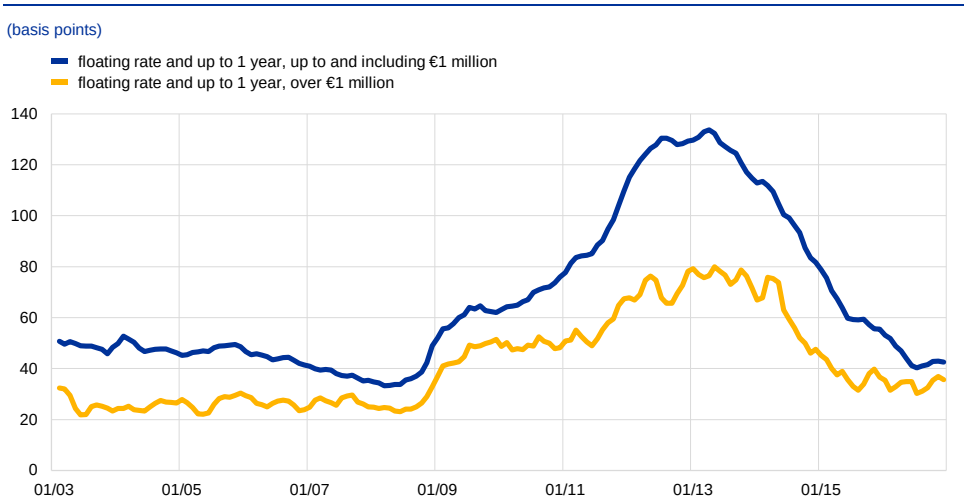
For each group of countries, the indicator is the unweighted standard deviation of the average of banks' daily CDS premia in countries belonging to the group.

Additional information

This indicator is based on CDS prices available for banks on the EONIA panel.

Chart S38

Cross-country standard deviation of MFI interest rates on new loans to NFCs



Source: ECB.

Non-technical description

The euro area cross-country dispersion of retail interest rates charged/paid by banks on loans and deposits to/from NFCs and households can be taken as an indicator of the degree of integration in the retail banking market. The dispersion of bank interest rates should be lower where instruments are more homogeneous across countries.

In this respect, it should be noted that differences in bank interest rates can be due to other factors including differing conditions in national economies (credit and interest rate risk, firm size, industrial structure, degree of capital market

development), institutional factors (taxation, regulation, supervision) and financial structures (degree of bank/capital market financing, competitiveness, etc.).

Description

The following general notation is used for each of the above categories of loan:

$r_{c,t}$ = the interest rate prevailing in country c in month t

$b_{c,t}$ = the business volume in country c in month t

$w_{c,t} = \frac{b_{c,t}}{B_t}$ is the weight of country c in the total euro area business volume B in month t where

$$B_t = \sum_c b_{c,t}$$

MFI interest rates in the euro area are computed as the weighted average of country interest rates $r_{c,t}$, using the country weights $w_{c,t}$:

$$r_t = \sum_c w_{c,t} r_{c,t}$$

The euro area weighted standard deviation takes the following form:

$$M_t = \sqrt{\sum_c (r_{c,t} - r_t)^2 w_{c,t}}$$

The monthly data are smoothed by calculating a three-month centred moving average of the standard deviation.

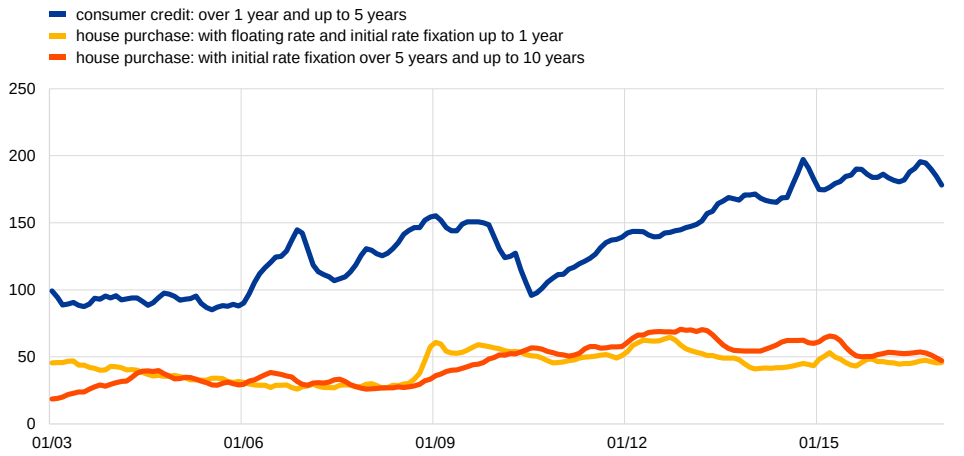
Additional information

The price measures for credit market integration are based on MIRs on new business reported to the ECB on a monthly basis since January 2003.

For the purpose of measuring financial integration, it might be preferable to compute the dispersion as the standard deviation of unweighted interest rates at the level of individual MFIs. However, these data are not available at the ECB, and therefore standard deviations of weighted rates across euro area countries are calculated instead.

Chart S39

Cross-country standard deviation of MFI interest rates on loans to households



Source: ECB.

Non-technical description

See Chart S38 above.

Description

See Chart S38 above.

Additional information

See Chart S38 above.

Abbreviations

Countries

BE	Belgium	**IT**	Italy	**AT**	Austria
DE	Germany	**CY**	Cyprus	**PT**	Portugal
EE	Estonia	**LV**	Latvia	**SI**	Slovenia
IE	Ireland	**LT**	Lithuania	**SK**	Slovakia
GR	Greece	**LU**	Luxembourg	**FI**	Finland
ES	Spain	**MT**	Malta	**UK**	United Kingdom
FR	France	**NL**	Netherlands	**US**	United States

In accordance with EU practice, the EU Member States are listed in this report using the alphabetical order of the country names in the national languages.

Others

AMI	ECB Advisory Group on Market Infrastructures
AnaCredit	analytical credit dataset
APP	asset purchase programme
BCBS	Basel Committee on Banking Supervision
BRRD	Bank Recovery and Resolution Directive
CCP	central clearing counterparty
CCCTB	common consolidated corporate tax base
CDF	cumulative distribution function
CDS	credit default swap
CI	credit institution
CMU	capital markets union
COGESI	Contact Group on Euro Securities Infrastructures
CPMI	Committee on Payments and Market Infrastructures
CRA	credit rating agency
CRD	Capital Requirements Directive
CRR	Capital Requirements Regulation
CSD	central securities depository
CSPP	corporate sector purchase programme
DSTI	debt service-to-income
EA	euro area
EAA	euro area accounts
EBA	European Banking Authority
EBF	European Banking Federation
EBP	excess bond premium
ECAF	Eurosystem credit assessment framework
ECB	European Central Bank
EDIS	European Deposit Insurance Scheme
EIOPA	European Insurance and Occupational Pensions Authority
EMMI	European Money Market Institute
EMU	Economic and Monetary Union
EONIA	euro overnight index average
EPTF	European Post Trade Forum
ERPB	Euro Retail Payments Board
ESCB	European System of Central Banks
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
EUR	euro
EURIBOR	euro interbank offered rate
FDI	foreign direct investment
GDP	gross domestic product
GG	government
G-SIB	global systemically important bank
G-SII	global systemically important institution
IC	insurance corporation
IF	investment fund
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
ISIN	International Securities Identification Number
LCR	liquidity coverage ratio
LEI	Legal Entity Identifier
LTI	loan-to-income
LTV	loan-to-value
M&As	mergers and acquisitions
MFI	monetary financial institution
MIB	Market Infrastructure Board
MIR	MFI interest rate
MMF	money market fund
MMSR	Money Market Statistical Reporting
MP	maintenance period
MRO	Main Refinancing Operation
NCA	national competent authority
NCB	national central bank
NFC	non-financial corporation
NPL	non-performing loan
ONDs	options and national discretions
OECD	Organisation for Economic Co-operation and Development
OFI	other financial intermediary
OI	other investment
OJ	Official Journal of the European Union
OMT	Outright Monetary Transaction
O-SII	other systemically important institution
Pay	payments
PF	pension fund
PI	portfolio investment
PR	Prospectus Regulation
PSPP	public sector purchase programme
RA	reserve assets
Repo	repurchase agreement
ROA	return on assets
RoW	rest of the world
RTS	regulatory technical standards
SeCo	securities and collateral
SEPA	Single Euro Payments Area
SLF	Securities Lending Facility
SMEs	small and medium-sized enterprises
SRM	Single Resolution Mechanism
SRMR	Single Resolution Mechanism Regulation
SSM	Single Supervisory Mechanism
STC	simple, transparent and comparable
STS	simple, transparent and standardised
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer system
T2S	TARGET2-Securities
TLAC	total loss-absorbing capacity
TLTRO	targeted longer-term refinancing operations
UCDB	Use of Collateral Database
VAR	vector-autoregression

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ISSN 1830-7159 (pdf)
DOI 10.2866/595429 (pdf)
ISBN 978-92-899-2919-6 (pdf)
EU catalogue No QB-AJ-17-001-EN-N (pdf)