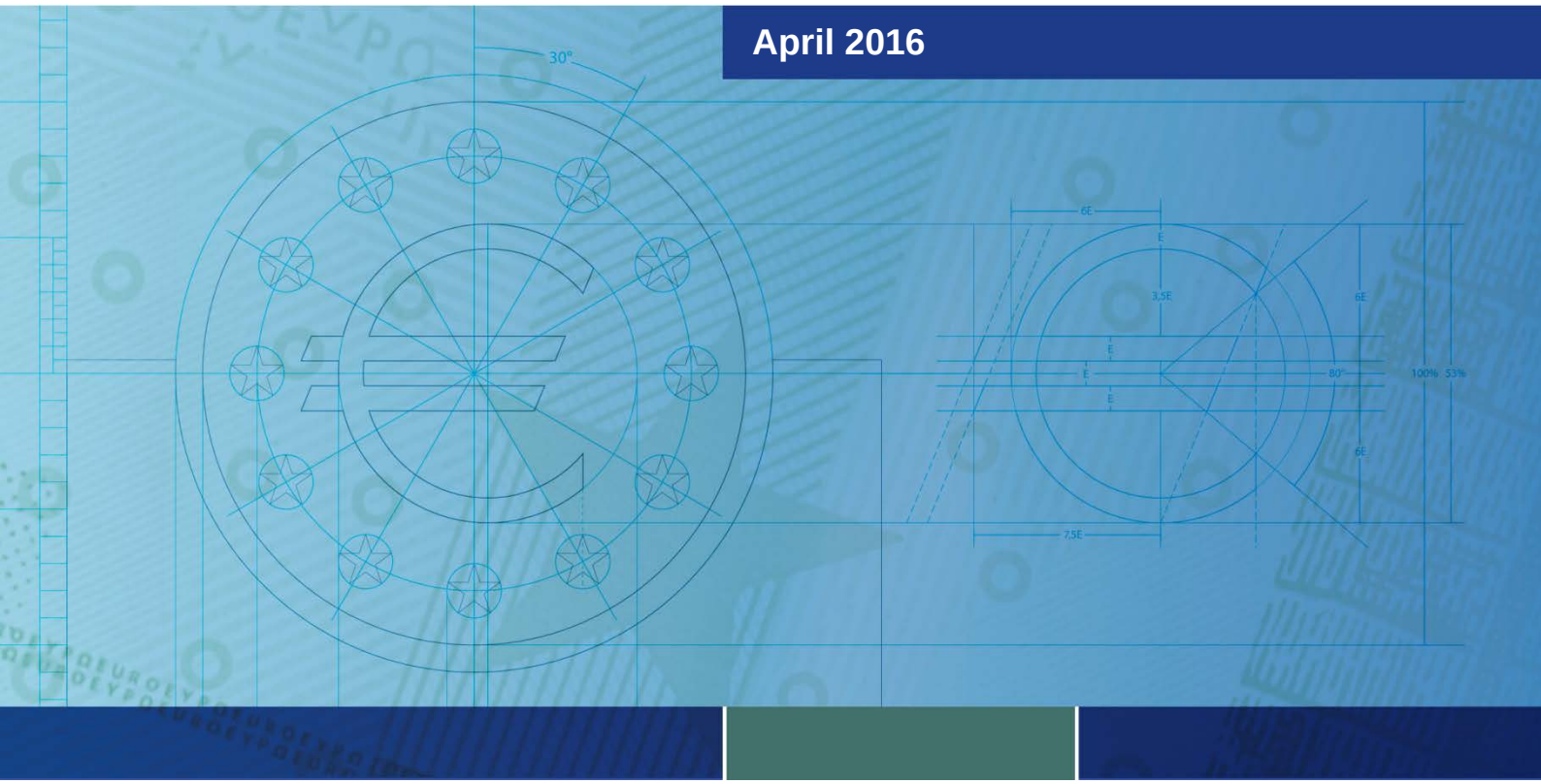
EUROPEAN CENTRAL BANK

EUROSYSTEM

Financial integration in Europe

2016

April 2016



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Preface

The ECB's annual report on financial integration in Europe contributes to the advancement of the European financial integration process 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 the above-mentioned set of 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 a 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 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 euro area financial integration. Since then the work on financial integration has evolved and has resulted in the publication of a yearly report.

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

Key messages

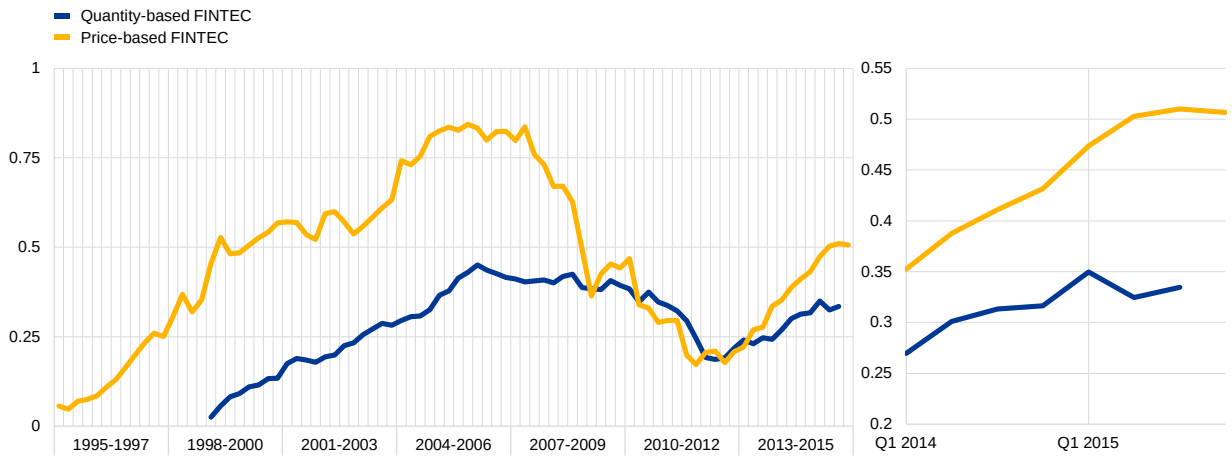
1 Overall assessment of financial integration

- **Overall, financial integration in the euro area has continued to recover since last year's report, although lately at a moderating pace.** The re-integration trend that followed substantial financial fragmentation associated with the financial and sovereign debt crises between 2007 and 2011 took off when the European banking union and the European Central Bank's Outright Monetary Transactions (OMT) framework were announced in 2012. It continued when two important pillars of the banking union started to operate, namely the Single Supervisory Mechanism (SSM), which was integrated in the ECB, in 2014 and the Single Resolution Mechanism (SRM) in 2015. Also, further ECB monetary policy measures very much supported this trend. Chart A shows the overall development of euro area financial integration since the 1990s, as reflected in a price-based and a quantity-based cross-market indicator of overall financial integration (called FINTECs, for Financial Integration Composites).

Chart A

Price-based and quantity-based Financial Integration Composites (FINTECs)

(percentages per annum)



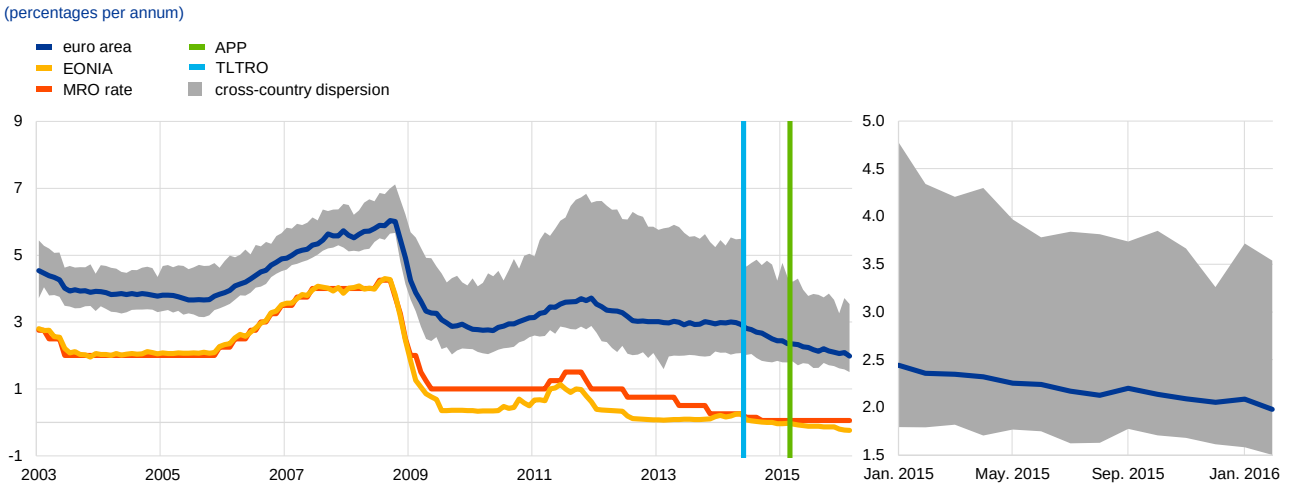
Sources: ECB and ECB calculations.
Notes: The price-based FINTEC aggregates ten indicators covering the period from the first quarter of 1995 to the fourth quarter of 2015, and the quantity-based FINTEC aggregates five indicators available from the first quarter of 1999 to the third quarter of 2015. The FINTEC is bounded between zero (full fragmentation) and one (full integration). Increases in the FINTEC signal higher financial integration. For a detailed description of the FINTEC and its input data, see the Statistical Annex.

- **The deceleration that became visible around spring/summer 2015 can be explained by differential developments for prices and quantities in various segments of the euro area financial system.** Notably, bank lending rates to firms and households continued to converge (see Chart B) and cross-border loans to firms continued to increase mildly in relative terms, supported by the ECB's unconventional monetary policy measures (including targeted longer-term refinancing operations), the gradual economic recovery and progress with the banking union. In contrast, corporate and covered bond rates have diverged

since last year's report (see Chart C), although very recently there was a correction of this phenomenon. Equity market returns showed substantial heterogeneity between late 2014 and mid-2015. These developments, however, can be explained to a large extent by increasing risk aversion in global financial markets amidst the slowdown in growth in emerging market economies and diverging economic outlooks across euro area countries. Therefore, it is not clear at the present juncture whether the overall financial re-integration trend in the euro area is tailing off or not.

Chart B

Composite bank lending rates for non-financial corporations and their cross-country dispersion

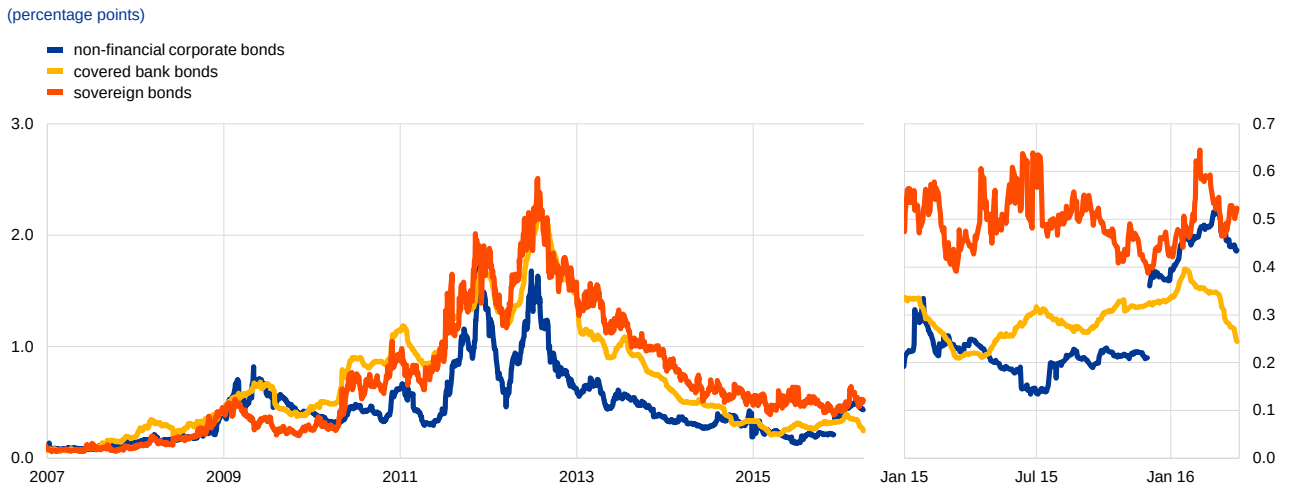


Sources: ECB and ECB calculations.
Notes: The indicator is computed by aggregating short and long-term rates, using a 24-month moving average of new business volumes. The cross-country dispersion displays the min-max range across euro-area countries after trimming off extreme values.

- **Looking forward, it is important that recent financial turbulence, for example as transmitted from the stock markets of emerging market economies or from economic and political uncertainties across euro area countries, do not bring the process of financial re-integration to a halt.** Against this background, it is all the more important that the Single Resolution Fund become operational as part of the SRM this year and that ECB Banking Supervision is running a large project aimed at preventing or containing material cross-country divergences and inconsistencies in the application of the European Union's banking regulatory framework. Such divergences can emerge from "national options and discretions" (O&Ds) that had been built into the framework when it was not yet known that banking supervision would be unified at the European level (see Special Feature B in this report). Moreover, it is key that the third pillar of the banking union and the European capital markets union initiative are pursued as a matter of priority. Finally, all other steps for completing European Economic and Monetary Union (EMU) proposed in the Five Presidents' Report of last year should be pursued with determination. A firming recovery and the normalisation of the economic situation in the euro area together with all these financial policy directions should ensure that, when monetary policy becomes less expansionary in the future, deep financial integration will be preserved.

Chart C

Cross-country dispersion of bond yields



Sources: Thomson Reuters, Markit and ECB calculations.
Notes: The chart shows daily standard deviations of Barclay's country indices for corporate bonds (issued by non-financial corporations), iBoxx country indices for covered bonds (issued by banks) and country ten-year benchmark government bond yields. Owing to data unavailability, data only include observations for Austria, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal and Spain. The level shift in the corporate bonds series in December 2015 is due to technical factors in the Austrian corporate bond index.

2 Selected policy issues for financial integration

- **For completing the banking union, the Eurosystem supports the establishment of a European Deposit Insurance Scheme (EDIS),** as proposed by the European Commission in November last year. It is a necessary component of a truly single European banking system and a natural complement to the single currency, since it would ensure the same level of confidence in the safety of deposits irrespective of their location. Moreover, EDIS would align control and liability with respect to deposit protection in Europe. As banking supervision and resolution were lifted to the European level, deposit protection should follow. In order to set the desirable incentives (for example, limiting moral hazard), EDIS should have appropriate mechanisms built in that discourage risk-taking by banks originating from their depositors being insured. Moreover, EDIS should be accompanied by continuing risk-reduction efforts in the banking union.

- **In order to enhance the financial system's resilience to shocks, its contribution to cross-country risk sharing and ability to finance the real economy, the more bank-oriented European system needs to be strengthened by further developing and integrating capital markets.** This is why the ECB welcomes the action plan for a European capital markets union (CMU) presented by the European Commission in September last year and calls for rapid progress towards implementing the early actions therein. Among the "quick wins" that should maintain momentum in establishing a European framework for securitisation, the inclusion of a differentiated prudential treatment of simple, transparent and standardised securitisation, is particularly important. Moreover, the Eurosystem fully supports the European Commission

regarding the need to review the macroprudential framework in the light of the implications that CMU may have for financial stability. This requires a comprehensive approach, involving a broadened supervisory perimeter that also captures systemically important non-bank financial intermediaries. All in all, CMU would benefit from a long-term vision paying significant attention to equity markets and high levels of ambition.

- **Financial integration in general benefits from further harmonisation of financial market data standards.** To this effect, the ECB is of the view that a comprehensive system of internationally accepted identifiers is important (see Box 2 in Chapter 3). For example, there should not be any security that does not have an International Securities Identification Number (ISIN), and the issuer, guarantor and offeror of a security should be identified by the Legal Entity Identifier (LEI). Moreover, the ECB supports the development of Unique Transaction Identifiers (UTI) and Unique Product Identifiers (UPI).

- **In monitoring and assessing financial integration going forward, greater emphasis should also be placed on how resilient integration is to shocks and whether it delivers the economic benefits expected from it.** This year's report makes a start in discussing this "quality" of financial integration (see Special Feature A). It is argued that integration through equity and foreign direct investment is more resilient than through debt. Moreover, integration through long-term debt tends to be more robust than through short-term debt and retail bank lending more robust than interbank lending. In recent years these more resilient forms of integration have gained some ground in the euro area, although this probably needs to go further. In addition, the euro area can still enhance substantially cross-country risk-sharing benefits from financial integration (meaning that during an economic downturn in one country, revenues from asset holdings in another compensate for lost domestic income and allow for consumption to be smoothed). Even though risk sharing has increased with the introduction of the euro, it still remains at relatively low levels. Research suggests that risk sharing is particularly fostered through various forms of equity holdings (but also through bank credit), underlining the importance of the capital markets union and its emphasis on equity markets (and the European Commission's recent initiative on fostering retail financial services).

Overview of the report

Chapter I contains the ECB's assessment of the degree of financial integration on the basis of price-based and quantity-based indicators, including the composite indicator for financial integration (FINTEC). It further summarises recent developments in the financial integration of four key financial market segments, notably money, bond, equity and banking markets.

Chapter II on "European institutional reform: Establishing a European Deposit Guarantee Scheme" explores the setting up of a European Deposit Insurance Scheme (EDIS), which is an important follow-up to the Five Presidents' Report.

Chapter III summarises the main activities that the Eurosystem has pursued in 2015 and early 2016 with a view to advancing financial integration in the euro area. In this context, new information is provided in two boxes on "Building a capital markets union" and on "Financial market data standards" (jointly produced with DG-FISMA of the European Commission), given the topical relevance of these two issues for financial integration.

Special Feature A, entitled "Financial integration and risk-sharing in a monetary union" summarises insights from the literature on capital flows and on risk sharing. Discussing both US and European evidence, it explores whether based on indicators of resilience and risk sharing the "quality" of financial integration in Europe can be assessed.

Special Feature B, entitled "National options and discretions in the prudential regulatory framework for banks" reviews options and discretions (O&Ds) in the EU prudential legal framework given their relevance for establishing a level playing field across the SSM and their contribution to financial integration.

Special Feature C, entitled "The Future of the European Retail Payments Market" investigates innovation in retail payments in relation to the Eurosystem integration work by looking at several innovative payment solutions that have been launched in Europe and the role of the Euro Retail Payments Board.

Special Feature D, entitled "The Use of Securities Holdings Statistics for Financial Integration" presents new financial integration indicators based on Securities Holdings Statistics (SHS) and outlines the potential use of SHS data for the purpose of financial integration monitoring.

Each chapter or special feature is preceded by a summary of results and conclusions, which further elaborate on the key messages above.

The **Statistical Annex** compromises details on the calculation of the FINTEC and its sub-indices. It includes a set of 33 standard indicators. 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

Overall, financial integration within the euro area has continued to recover since last year's report, although lately at a moderating pace. The re-integration trend – which followed substantial financial fragmentation associated with the financial and sovereign debt crises between 2007 and 2011 – took off in 2012 after the agreement to create the banking union and the announcement of the ECB's Outright Monetary Transactions (OMT) programme. According to a price-based and a quantity-based composite indicator compiled by the ECB, the average degree of financial integration across money, bond, equity and banking markets displayed a moderate increase in 2015 compared with the situation at the end of 2014. While some price-based measures of financial integration in bond and equity markets have indicated wider return dispersions in these market segments since the summer of 2015 owing to emerging strains in the global financial system and diverging economic outlooks across euro area countries, bank retail interest rates have at the same time become much less dispersed across euro area countries, reflecting, among other things, the impact of the ECB's non-standard monetary policy measures. Finally, quantity-based information from intra-euro area cross-border holdings of equities and bonds – which provide particularly direct evidence on financial integration developments relative to price-based indicators, but may also show them with a delay – suggest mild improvements in financial integration, while the situation in money markets appeared to be broadly unchanged from 2014. Taking all the currently available evidence together, it is not clear whether the aggregate financial re-integration trend among euro area countries is tailing off or not.

1 Introduction

This Chapter reviews the main developments regarding financial integration in the euro area during 2015. It focuses on four core segments of the financial system, namely the money, bond, equity and banking markets. The analysis is based on a number of indicators that capture the overall state of financial integration. As a general caveat, it is important to note that some indicators do not necessarily reflect solely varying degrees of market integration, but also other factors, such as differentials in credit risk premia priced in sovereign or corporate bond yields. In some cases, it also makes sense to compute indicators which can illustrate diverging developments for different groups of euro area countries. The methodology for such country groupings as used in this report is described in Section 2 of the Statistical Annex.

In this year's report, the impact of extreme outliers has been removed for a few standard financial integration indicators as they distort the information

content regarding euro area-wide developments in financial integration. The outliers mainly reflect unusual developments observed in the Greek financial system in the second half of 2015 in the context of the negotiations between Greece and its official creditors and the referendum held on 5 July. As a consequence of increasing uncertainty as well as rising macroeconomic and financial stability concerns among domestic and foreign investors, the prices of many Greek securities dropped markedly, and the need emerged for the Greek government to impose capital controls. The extreme outliers that these events caused significantly impaired the meaningfulness of some standard financial integration indicators for the euro area as a whole, in particular those computed as the equally weighted cross-country standard deviation of asset returns. In order to preserve the information content of these indicators without changing their computational method, outlier data from Greece were not included. Those cases are identified in the notes to the respective charts in the main text or in the Statistical Annex.

2 Aggregate assessment based on composite indicators

The broad-based general recovery in intra-euro area financial integration decelerated somewhat in 2015. This is reflected in developments in composite indicators of financial integration. In order to offer a comprehensive overview of the state of financial integration in the euro area across different market segments, price-based and quantity-based financial integration composite indicators (FINTECs) were introduced in the previous issue of this report. According to both metrics, the average degree of financial integration across money, bond, equity and banking markets covered by the indicators continued to increase overall in 2015 compared with the situation at the end of 2014 (see Chart 1). These overall increases, however, reflect further progress in financial integration made during the first part of the year, while both indicators subsequently levelled off in response to emerging financial stress.

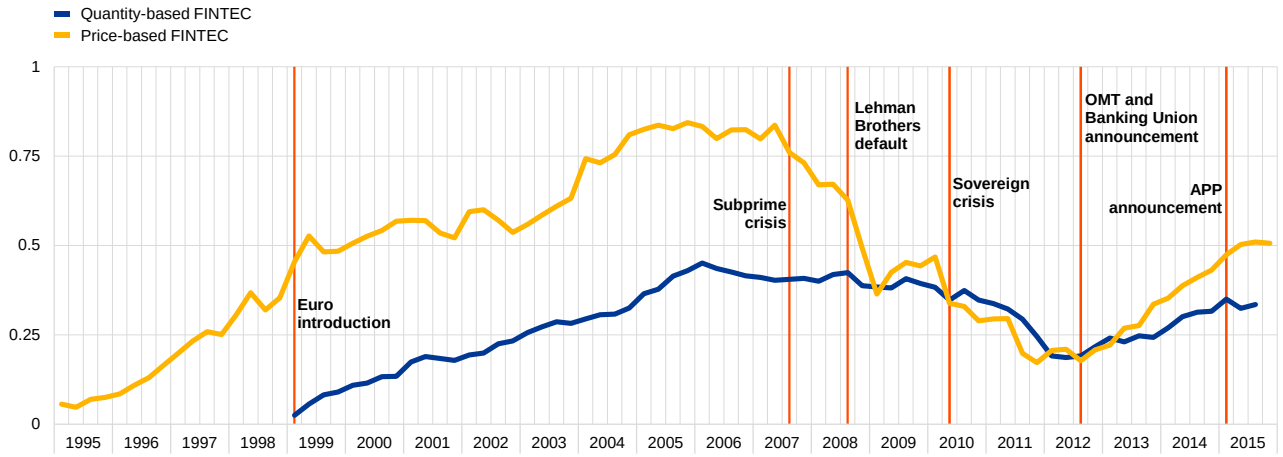
The overall increase in both the price-based and the quantity-based FINTEC from their levels at the end of 2014 are driven by the majority of the sub-components. The price-based FINTEC increased overall due to likely improvements in integration as signalled by lower price dispersion measures in retail banking markets, the unsecured money market and sovereign bond markets.[2] By contrast, price-based measures of financial integration in corporate bond and equity markets indicate an overall increase in cross-country dispersion of asset returns. However, there is evidence suggesting that the wider return dispersions in these specific market segments mainly reflect divergent developments in domestic asset fundamentals rather than genuine impediments to market integration. This view is also consistent with quantity-based information on intra-euro area cross-border holdings of equities and bonds which suggests mild improvements in financial integration. The situation in money markets from a quantity perspective appeared to be more or less unchanged from the last quarter of 2014.

[2] For a graphical representation of developments in price-based FINTEC sub-indices for the four market segments concerned, see Charts S1 to S4 in the Statistical Annex.

Chart 1

Price-based and quantity-based Financial Integration Composites (FINTECs)

(percentages per annum)



Sources: ECB and ECB calculations.
Notes: The price-based FINTEC aggregates ten indicators covering the period from the first quarter of 1995 to the fourth quarter of 2015, and the quantity-based FINTEC aggregates five indicators available from the first quarter of 1999 to the third quarter of 2015. The FINTEC is bounded between zero (full fragmentation) and one (full integration). Increases in the FINTEC signal higher financial integration. For a detailed description of the FINTEC and its input data, see the Statistical Annex.

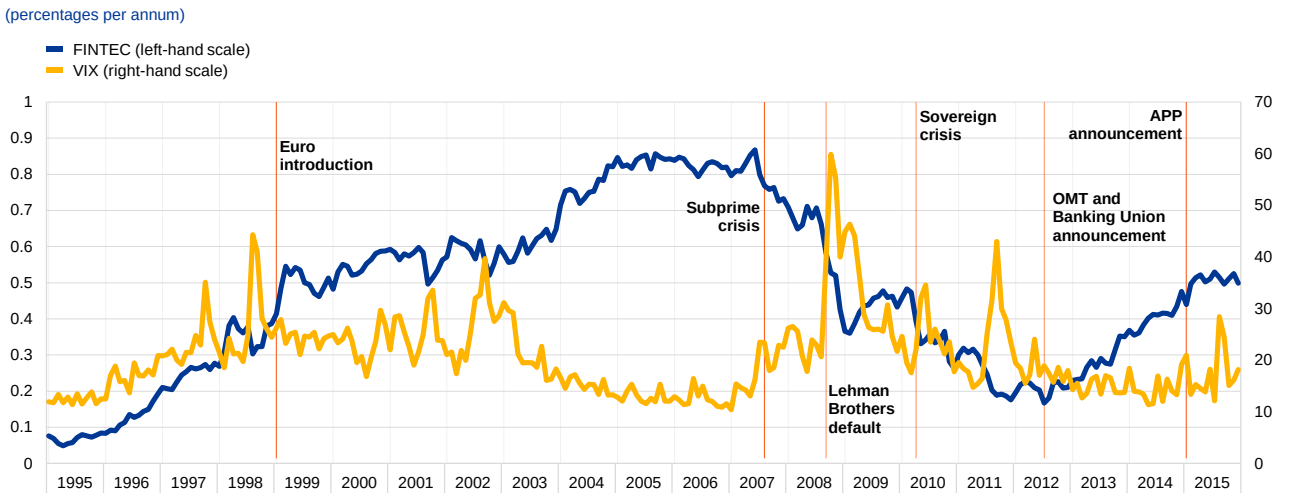
The divergence in the information from some price-based measures of financial integration reflects the different impacts of emerging financial stress and the ECB's non-standard monetary policy measures on the various market segments concerned. On the one hand, the cross-country dispersion in the rates of return in equity and corporate bond markets widened somewhat amidst a general increase in investors' degree of risk aversion as well as divergent macroeconomic trends across euro area countries affecting the perceptions of investors about credit risk and the outlook for profitability. Among other things, the different degrees of exposure of financial and non-financial firms in individual euro area countries to the continuously deteriorating economic outlook in emerging markets, such as China or major commodity exporters, are likely to have been among the driving factors behind these developments, as well as differences in efforts made in terms of structural reforms in some countries. On the other hand, the various non-standard monetary policy measures taken by the ECB – adopted to counter risks to price stability in an environment with ultra-low monetary policy interest rates – gradually mitigated the degree of fragmentation in the credit intermediation process across euro area countries. The ECB's targeted longer-term refinancing operations (TLTROs), directly aiming to improve bank lending to the euro area non-financial private sector, are likely to have also played a role in this context. These policy effects became visible in the generally narrowing dispersion in bank loan and deposit rates as well as in money market rates from relatively high levels which had mirrored the severe impairments in the transmission of the single monetary policy after the start of the sovereign debt crisis in the monetary union. The ECB's public sector purchase programme (PSPP) likely contributed to the observed lower yield dispersions in the short- and long-term segments of euro area sovereign bond markets (see Box 2).

The continued cross-country convergence trend in bank retail interest rates offset some of the divergence emerging in securities markets such that the

price-based FINTEC has remained more or less flat since mid-2015. Chart 2 contrasts the evolution of financial integration measured by the price-based FINTEC with the developments in a measure of global risk aversion and uncertainty, namely the VIX index.[3] The chart shows that the most recent stabilisation in the aggregate price-based measure of financial integration coincides with a relatively sharp increase in this measure of global risk aversion. The fact that changes in cross-country asset price differentials often reflect narrowing or widening divergences in domestic macroeconomic fundamentals should generally warn against interpreting price dispersion measures as direct evidence on the state of financial integration. More direct evidence regarding the state of financial integration among euro area countries is provided by quantity-based indicators.

Chart 2

Price-based FINTEC and global risk aversion



Sources: ECB and ECB calculations.
Notes: For a detailed description of the FINTEC and its input data, see the Statistical Annex. The VIX is the Volatility Index of the Chicago Board of Options Exchange, constructed from a portfolio of options on the S&P 500 index.

The quantity-based FINTEC suggests a mild overall improvement in financial integration compared with the fourth quarter of 2014. The 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.[4] While MFIs' and investment funds' relative holdings of bonds and equities all increased slightly in the first two quarters of 2015, the cross-border activity in the inter-MFI market decreased somewhat overall.

[3] The VIX is often referred to as a "fear gauge" or a measure of risk aversion among investors. Ssee Coudert, V. and Gex, M., "Does risk aversion drive financial crises? Testing the predictive power of empirical indicators", *Journal of Empirical Finance*, Vol. 15, 2008, pp. 167-184.

[4] Compared with the version of the quantity-based FINTEC as shown in last year's report, the current version uses market size-based weights which are corrected for a computational error. The corrected version displays a higher level of integration in the years prior to the crisis so that it peaks in 2005.

3 Money markets

Money market integration remained broadly unchanged in 2015. The share of intra-euro area cross-border money market transactions decreased slightly in 2015, but in a context of a significant decline in overall market turnover. However, the fact that the decline in the cross-border share is limited (see Chart 3) suggests that credit risk considerations were not a main driver (see also Box 2 below). Consistent with this, indicators of money market rate dispersion across the euro area remained broadly stable at relatively low levels. Other indicators continued to point to a smooth reallocation of central bank liquidity among euro area countries during 2015.

Rising excess liquidity had an impact on money markets and influenced indicators of market fragmentation, but this was driven by monetary policy rather than reflecting renewed market stress. Excess liquidity is defined as the level of bank reserves held at the central bank in excess of the level of required reserves (including recourse to the deposit facility). As excess liquidity rises, incentives for interbank trading are reduced, including cross-border flows. If this implies that the remaining trades occur between banks with similar characteristics, then rate dispersion may be dampened. Furthermore, with the exception of the targeted longer-term refinancing operations take-up, the increase in excess liquidity now mainly comes from asset purchases programmes rather than Eurosystem liquidity operations. Therefore, the Eurosystem has become the main driver of the increase in excess liquidity, as opposed to bank demand for the excess liquidity added through Eurosystem refinancing operations. Hence the level of excess liquidity should no longer be taken as an indication of funding stress as was the case in the past, even if the circulation of the excess liquidity across countries remains imperfect.

Quantity and price-based indicators

The decline in turnover in many market segments constitutes the most visible change in money market dynamics in 2015. The ECB Money Market Survey for the second quarter of 2015[5] clearly shows a decrease in turnover to the levels observed in the same quarter in 2012, with a quarterly turnover close to €70 trillion. The decline was apparent in the secured and unsecured market and in derivatives markets. The total turnover in secured lending and borrowing decreased by 13% to €28.6 trillion in the second quarter of 2015 compared with the same period of the previous year. In the unsecured market, turnover declined by 39% to a quarterly turnover of €2.8 trillion and thereby set a record low. Turnover in overnight index swaps (OISs) and forward rate agreements (FRA) declined considerably (e.g. by 56% for the OIS segment). Other derivatives, especially cross-currency swaps, were traded more actively.

The counterparty structure of the various money market segments showed limited changes in 2015. This suggests that the decline in market activity took place

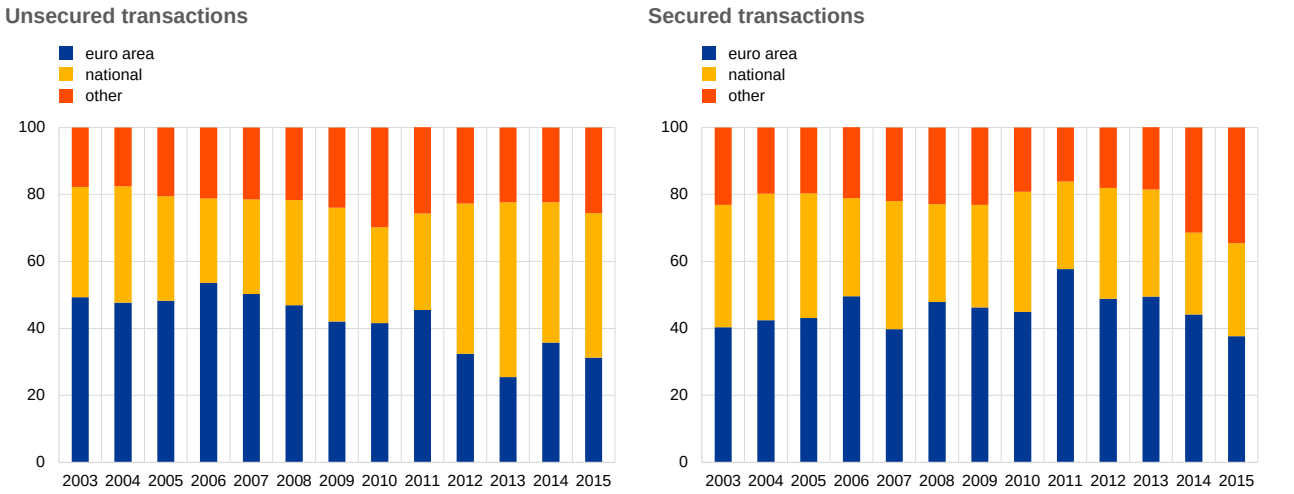
[5] https://www.ecb.europa.eu/stats/money/mmss/html/index.en.html

across all major groups of trading partners and thus did not reflect credit risk considerations. In spite of the broad decrease in turnover in the money markets, the Money Market Survey shows that the share of domestic counterparties remained broadly unchanged at around 40% for the unsecured market and increased slightly to around 25% for the secured market. At the same time, the share of euro area counterparties decreased slightly from 35% to 31% of the transactions on the unsecured market, and from 44% to 38% for the secured market (Chart 3).

Chart 3

Counterparty structure of money market transactions

(percentage of total)



Source: ECB Money Market Survey 2015.
Note: The panel comprised 98 credit institutions.

Indicators of money market rate dispersion across the euro area remained broadly stable at relatively low levels. Chart 4 presents the dispersion of unsecured interbank lending rates across countries and for different maturities. During the global financial crisis and the sovereign debt crisis, interest rate dispersion reached high levels as a result of the financial tensions in certain jurisdictions. Since 2012, dispersion measures have decreased as financial market tensions subsided and market access of banks improved.

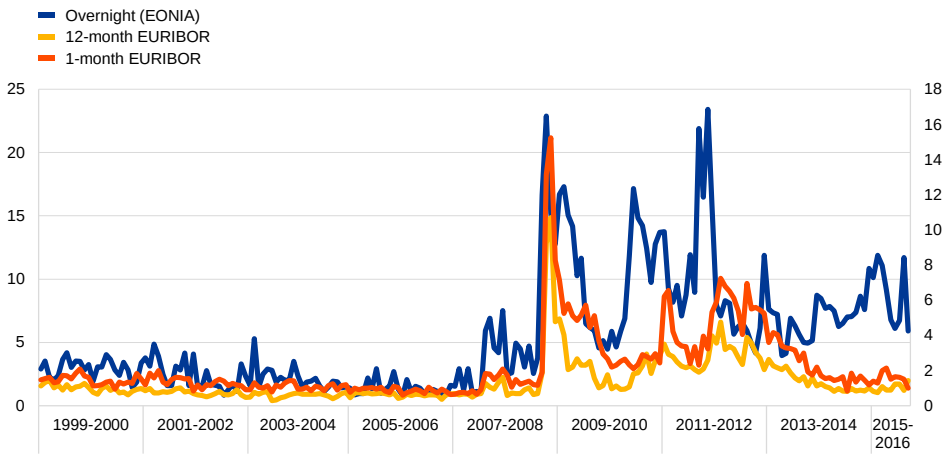
At longer maturities, the dispersion stood at levels comparable to those observed before the crisis. This fact illustrates how credit and liquidity risks and the related uncertainties came down. At the overnight maturity, dispersion remained above the levels observed before the crisis, which partly reflected differences in the credit quality of counterparties, deals with foreign banks and continued money market fragmentation.[6]

[6] In contrast to the transaction-based EONIA benchmark rate, EURIBOR is based on contributions by a different set of panel banks. Moreover, the more theoretical definition of EURIBOR (i.e. the rate offered by a prime bank to another prime bank) leads to a lower cross-country dispersion. Both sources of difference may hamper the comparison across maturities.

Chart 4

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

Average interquartile range per maintenance period, in basis points.

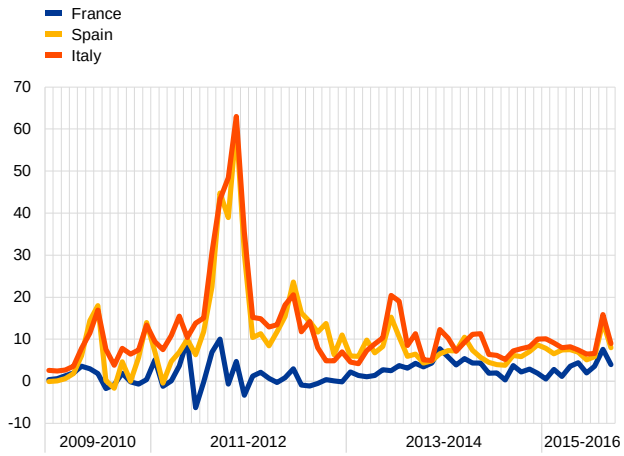


Sources: European Money Markets Institute (EMMI) and ECB calculations.

Chart 5

Spreads on overnight repos against certain sovereign bond collateral (versus Germany)

Average per maintenance period, in; basis points.



Sources: Bloomberg, Banco de España and ECB calculations.
Notes: Based on RepoFunds Rates for Italian, French and German sovereign bonds, and repos against Spanish sovereign bonds.

In the secured segment, the dispersion of spreads on repos for collateral from different euro area sovereigns remained at low levels. Chart 5 presents the spread on overnight repos based on French, Italian and Spanish government bonds versus repos based on German government bonds. Those spreads remained on average below 10 basis points in 2015. At the end of 2011, the use of Spanish and Italian collateral had still been associated with elevated spreads.

Furthermore, the search for yield associated with the avoidance of negative interest rates may have contributed further to the convergence in money market rates, pointing to a slight reduction of market segmentation. In particular, repos backed by core-country collateral were initially used more as they formed an alternative to depositing funds in the deposit facility of the Eurosystem. At a later stage, similar market behaviour was observed for collateral from other euro area jurisdictions such that the spreads between repos based on collateral from Group A versus Group B countries (i.e. countries which experienced significant downgrades of their sovereign debt during the crisis vis-à-vis countries which did not)[7] compressed considerably.

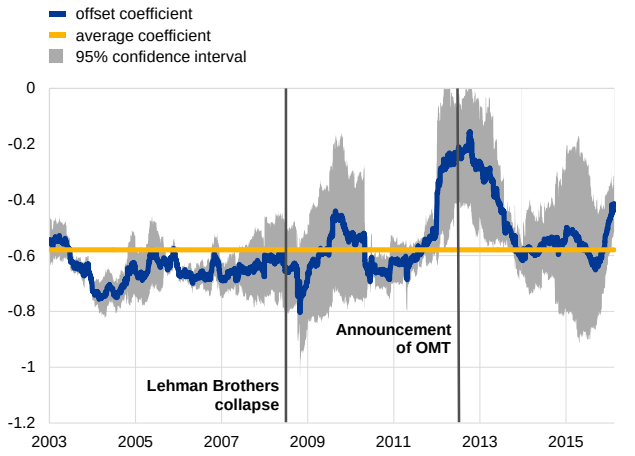
The extent to which domestic liquidity shocks are offset by euro area in- or outflows is indicative of the functioning of the money market across borders and its potential stabilising effects. Changes in a country's autonomous factors (banknote demand, government deposits with central banks, central bank investment activities, etc.) are

[7] The methodology for such country groupings is described in the Statistical Annex.

a key source of shocks to banks' reserve holdings with their national central bank. In a functioning market, central bank reserves are lent by banks (countries) with a liquidity surplus to banks (countries) with a liquidity deficit. Chart 6 presents an estimate of the offset coefficient, capturing the extent to which liquidity shocks are absorbed across euro area countries.

Chart 6

Offset coefficient for domestic liquidity shocks



Source: ECB.
Notes: The offset coefficient results from a panel regression of changes in net intra-Eurosystem claims on changes in net domestic autonomous factors (controlling for USD operations); see Veyrune, R., Liaudinskas, K. and Sprokel, Z., "Geographical segmentation of the euro area money market: a liquidity flow approach", *Financial Integration in Europe*, ECB, 2014, pp. 65-84. Values close to zero point to a lack of cross-country flows.

The offset coefficient continued to point to a smooth reallocation of central bank liquidity across euro area countries during 2015. Since 2003, the coefficient has averaged -0.58, meaning that every €1 of domestic liquidity reduction was on average offset by a 58 cent inflow from the rest of the Eurosystem on the same day. The other 42 cent was absorbed either by counterparties' reserve holdings or via higher recourse to the Eurosystem. Hence, higher absolute values of the (negative) offset coefficient are indicative of more integrated interbank money markets. In 2015, the coefficient remained close to its long-term average and hence significantly below its high of -0.2 reached prior to the announcement of Outright Monetary Transactions (OMT) in 2012. The uncertainty surrounding the coefficient estimate increased between end-2014 and mid-2015, possibly because TLTRO allotments and Eurosystem asset purchases impacted bank reserves and cross-border flows independently of domestic liquidity shocks. This uncertainty declined somewhat after mid-2015.

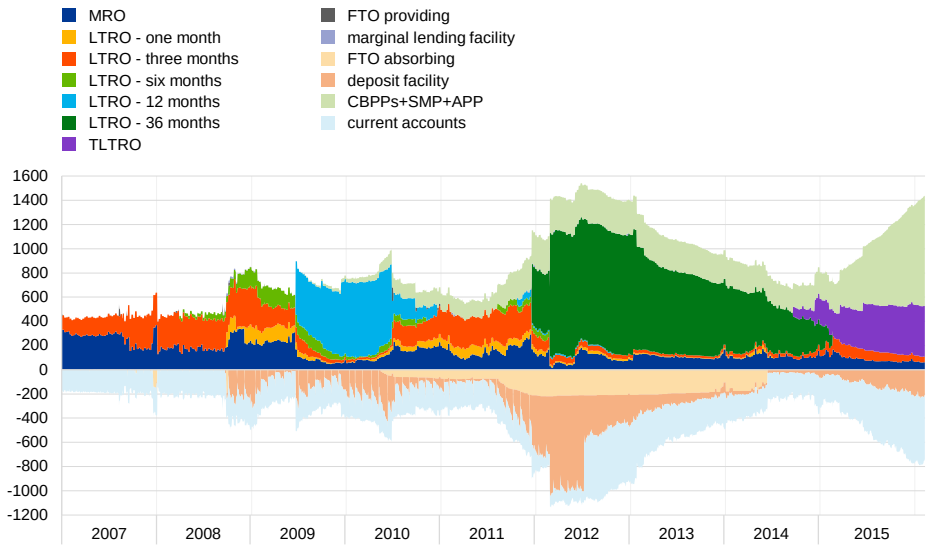
Impact of ECB monetary policy on money markets and integration indicators

The implementation of the Eurosystem's asset purchase programme (APP) led to a strong increase in excess liquidity. In 2015, the Eurosystem launched the APP with the aim to provide monetary stimulus to the economy in a context where key ECB interest rates were close to their lower bound. One implication of the APP is that it raises bank reserves with the central bank independently from the demand for bank reserves, leading to a level of excess liquidity of almost €650 billion in December 2015. Similarly, the TLTROs provided attractive stable funding for those banks that could channel it towards lending to the real economy. Participation in those operations also strongly supported the level of excess liquidity, with a roughly constant level of liquidity provided through all refinancing operations combined (i.e. in MROs, 3-month LTROs and TLTROs). The continued reliance on refinancing operations may partly point to persistent funding needs of some banks that still lack market access. Chart 7 provides an overview of the Eurosystem operations and recourse to standing facilities.

Chart 7

Eurosystem balance sheet

(outstanding amount of operations and recourse to standing facilities; liquidity providing (+) and liquidity absorbing (-); EUR billions)



Source: Eurosystem.
Note: MRO stands for main refinancing operation, (T)LTRO for (targeted) longer-term refinancing operation, FTO for fine-tuning operation, CBPP for covered bond purchase programme, SMP for Securities Markets Programme and APP for asset purchase programme.

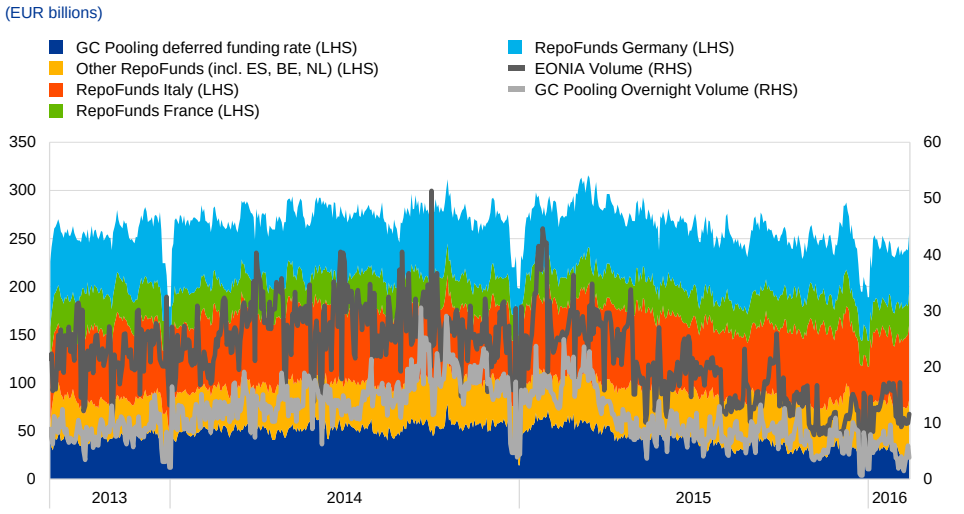
In contrast to previous occasions when excess liquidity rose, the latest increase did not reflect rising funding stress or increasing market fragmentation. In the past, excess liquidity rose because of higher participation in Eurosystem refinancing operations, which largely reflected the greater funding needs of banks. Likewise, the decline in excess liquidity in 2013 and 2014 was the consequence of a reduced fragmentation of euro area money markets, reflecting less liquidity hoarding and better market access for banks from countries which had been most affected by the sovereign debt crisis. In contrast, in 2015 higher excess liquidity was mainly a consequence of active liquidity injections by the Eurosystem through its programmes.

The increase in excess liquidity was an important driver of the lower market activity reported for 2015. As a growing set of banks held larger amounts of excess liquidity, there was simply less need for borrowing. For example, the decline in funding demand explains the decline in activity in the overnight repo segment, which is typically used for funding purposes, while volumes in the short-term repo segment were more robust (Chart 8).

Regulation also appeared to play a role which may vary across countries until Basel III rules are fully implemented. Market participants often pointed to new regulations and the associated incentives to reduce risk-taking as one of the main reasons behind lower money market activity. Furthermore, the maturity extension of trades that investors initially used to avoid negative rates and the incentives created by new regulations to rely more on longer-term funding led to an automatic decline in turnover as fewer longer-term contracts are needed to replace many short-term ones. Finally, the lower activity in derivatives was also related to monetary policy as

low uncertainty about future short-term interest rates and the flat yield curve reduced the demand for interest rate swaps.

Chart 8
Trading volumes in the short-term repo and overnight unsecured markets



Source: Bloomberg.

Overall, the lower market activity should not be taken as an indicator of market stress and fragmentation as in previous years. The change in activity may have had some impact on the rate dispersion indicators presented above, but that could occur in either direction depending on the nature of the transactions and the characteristics of the counterparties.

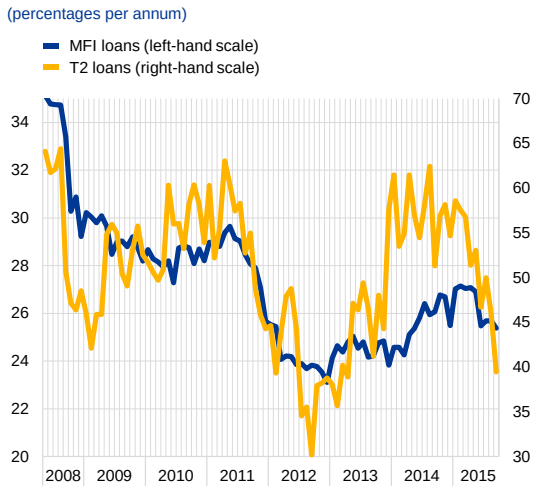
Box 1
Using TARGET2 payment data to analyse money market transactions

Despite their fundamental importance, relatively little is known about actual transactions in interbank markets since, for the most part, banks trade short-term debt over the counter. Hence, information about the functioning of euro interbank markets has so far mainly relied on limited data from electronic trading platforms, or on surveys.

One further method of generating information about the unsecured overnight interbank market builds on data from payment systems to reconstruct the unsecured overnight interbank loans that are behind the observed payments. When banks trade liquidity in central bank money, the data from payment systems that settle in central bank money can be used to identify overnight interbank transactions. Examining the TARGET2 payment data makes it possible to monitor euro area-wide developments. Since the underlying information is at the level of individual transactions, it can be aggregated at different levels to examine specific questions. A more detailed view on the usefulness of TARGET2 data for the analysis of the unsecured overnight money market is provided in the ECB's Economic Bulletin (Box 3 of Issue 6 / 2015).

Chart A

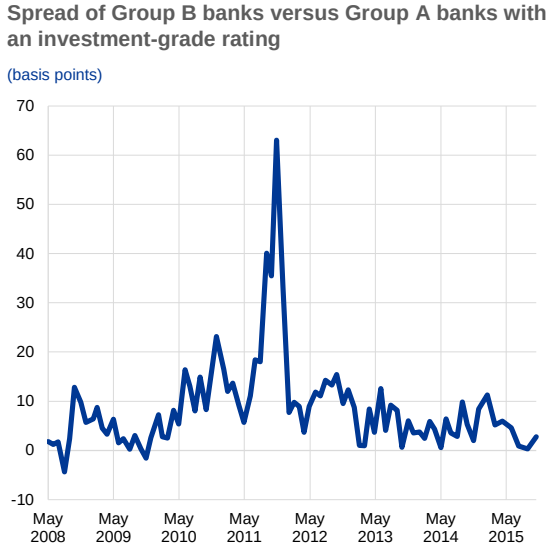
Share of cross-border overnight money market volume based on MFI data and TARGET2 data



Source: MFI loans database and TARGET2 money market values, based on the ECB methodology refined in 2013. See Frutos, J. C., Garcia-de-Andoain, C., Heider, F. and Papsdorf, P., "Stressed interbank markets: Evidence from the European financial and sovereign debt crisis", *Working Paper Series*, forthcoming, ECB, 2016.
Notes: Intra-group values were excluded; if loans have a zero interest rate, they are not identified as a loan. Last observation: 11 November 2015.

Chart B

Spread between borrowing rates



Sources: TARGET2, DBRS, Fitch, Moody's, Standard & Poor's and ECB.
Note: The last observation is for 8 December 2015.

The cross-border share in the interbank market tracks closely events in the financial and sovereign debt crisis. Chart A shows the share of intra-euro area cross-border transactions in the total amount of unsecured overnight interbank loans identified in the TARGET2 system (right-hand scale) and compares it with the respective share computed at the MFI level (left-hand scale).[8] Both shares declined rapidly after the Lehman Brothers bankruptcy in September 2008. They then recovered gradually before declining markedly again when the sovereign debt crisis intensified in mid-2011. This evidence suggests that interbank markets not only shrank, but they also fragmented. However, recent data also show that the situation started to improve shortly after the ECB announcement of the OMT framework. For instance, in 2014 the cross-border share in TARGET2 transactions was similar to the levels observed before the start of the sovereign debt crisis. For the overall MFI sector, this recovery was also evident, although less pronounced. Since 2015, and in particular after the start of the APP in March, the share of the interbank market that trades across national borders has progressively decreased, amid increasing levels of excess liquidity.

In terms of prices, TARGET2 data offer supporting evidence regarding financial integration for the unsecured overnight money market. Controlling for credit quality, the spread paid for overnight funding by banks located in Group B vis-à-vis Group A (i.e. countries which experienced significant downgrades of their sovereign debt during the crisis vis-à-vis countries which did not [9]) decreased significantly after the three-year LTROs in December 2011 and March 2012. In addition, further convergence was particularly evident after the announcement of the APP in January 2015. This effect was strong for

[8] MFI loans include all types of interbank loans (all maturities and currencies) between all MFIs. By contrast, TARGET2 loans include only overnight loans carried out in euro by banks with access to TARGET2.

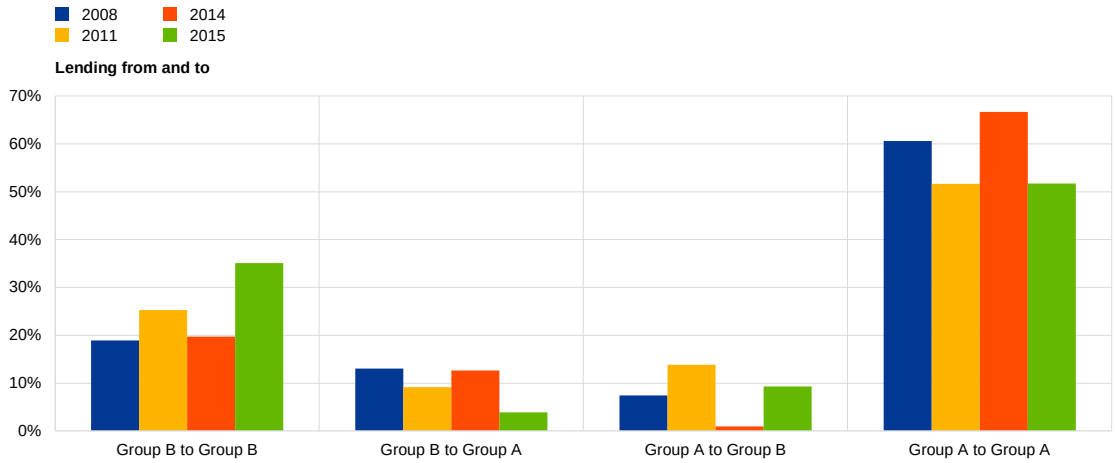
[9] The methodology for such country groupings is described in the Statistical Annex.

borrowing conditions of investment-grade institutions (Chart B). The spread differentials between the two country groups at the end of the review period were far away from the historical peak reached at the height of the sovereign debt crisis.

Chart C

Overnight lending and borrowing volume for Group A and Group B countries

(share of maintenance period volumes; percentages)



Sources: TARGET2, DBRS, Fitch, Moody's, Standard & Poor's and ECB.
Notes: The maintenance periods included in the chart are 2008MP6, 2011MP11, 2014MP1 and 2015MP8.

In terms of quantities, TARGET2 data also showed an improvement in integration both within and across country groups over time. Chart C shows a breakdown of the average share per maintenance period traded on the unsecured overnight market by banks from Group A and Group B countries. Since 2008, there was an increase in the total share traded by banks inside Group B, as well as a rise in the share these banks received from Group A in 2015 (compared to 2014). Overall, these data suggest that following the start of the public sector purchase programme (PSPP), a re-distribution of unsecured funding flowing to Group B materialised.

4 Bond markets

In the period under review, the degree of convergence of euro area bond markets largely stabilised around its 2014 levels. This notwithstanding, financial market volatility in early 2016 has resulted in a pick-up in some indicators of bond market fragmentation. Specifically, price-based indicators showed a continued dispersion of yields of euro area sovereign, non-financial corporate and bank bonds, although considerably below its intensity during the global financial crisis and the euro area sovereign debt crisis. While remaining market segmentation may have contributed to the continued divergence of yields, such variations also reflect the degree of risk aversion of investors as well as differences in risk profiles of issuers and how these factors have changed in the period under review. In addition, the ECB's monetary policy also contributed to developments in yield spreads. Turning to quantity-based indicators, some resurgence of euro area MFIs' willingness to hold debt securities issued by sovereigns and banks from euro area countries outside

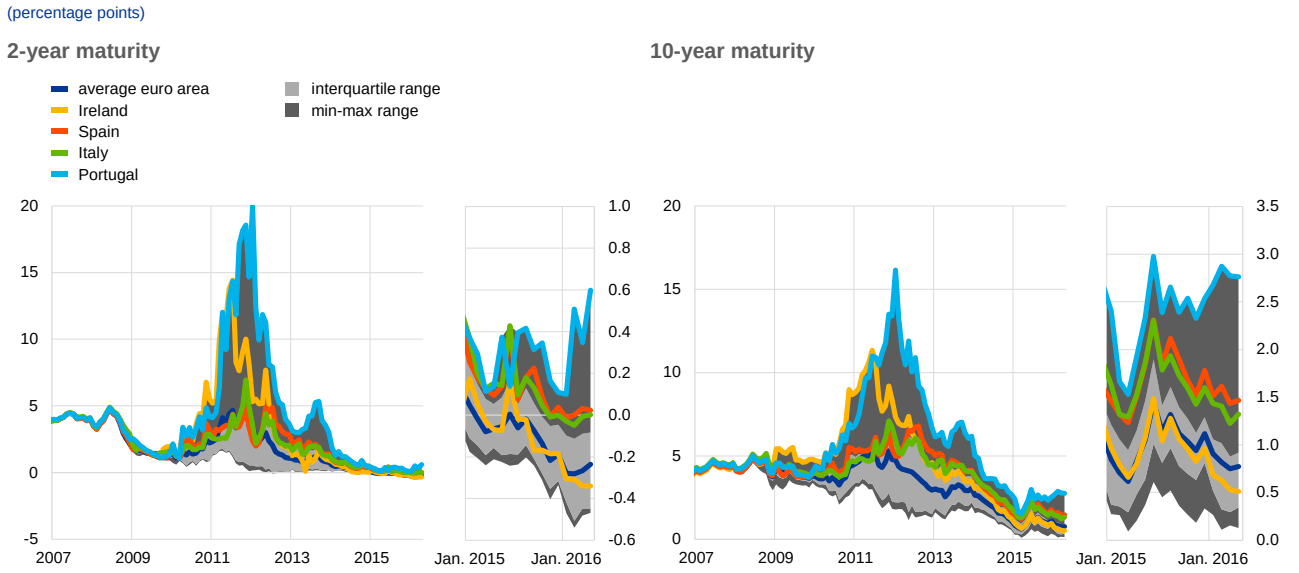
their country of residency points towards a tentative reversal of the bond market segmentation observed over the period 2009-12.

Price-based indicators

In the period under review bond yields of individual euro area sovereigns showed a degree of divergence which was similar to that in 2014. This notwithstanding, the degree of intra-area yield dispersion was fairly limited when compared with the period from 2010 to the first half of 2014 (Chart 9). While some of these yield differences may reflect lingering market segmentation, shaped by factors such as liquidity risk premia driven by liquidity differentials across euro area sovereign bond markets, to some extent they may also constitute credit risk premia attributable to differences in the fiscal and macroeconomic outlook of euro area countries.

Chart 9

Dispersion of euro area sovereign bond yields



Sources: Thomson Reuters and ECB calculations.
Notes: The data used are based on the euro area country composition as in 2011. The yields for Greece, Cyprus, Estonia, Luxembourg, Malta and Slovenia are excluded owing to infrequent observations or a lack of observations.

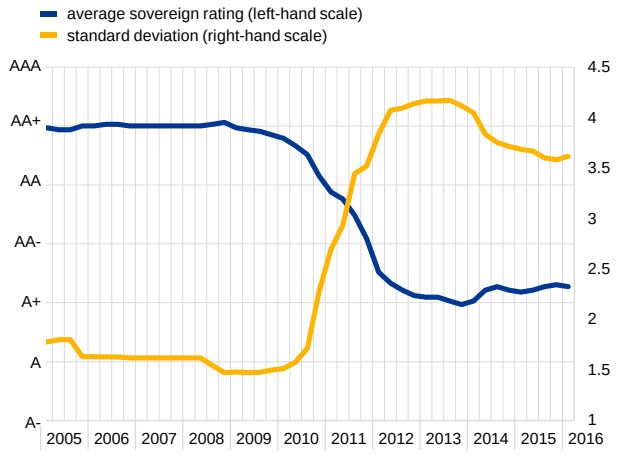
At least part of the remaining differentiation across euro area sovereign bond yields is likely to reflect the pricing of credit risk. In contrast to the years before 2009, sovereign ratings in the euro area have fluctuated at a relatively low level since 2012, although a slight improvement has been noticeable from late 2013 onwards (Chart 10). Similarly, the dispersion of these ratings has remained elevated, with some decline seen after 2013.

In addition, liquidity risk premia may have also played some role, particularly during the episode of elevated market volatility in early 2016. While showing no clear-cut trend for a large part of 2015, some shift in investor preferences towards liquid assets in an environment of heightened economic uncertainty seems to have

contributed to a rise in some indicators of liquidity risk premia (Chart 11). Despite this uptick, the premium paid for liquidity – expressed as the spread of (German and French) agency bonds over corresponding government bonds – has stayed relatively low when compared to the peaks seen during the global financial crisis and the euro area sovereign debt crisis. At the time, the price of more liquid assets (government bonds) was – sometimes substantially – higher than that of less liquid assets (agency bonds) with effectively the same credit risk.[10] In addition, movements in the spread between sovereign and agency bonds in the course of 2015 may have also been influenced by differing effects of the ECB's asset purchase programme on liquidity conditions in the two markets.

Chart 10

Sovereign debt rating developments and dispersion in the euro area

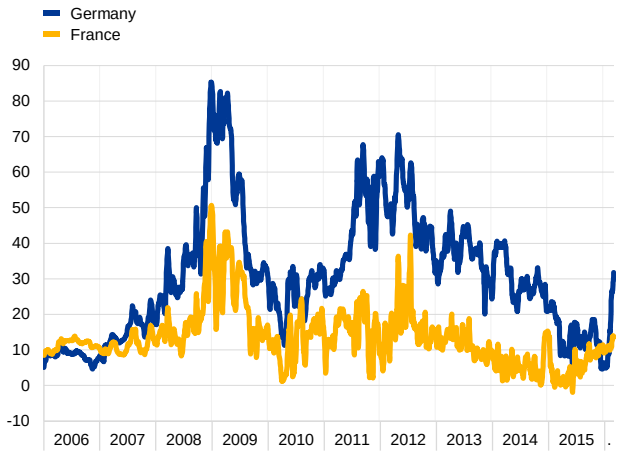


Sources: Thomson Reuters and ECB.
Notes: The chart shows Standard & Poor's ratings for the long-term sovereign debt of Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, Slovakia and Spain. The left-hand scale represents the unweighted average of their ratings expressed as letter grades. The right-hand scale represents the standard deviation of their ratings expressed as numerical notches.

Chart 11

Spreads between agency bonds and sovereign bonds for Germany and France at the five-year maturity

(five-day moving averages of daily data, basis points)



Sources: Thomson Reuters and ECB calculations.
Note: Zero-coupon spreads between agency and government bond yields.

Despite some notable increases since the second half of 2015, the cross-country dispersion of corporate bond yields has remained moderate. Largely tracking developments in euro area government bonds, the yield dispersion in early 2016 of covered bonds issued by banks and bonds issued by the non-financial corporate sector is at levels prevailing before the euro area sovereign debt crisis, yet without touching the lows seen before the global financial crisis (Chart 12). This marks a consolidation of the declining yield dispersion observed after the ECB's OMT announcement in 2012. However, particularly since the latter half of 2015, yields diverged to some degree as investors re-assessed their outlook for individual euro area banks and corporations, depending on their exposure to an overall rise in

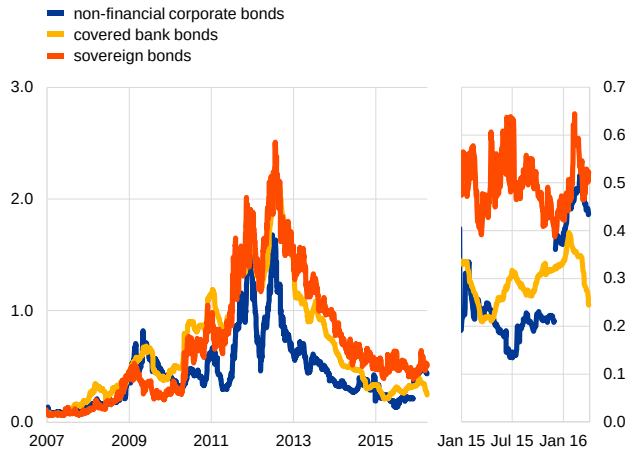
[10] Government-guaranteed agency bond yields are constant maturity yields of estimated curves for the German agency KfW (Kreditanstalt für Wiederaufbau) and for the French CADES (Caisse d'Amortissement de la Dette Sociale). As the bonds issued by KfW and CADES are fully guaranteed by the state, their credit risk is equal to that of the corresponding government bonds. For more details, see Ejsing, J., Grothe, M. and Grothe, O., "Liquidity and credit risk premia in government bond yields", *Working Paper Series*, No 1440, ECB, June 2012.

uncertainty about global economic growth as well as their sensitivity to a change in global financing conditions.

Chart 12

Cross-country dispersion of bond yields among non-financial corporations and banks in the euro area

(daily data; standard deviation, percentage points)

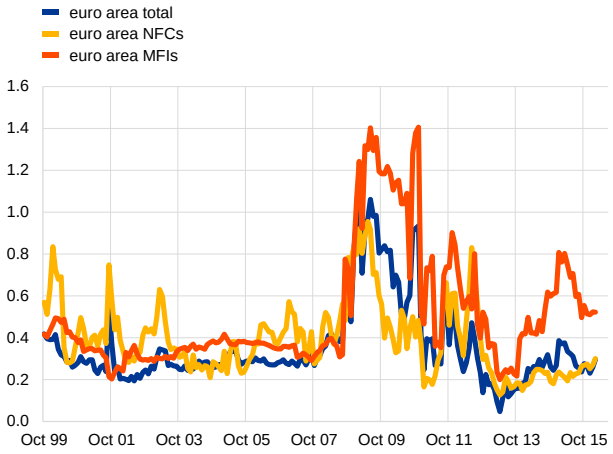


Sources: Thomson Reuters, Markit and ECB calculations.
Notes: The chart shows standard deviations for Barclay's country indices for corporate bonds (issued by non-financial corporations), iBoxx country indices for covered bonds (issued by banks) and country ten-year benchmark government bond yields. Owing to data unavailability, data include observations for (i) Austria, Finland, France, Germany, Ireland, Italy, the Netherlands and Spain (sovereign bonds); (ii) Austria, France, Germany, Ireland, Italy, the Netherlands and Spain (covered bank bonds); and (iii) Austria, Finland, France, Germany, Italy, the Netherlands and Spain (non-financial corporate bonds). The level shift in the corporate bonds series in December 2015 is due to technical factors in the Austrian corporate bond index.

Chart 13

Cross-country dispersion of excess bond premia among euro area issuers

(monthly data; standard deviation, percentage points)



Sources: Bank of America Merrill Lynch, Moody's and De Santis, R., "Sovereign risk channel, misalignment and fragmentation in the euro area corporate bond market", mimeo, 2015.
Notes: Fragmentation is measured as the dispersion of excess bond premia (EBP) among the largest nine euro area countries (AT, BE, DE, ES, FI, FR, IE, IT, NL). The EBP is the deviation of asset swap spreads relative to the median of the expected default frequency and a set of bond-specific characteristics, such as credit ratings, outstanding amounts, coupons and effective durations (see De Santis, 2015). 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.

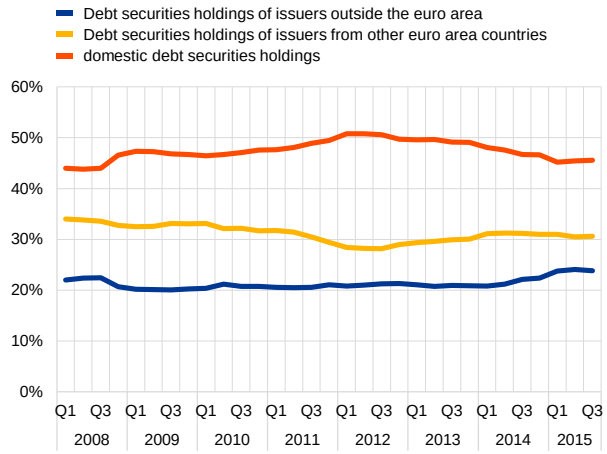
Evidence from excess bond premia is mixed. An analysis of the cross-country dispersion of excess bond premia (credit spreads not explained by bond-specific credit and liquidity risks) confirms both a consolidation of the past years' declines in the period under review as well as a small rise since the second half of 2015 for euro area non-financial corporations (Chart 13). After spiking during the global financial crisis and the euro area sovereign debt crisis, the cross-country dispersion of these premia has fallen back to pre-2008 levels. By contrast, euro area MFIs continue to experience dispersion of a considerably higher degree than that seen in the years before 2008. In addition, the dispersion of excess bond premia of euro area MFIs followed a pronounced upward trend between late 2013 and early 2015 which has only recently reversed.[11]

[11] A country-by-country breakdown shows that this upward trend in dispersion was caused, on the one hand, by declining excess bond premia in Italy and Spain, moving them further below the euro area average. While this was likely due to an improving economic outlook and a decline of sovereign spreads, in Italy the ECB's non-standard monetary policy measures and weakening links between banks and the sovereign may have also played a role. On the other hand, excess bond premia in Austria have risen further above the euro area average, possibly due to the exposure of Austrian MFIs to the deteriorating economic situation in Russia and Ukraine.

Chart 14

Holdings by euro area investors (all sectors) of debt securities

(percentage of total holdings)



Source: ECB.

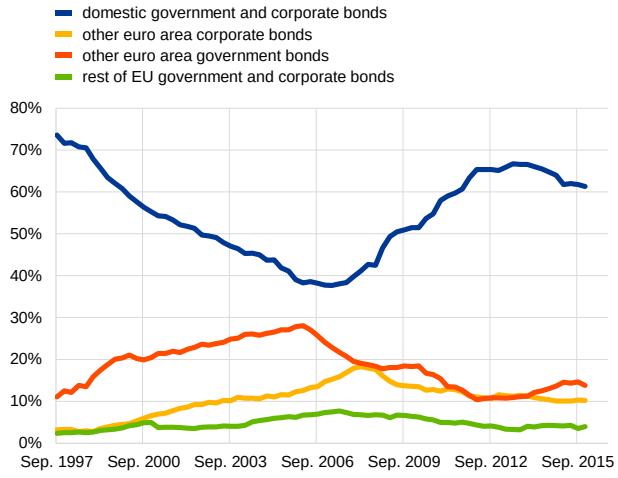
Market fragmentation above levels seen before the global financial crisis is evident from data capturing the holdings of debt securities by euro area investors. By the start of 2012, the share of domestic debt securities held in the portfolios of these investors had risen to 51%, from 44% in the first quarter of 2008 (Chart 14). The counterpart to this increase was primarily a relative divestment of debt securities issued by other euro area countries, bringing their share down from 34% to 28%. Since then, however, domestic investment in debt securities has fallen back to 46% in the third quarter of 2015, with portfolios first reallocated to debt issuers from other euro area countries (mid-2012 to early 2014) and then to issuers outside the euro area (mid-2014 to early 2015).

Data available on the holdings by euro area MFIs of securities issued by EU debtors shed more light on these findings. While narrower in scope, they show that euro area MFIs considerably reduced their portfolio allocations to government bonds from other euro area countries (Chart 15) between early 2010 (18%) and the beginning of 2012 (10%), continuing a trend that had already started in early 2006 (28%). Similarly, the share of holdings of debt securities issued by other euro area MFIs (Chart 16) shrank between mid-2007 (39%) and mid-2012 (24%), whereas the share of holdings of other euro area corporate bonds has been on the decline since the start of 2008 (when it stood at 18%) before stabilising around 10% in 2015 (Chart 15). Holdings of domestic debt securities have been the main beneficiary of these developments. Particularly with regard to the accumulation of domestic government debt, existing bank-sovereign linkages have intensified with spillover effects on banks' stock and bond prices from changing perceptions about sovereign risk. In recent years, however, the share of holdings of domestic debt securities by euro area MFIs has decreased again, similar to the trends observed for the portfolios of debt securities held by all euro area investors, but remained above the levels seen before the global financial crisis.

Chart 15

Holdings by euro area MFIs of debt securities issued by EU corporates and sovereigns

(percentages of total holdings, excluding the Eurosystem)

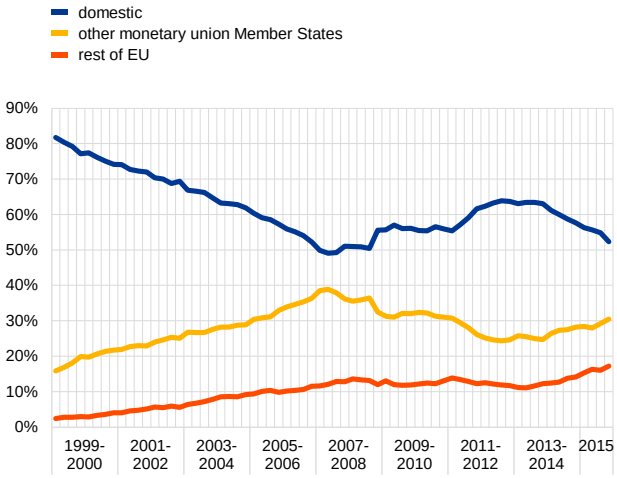


Source: ECB.
Notes: Outstanding amounts are classified by the residency of the issuer. Eurosystem holdings are excluded.

Chart 16

Holdings by euro area MFIs of debt securities issued by EU MFIs

(percentages of total holdings, excluding the Eurosystem)



Source: ECB.
Notes: Outstanding amounts are classified by the residency of the issuer. Eurosystem holdings are excluded.

Monetary policy impact on bond markets

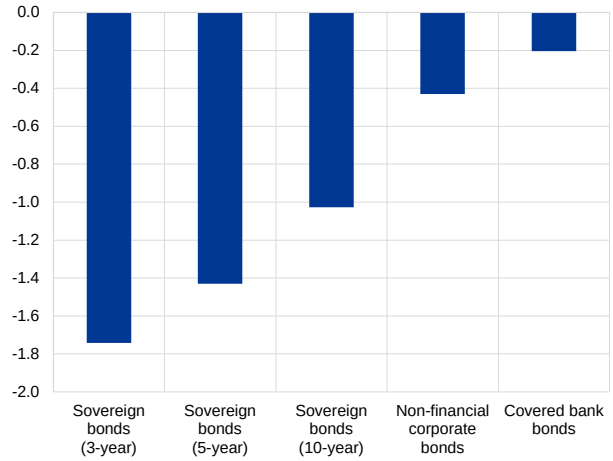
The ECB's monetary policy has noticeably shaped the dispersion of euro area sovereign and corporate bond yields, particularly since the announcement of OMTs in 2012. At the time, the dispersion of yields in the wake of the euro area sovereign debt crisis had substantially surpassed levels seen at the height of the global financial crisis. Following the ECB's OMT announcement, risk premia related to market fragmentation and the perceived risk of redenomination (i.e. euro area break-up) began to recede.[12]

[12] Estimation of the premia relating to the risk of redenomination of a given euro-denominated asset into a devalued legacy currency is challenging. Under certain assumptions, some gauges can be obtained from differences between EUR- and USD-denominated credit default swap premia.

Chart 17

Impact of ECB monetary policy announcements on the yield dispersion across euro area bond markets

(changes in standard deviation, basis points)



Sources: Thomson Reuters, Markit and ECB calculations.
Notes: The chart shows the average change in the standard deviation of euro area bond yields surrounding the Governing Council meetings on 22 January, 5 March, 22 October and 3 December in 2015, measured from the market close on the day preceding the meeting to the market close on the day following the meeting. Yields of bonds issued by non-financial corporations are derived from Barclay's country indices, while those of covered bank bonds are derived from iBoxx country indices. Owing to data unavailability, data only include observations for Austria, France, Germany, Italy, the Netherlands and Spain.

In 2015 the ECB's monetary policy decisions are likely to have further reduced the fragmentation of euro area bond markets, especially in the sovereign segment (see also Box 2). Announcements pertaining to the ECB's active asset purchase programmes during the press conferences in 2015 on 22 January, 5 March, 22 October and 3 December[13] on average lowered the cross-country standard deviation of euro area sovereign bond yields by between one (10-year sovereign bond yields) nearly two (3-year sovereign bond yields) basis points[14] by the market close of the following day (Chart 17).[15] The corresponding impact on the yield dispersion for non-financial corporate and covered bank bonds was considerably smaller. However, it should be noted that these observed announcement effects, which exclude most of the pre-meeting impact of ECB communication on market expectations, may overestimate (or underestimate) the potential long-term effects of the ECB's monetary policy on the dispersion of bond yields across individual euro area countries. In particular, such effects may reverse once the ECB's non-standard measures expire as – ultimately – financial integration is a structural issue that monetary policy is unlikely to address in a lasting way.

Box 2

Financial integration in bond markets − is the APP reducing differences in market liquidity?

Asset purchases are an important element of the current non-standard monetary policy measures of the ECB. They may also contribute to financial integration. This would work via the market liquidity channel. Broadly speaking, market liquidity refers to the functioning of the market: in a liquid market it will be easy for investors to transact substantial amounts of bonds at any time without causing a significant price impact. In less liquid bond market segments, a liquidity risk premium is priced into bond yields and explains part of the yield differential relative to the most

13 On 22 January, the expansion of the ECB's existing asset-backed securities and covered bond purchase programmes to encompass public sector securities from March 2015 onwards was announced. On 5 March, more detailed implementation aspects of such purchases were laid out. On 22 October, the possibility of a modification of the asset purchase programme towards further monetary accommodation was hinted at in the press conference. On 3 December, the duration of asset purchases was extended to last at least until the end of March 2017 and the intention to re-invest the principal payments on maturing securities purchased for as long as necessary was announced.

14 While these effects are admittedly small, they are nevertheless non-negligible in relation to the level of bond yields previous to the announcement. For example, with five-year sovereign bond yields – on average – below 30 basis points on the day before the announcement, a 1.4 basis point fall in the standard deviation is equivalent to a reduction of about 5%.

15 The event window was deliberately chosen narrowly, from the market close of the day preceding the Governing Council meeting to the market close of the day after the meeting, to isolate the impact of the announcements made during the ECB press conference from possible other news that could influence the standard deviation of euro area bond yields.

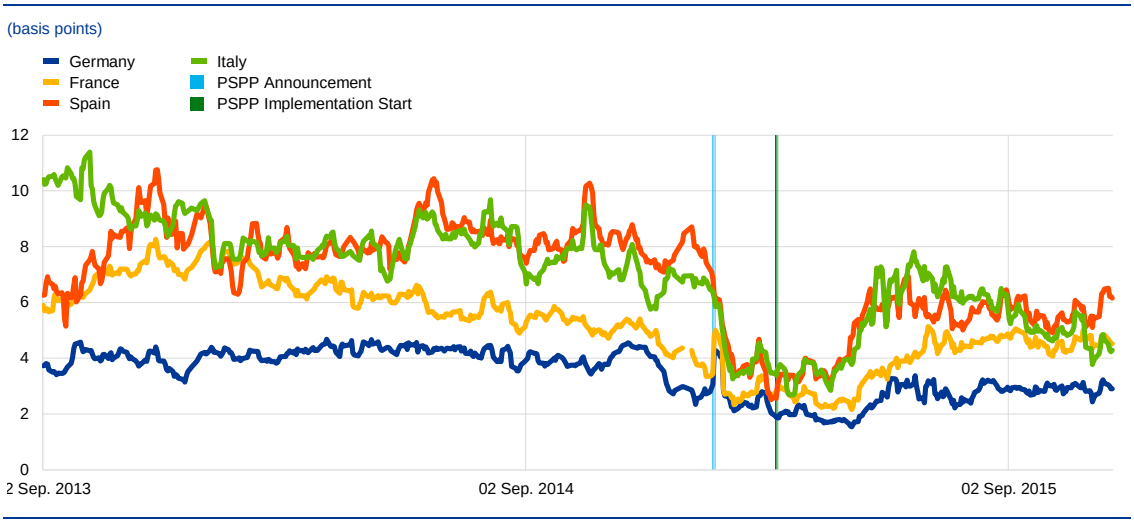
liquid segments. It can be expected that an improvement in market liquidity – ceteris paribus – reduces these premia. In the context of the euro area, this would be expected to reduce bond yield dispersion across member countries as liquidity premia would be reduced more in countries with less liquid markets. This box deals with this liquidity channel and explores whether the asset purchases conducted by the ECB can support a reduction of the cross-country dispersion of bond yields.

Conceptually, the impact of asset purchases by central banks on the liquidity of the targeted market segments can be two-fold. On the one hand, the presence of a large, regular buyer can improve market liquidity as it increases the predictability of demand. Potential sellers can be enticed by higher prices and potential buyers by a perceived limitation of downside price risk of the targeted securities. On the other hand, the execution over time of large purchases can trigger some crowding-out of other investors (limiting potential demand) and some scarcity of the targeted securities (limiting the free float).

The liquidity premium cannot be observed from bond yields directly. Therefore, this box uses noise indicators for the four most important sovereign bond jurisdictions in the euro area (Chart A) in terms of size, whereby lower values of the noise indicator suggest higher liquidity in the respective market.

Chart A

"Noise" indicator of market liquidity in selected euro area sovereign bond markets



Source: ECB calculations and EuroMTS for underlying bond prices.
Notes: The indicator reflects noise in the measurement of yields. It is given by the mean squared deviation of actual yields from a yield curve derived by a Nelsson-Siegel-Svensson (NSS) yield curve model for each country, at a daily frequency. NSS parameters are calculated by the ECB and available from the SDW database. See Hu, G. X., Pan, J. and Wang, J., "Noise as information for illiquidity", *Journal of Finance*, Vol. 68(6), 2013, for more details on the empirical approach.

On balance, the indicators suggest that the APP has led to some improvement in the level of market liquidity and to more homogeneous liquidity conditions across the major sovereign issuers. These effects were particularly strong in anticipation of the programme until immediately after the start of the implementation. A relatively sharp correction was observed over the summer of 2015, suggesting that liquidity conditions may also have become more volatile.

The ECB's own experience in the implementation of sovereign bond purchases under the APP and feedback from market participants also suggest broadly stable market liquidity developments since the start of 2015 in the main bond market jurisdictions. The APP purchases may have

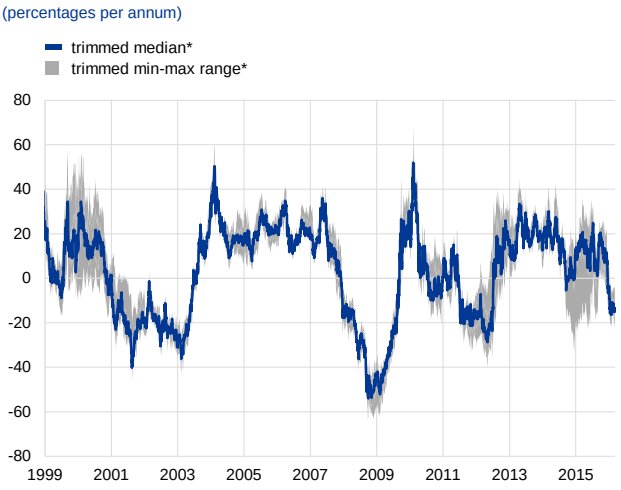
predominantly supported market liquidity in the sense that market-makers can rely on the presence of a large buyer in the market. This possibly lowers their reluctance to temporarily hold large positions. That said, episodes of reduced market liquidity were experienced over the summer of 2015, most notably in smaller jurisdictions.

The impact of asset purchase programmes on market liquidity needs to be seen against the background of structural exogenous factors that may actually reduce market liquidity. More specifically, the business model of the traditional providers of market liquidity – the market-makers – has come under pressure due to a range of factors, including the more widespread use of electronic trading, the low interest rate environment and more demanding regulatory requirements. In response, market-makers are showing a reduced willingness to maintain sizeable inventories of a broad range of bonds, potentially reducing market liquidity in some market segments.

5 Equity markets

Chart 18

Equity market index returns in the euro area



Sources: Thomson Reuters and ECB calculations.
Notes: The median and the minimum-maximum range are trimmed in order to exclude the best and the worst annual stock market performance.

Indicators of equity market convergence across euro area countries paint a relatively mixed picture for the period under review. Some price-based indicators in particular are hinting at a rise in cross-country heterogeneity, likely driven by an increase in global economic and financial uncertainties having differing effects across euro area equity markets. By contrast, quantity-based indicators are showing a steady diversification by euro area investors away from their home market, although the home bias still remains relatively high.

Following an extended period of convergence after the introduction of the euro, the dispersion of euro area stock market returns has waxed and waned since the beginning of the global financial crisis. Particularly at the height of the euro area sovereign debt crisis, the heterogeneity of stock market returns was substantial, but was remedied to some extent in the period following the ECB's OMT announcement in September 2012 (Chart 18). Since late 2014, however, equity performance across the euro area has started to diverge anew as global economic and financial uncertainties have intensified, leading to temporary bouts of risk aversion among investors with a varying impact across individual euro area equity markets.[16] The drifting apart of euro area stock

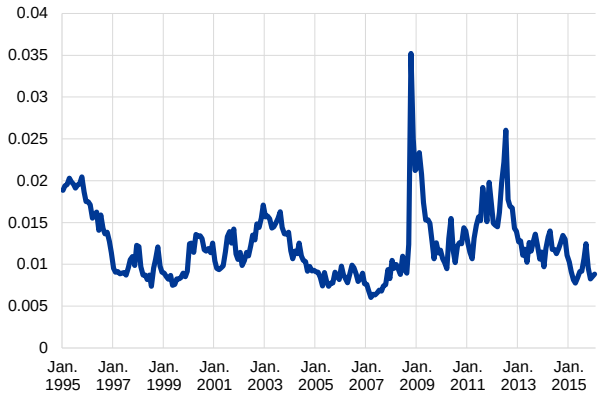
[16] Overall, the observed heterogeneity of euro area stock market returns over time prevails if non-financial corporations are considered only. While equity returns of the banking sector have shown a considerable degree of heterogeneity across euro area countries, stocks of non-financial corporations have followed a similar, albeit less pronounced, pattern.

market returns in the period under review is also reflected in some of the more elaborate convergence measures[17], although with a mixed picture emerging.

The equity market segmentation index remained around levels seen before the global financial crisis. The index measures the average cross-country deviation in sectoral equity valuation levels (Chart 19). According to this measure, the fragmentation of euro area equity markets in January 2016 was comparable to that in the period from 2005 up to the first half of 2007, leaving it far below the peaks witnessed at the height of the global financial crisis or the euro area sovereign debt crisis.

Chart 19

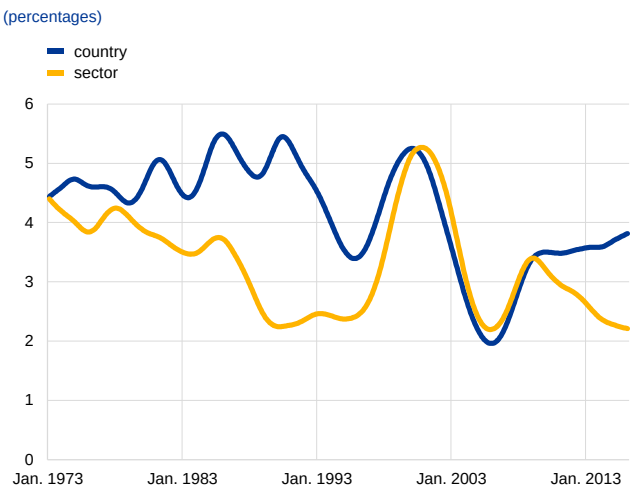
Equity market segmentation in the euro area



Sources: Thomson Reuters and ECB calculations.
Notes: The indicator measures segmentation in European equity markets via valuation differentials. For each calendar month, the absolute difference between the stock market valuation level (based on analyst forecasts) of a given country and the euro area average is computed, 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. A larger value indicates a higher level of market segmentation or equivalently a lower level of market integration. A measure of zero implies perfect integration. See also the notes to Chart S22 in the Statistical Annex.

Chart 20

Country and sector dispersions of euro area equity returns



Sources: Thomson Reuters and ECB calculations.
Notes: Country and sector dispersions are filtered using the Hodrick-Prescott smoothing technique. For technical details on the calculation of this indicator, see the notes to Chart S16 in the Statistical Annex.

By contrast, differences in the country dispersion of euro area stock returns are indicating that equity market segmentation has risen (Chart 20). Following a steep rise in the wake of the global financial crisis, equity market segmentation across countries has followed a slightly increasing trend that has recently accelerated. By this measure, equity market segmentation has returned to levels prevailing before the introduction of the euro. Across sectors, however, equity market

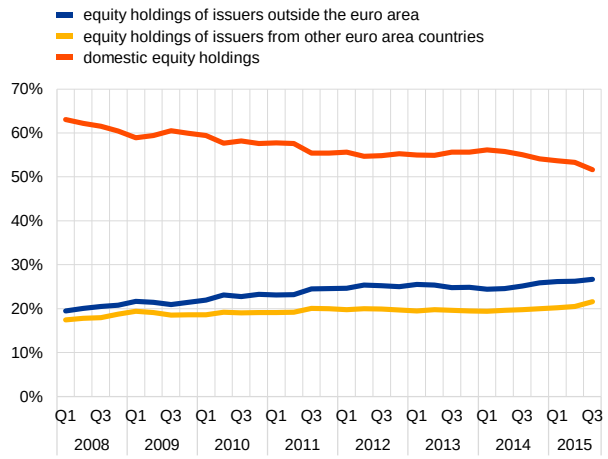
[17] The indicators of stock market heterogeneity presented in Chart 18 are a rather crude means to assess market integration, most notably since they are not adjusted for the differing risk characteristics of individual euro area equity market indices.

fragmentation has notably decreased since the global financial crisis, comparable with the findings presented in Chart 19.[18]

Chart 21

Holdings by euro area investors (all sectors) of equities

(percentages of total holdings)



Source: ECB.

Different from price-based indicators of euro area equity market integration, quantity-based measures are showing a more positive picture (Chart 21). After having remained roughly unchanged for several years, the share of holdings by euro area investors of equities issued in euro area countries other than their country of residency started to rise, reaching nearly 22% of total holdings by the third quarter of 2015. Together with a similar increase in equity holdings from issuers outside the euro area, this points towards growing investor diversification across countries. On the flipside of this development, domestic equity holdings have fallen from close to 65% of total holdings to around 52% during the same period, albeit still indicating a sizeable degree of home bias. As emphasised in Section 2 above, these quantity-based indicators may provide more reliable information about the current state of equity market integration in the euro area than the price-based indicators. The price-based indicators appear to be more strongly influenced by diverging macroeconomic fundamentals and other sources of risk having differentiated impacts on equity valuations across euro area countries.

6 Banking markets

Supported by monetary policy measures and the progress achieved in the establishment of a banking union, financial integration of the euro area banking markets improved during 2015. The fragmentation in financing conditions and deposit rates during the financial and sovereign debt crises has been reduced. In addition, lending rates for firms and households declined considerably, improving the pass-through of policy rates and reducing financial fragmentation. In fact, the dispersion in bank lending rates paid by non-financial corporations (NFCs) in euro area countries has narrowed.

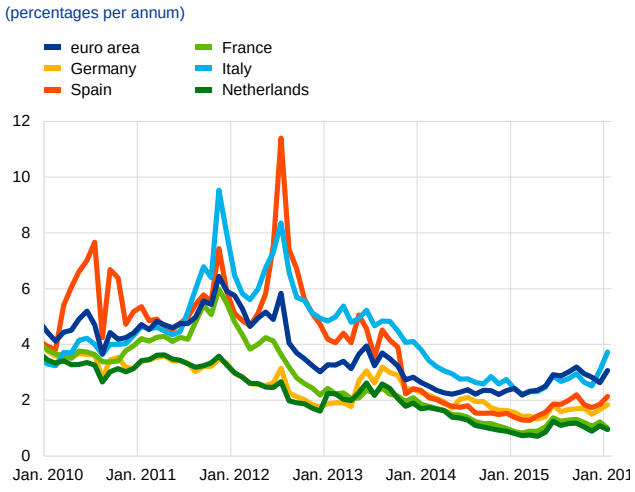
The quantity-based indicators still signal relatively small cross-border lending activities and therefore relatively low levels of retail banking integration. Cross-border credit provided by local affiliates of foreign banks seems to be stable at low levels. Cross-border lending to NFCs via direct cross-border loans in the euro area has been showing an upward trend, but at low levels. The share of cross-border retail deposits remains low or negligible. Further efforts should be made to improve the integration of retail banking services in quantitative terms through a common set

[18] In an integrated financial market, there should be no financial premium on sectoral or geographical diversification, reducing the gap between cross-country and cross-sectoral dispersions. For more details on the calculation and interpretation of this indicator, see the notes to Chart S22 in the Statistical Annex.

of rules. In this context, further enhancement of the banking union and regulatory initiatives towards creating a true European market for retail financial services[19] could help.

Chart 22

Bank bond yields in selected euro area countries



Sources: Merrill Lynch Global Index and ECB calculations.

The financing conditions faced by banks in wholesale funding markets in different euro area countries converged. Before the outbreak of the financial crisis, the dispersion of yields across euro area banks had been relatively low. Chart 22 illustrates the evolution of bank bond yields with investment-grade and non-investment-grade ratings, respectively, since 2011. The failure of Lehman Brothers as well as the sovereign debt crisis translated into large increases in the level and dispersion of yields across euro area banks, often linked with higher dispersions across countries related to the sovereign-bank nexus. There has been a significant convergence towards lower interest rate levels, in particular for investment-grade bonds, narrowing the yield dispersion across banks from different euro area countries (Chart 22). More recent developments show a slight increase in bank bond yields, which was accompanied by an increase in the dispersion across countries driven by the high-yield segment. However, the level of bank bond yields is still lower than prior to the crisis. The slight increase seems to reflect the recent increase in global risk aversion and uncertainties about the euro area and global growth outlook. Another reason for higher bank bond yields, especially in the case of senior unsecured bank bonds, might be the new total loss-absorbing capacity (TLAC)[20] standard issued by the Financial Stability Board.

The narrowing of the dispersion of bank bond yields across euro area countries was partly linked to the ECB's non-standard monetary policy measures. All three of the main channels of transmission of the asset purchase programme (APP) and the targeted longer-term refinancing operations (TLTROs) – namely the direct pass-through, portfolio rebalancing and signalling channels – tend to lower bank funding costs and support reduced financial fragmentation. There are a number of ways to estimate the direct and indirect impact of the APP and the TLTROs on bank financing conditions. One potential way is the estimation via controlled event studies. Such studies suggest that the combined effects of the non-standard measures implemented since June 2014 significantly lowered yields in a broad set of financial market segments, with the effects generally increasing with maturity and riskiness. The results of one such study was presented in the ECB's Economic Bulletin.[21] It suggests that the combined effects of the APP and the TLTROs reduced the cost of issuing bonds for banks in all countries. For example, in

19 See, for example, the European Commission's initiative on retail financial services, December 2015.

20 See the Financial Stability Board press release dated 9 November 2015.

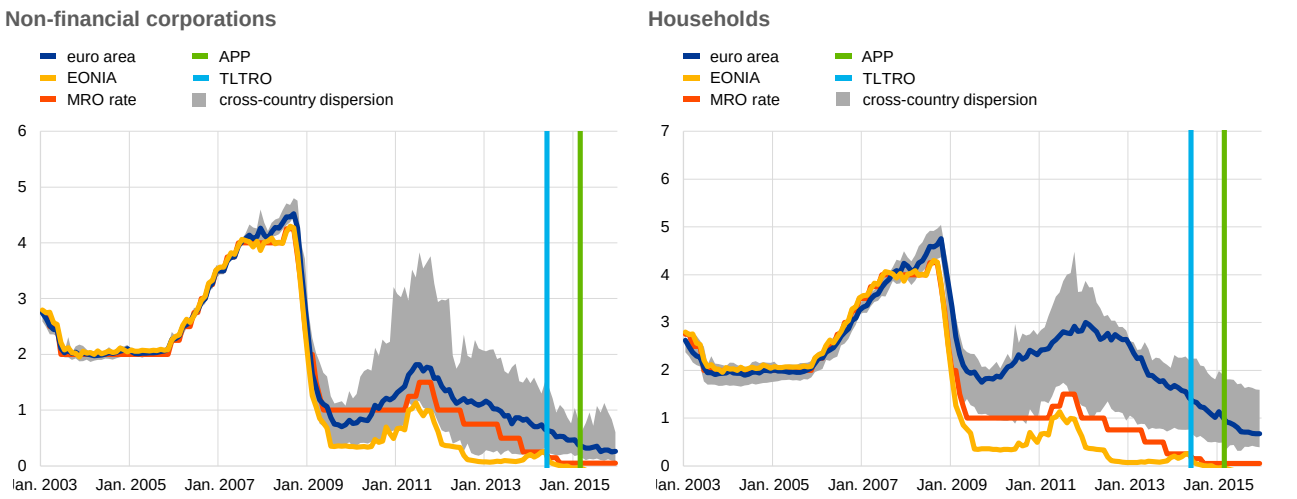
21 See Box 2 of the article entitled "The transmission of the ECB's recent non-standard monetary policy measures", *Economic Bulletin*, ECB, Issue 7, 2015.

Germany the effect was estimated at -20 basis points and in Italy at -85 basis points. This did not only help to reduce impairments in the transmission mechanism, as those effects were passed on to bank borrowers, it also helped to further reduce financial fragmentation as the dispersion in the level of bond yields across all euro area countries narrowed. In addition to the ECB's non-standard monetary policy measures, the prospect of a banking union and the enforcement of a single rulebook for banks in Europe may have contributed to reviving credit flows to the real economy.

Chart 23

Composite rates on deposits with an agreed maturity

(percentages per annum)



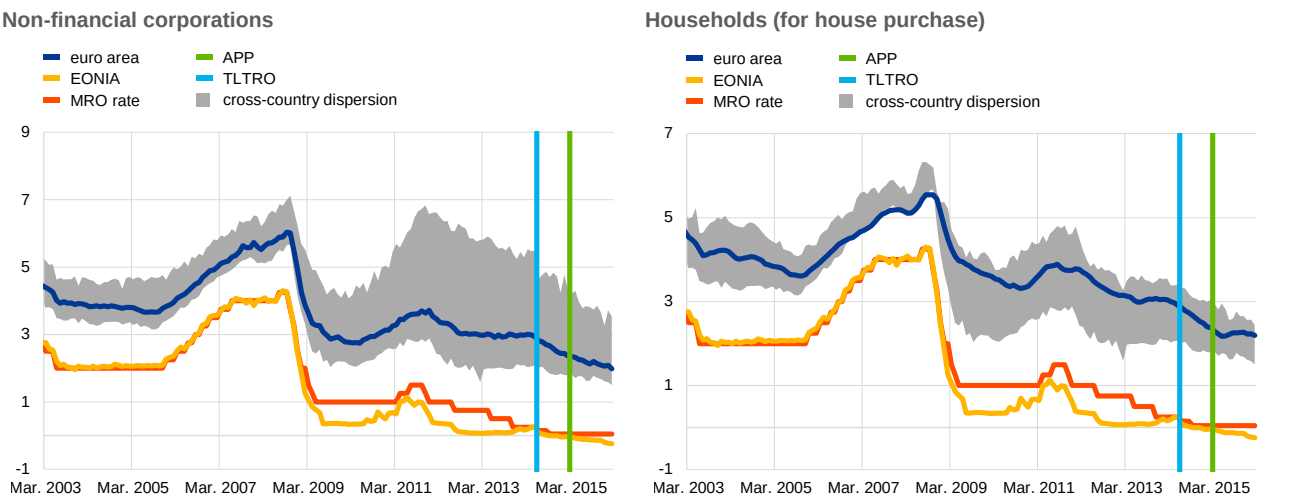
Sources: ECB and ECB calculations.
Note: The cross-country dispersion displays the min-max range after trimming off the two extreme values.

Reductions in price-based fragmentation were also visible in the developments in interest rates on MFI deposits for NFCs and households. Before the outbreak of the financial crisis, these rates closely followed the ECB main refinancing operation (MRO) rate (Chart 23). During the financial crisis, the deposit rates diverged from MRO rates both for NFCs and households. This difference suggests an impairment of funding market access for MFIs from countries most affected by the sovereign debt crisis because they had to offer higher interest rates to savers in order to ensure that they had sufficient funding. While spreads had been narrowing over the last few years, they remained significantly higher at the end of the review period compared with the pre-crisis period. However, since the adoption of the TLTROs and the APP, the spreads between deposit rates and the MRO rate narrowed progressively. The corresponding cross-country dispersion for households remained high, although the level of dispersion decreased. The launch of a European Deposit Insurance Scheme (EDIS) may contribute to lower cross-country dispersion even further as it will promote depositor confidence independently of the location of a bank and will thus bring more competition in the European retail banking market (see also Chapter 2 of this report).

Chart 24

Composite bank lending rates for NFCs and households

(percentages per annum)



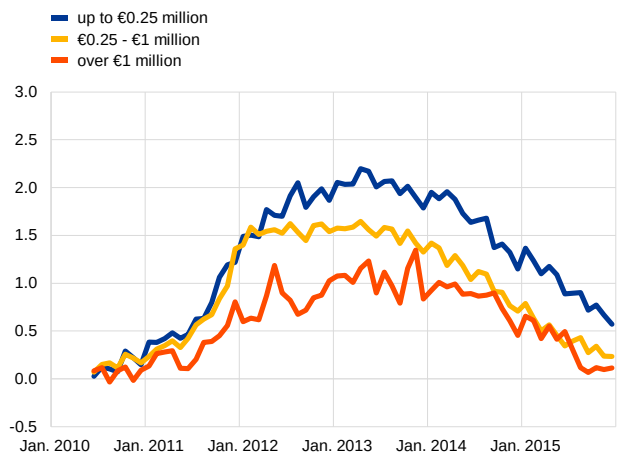
Sources: ECB and ECB calculations.
Notes: The indicator is computed by aggregating short and long-term rates, using a 24-month moving average of new business volumes. The cross-country dispersion displays the min-max range after trimming off extreme values.

The dispersion in the cost of borrowing for NFCs and households from MFIs across the euro area further converged in 2015. From the high level of dispersion that was observed after the intensification of the financial crisis, the ECB indicators on the borrowing costs of NFCs and households (Chart 24) narrowed across countries. Since the adoption of credit easing and the APP by the ECB, the overall level of composite lending rates charged to NFCs has also declined at the euro area level as well as in most countries. Decreases in lending rates were mainly related to the decline in sovereign spreads and other risk factors (related to banks and borrowers). Composite lending rates for households also declined, but these rates showed a somewhat higher degree of persistence. In some countries, even small increases were recently observed, reflecting to a large extent the contribution of the market rate and sovereign spreads and other risk factors.

Chart 25

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

(percentages per annum)



Sources: ECB and ECB calculations.
Notes: Based on a fixed sample of ten countries. Group B countries are here ES, IE, IT and PT. The Group A countries are AT, BE, DE, FI, FR and NL. No data are available for GR and LU. 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.

A closer look at bank lending rates for NFCs reveals that the spread in lending rates between euro area countries has decreased further for all classes of loan size. During the sovereign debt crisis, small loans were affected to a greater extent than large ones (Chart 25). As small loans are typically used by small and medium-sized enterprises (SMEs), SMEs in Group B countries were hit harder by high lending rates than their peers in Group A countries. Since the announcement by the ECB of the credit easing package in June 2014, bank lending conditions have improved relatively more for SMEs in Group B countries. Since

SMEs play a critical role in many euro area economies, the reduction in interest rates charged on their loans contributes to economic recovery in these countries.

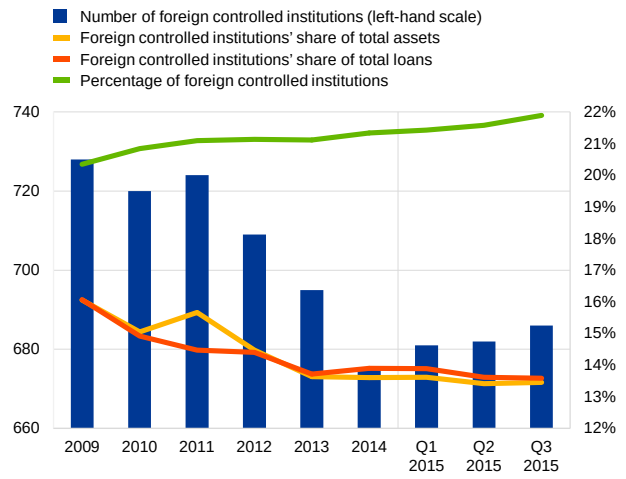
The latest ECB surveys on SMEs' access to finance reported an improvement in the availability of external sources of finance (e.g. bank loans) for SMEs. Moreover, the willingness of banks to provide credit to SMEs increased. Euro area SMEs considered "access to finance" as the least important problem that they were facing. However, these results differ across countries, with Austria, Belgium, Finland and Germany at one end of the scale with their SMEs facing smaller or no issues in accessing financing, and SMEs in Greece in particular, but also in Ireland, Italy and the Netherlands, at the other end of the scale. Various monetary policy measures such as the asset-backed securities purchase programme (ABSPP) and more specifically the TLTROs aim to lower the interest rates paid by SMEs.

Financial integration in banking markets not only has aspects related to the pricing of loans, but also has aspects related to the quantity of loans provided. Banks can provide cross-border credit either locally, through their affiliates, or via direct cross-border loans. Growing euro area bank business activity through one of these channels could signal that banking markets have become more closely integrated and that benefits from the efficient allocation of savings to the best investment opportunities are being fully reaped. Contraction of cross-border lending can either signal frictions in the integration of financial markets or different developments in profitable investment opportunities across countries.

Chart 26

Non-domestic affiliates in euro area countries

(total number (left-hand scale); percentages (right-hand scale))



Source: ECB (consolidated banking data).
Note: Foreign-controlled affiliates comprise foreign (EU and non-EU) controlled subsidiaries and foreign (EU and non-EU) controlled branches.

Cross-border credit provided by local affiliates of foreign banks stagnated in total. The share of both total assets and total loans of non-domestic affiliates remained at low levels of around 14% (Chart 26). This number masked high cross-country heterogeneity: whereas in large countries the shares were below 10%, most of the small countries had shares of more than 80%. Non-domestic affiliates had on average much lower total assets and total loans than domestic affiliates. Overall, the total number of non-domestic affiliates in euro area countries steadily declined as from 2011, which is line with the general trend of reducing bank affiliates in the euro area. In the first three quarters of 2015, the declining trend seemed to have slightly reversed. The share of non-domestic affiliates slightly increased to 21.9%. The ECB's Report on financial structures[22] also provides information on domestic and non-domestic affiliates, based on consolidated and non-consolidated ECB statistics.

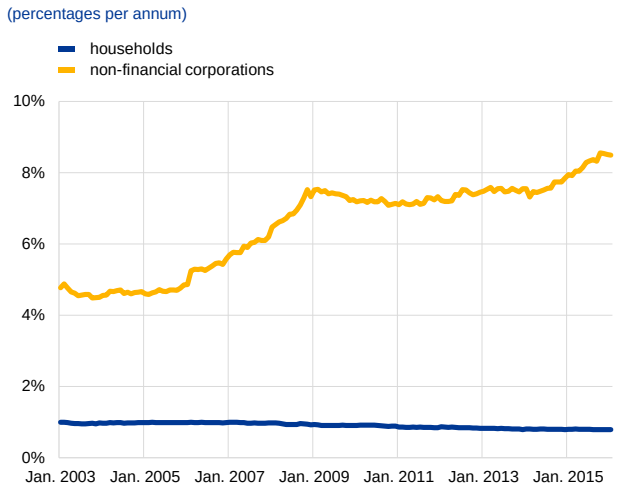
Cross-border bank lending via direct cross-border loans in the euro area seemed to be on an upward trend. The share of cross-border loans to non-

[22] Report on financial structures, ECB, October 2015.

financial corporations, which account for around 8% of all loans to non-financial corporations, continued to grow, albeit at a slow pace (Chart 27). Cross-border loans to households, as a share of total household loans, were negligible and on a very slight downward trend. In December 2015 the European Commission launched an initiative[23] to identify potential barriers to customers using financial services across the EU (e.g. loans and mortgages), as well as to firms providing such services. The removal of those barriers may help to boost competition, transparency and choice in the retail market, which may lead to more financial integration in this market segment.

Chart 27

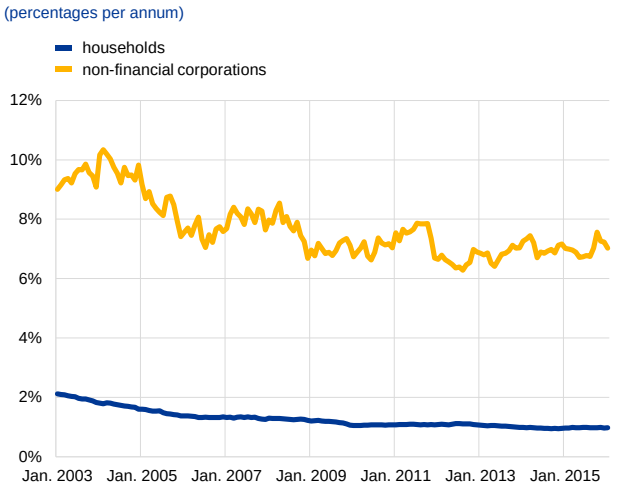
Share of cross-border loans in the euro area by sector



Source: ECB (BSI statistics).
Notes: Cross-border loans include loans to other euro area countries for all maturities and currencies. Interbank loans do not include central bank loans.

Chart 28

Share of cross-border deposits in the euro area by sector



Source: ECB (BSI statistics).

The share of cross-border deposits remains low. The trend in the share of cross-border deposits of non-financial corporations had been decreasing since 2003, but stabilised at low levels in recent years (Chart 28). Cross-border deposits of households only exist in marginal amounts, suggesting that this market is far from being integrated in the euro area. Further efforts should be made to establish a truly European market as this could bring advantages for deposit providers as well as for deposit takers. In this context, the banking union, including the EDIS and the further enhancements of the European market for retail financial services, could improve the poor integration of retail banking services through a common set of rules.

[23] Green Paper on retail financial services – Better products, more choice, and greater opportunities for consumers and businesses, European Commission, 10 December 2015.

Chapter 2
European institutional reform − establishing a European Deposit Insurance Scheme

A European Deposit Insurance Scheme (EDIS) represents the necessary third pillar of the banking union and is an important follow-up to the Five Presidents' Report, which was published on 22 June 2015. The European Commission's legislative proposal for an EDIS[24] *is an important milestone in closing the gap in the legislative framework governing the institutional and regulatory set-up of the banking union. Together with the EDIS proposal, the European Commission published a communication, announcing further work to ensure that additional risk-reducing measures are taken in parallel.*[25] *This in particular includes an alignment of national options and discretions in banking prudential rules and further work on the convergence of insolvency laws and other prudential measures. The EDIS and the risk-reduction measures have the potential to strengthen and stabilise the banking union to the benefit of the entire Economic and Monetary Union (EMU). This chapter reflects the Opinion of the ECB*[26] *on the European Commission's proposal to establish an EDIS. It presents the rationale for and the desired features of an EDIS, and gives an overview of the European Commission proposal and how it addresses those features.*

1 Rationale for an EDIS

The following chapter presents the main rationale for setting up an EDIS. Besides outlining its key expected benefits, challenges for an EDIS are presented and ways to address them are discussed.

1.1 Benefits of an EDIS

The main benefit of an EDIS is that it completes the banking union, as it is its necessary third pillar. The economic rationale behind EDIS calls for a single deposit protection system in order to achieve a truly single currency. Moreover, the following

[24] 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.

[25] Commission Communication "Towards the completion of the Banking Union", published on 24 November 2015.

[26] Opinion on 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), 20.4.2016.

section outlines some legal considerations in the context of setting up such a scheme.

1.1.1 Completing the banking union and aligning liability and control

The EDIS is the necessary third pillar of the banking union. It will increase consistency with regard to the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM) by aligning the liability for deposit protection and the control over the key factors influencing the risk of a depositor payout. The current architecture of the banking union is incomplete and creates an asymmetric situation in which a common framework is established for supervision and resolution, but not for deposit protection. Depositors cannot yet profit from a uniform system of protection promoting confidence across the banking union, even though banks are subject to common European supervision and resolution.[27] Furthermore, as supervision and resolution are European, their effectiveness will influence the "if and when" a national deposit guarantee scheme (DGS) has to pay out to insured depositors or contribute to resolution. Thus, there is a mismatch between European control and national liability, which should be concomitant to ensure full consistency. An EDIS is therefore necessary to eliminate such asymmetry by elevating accountability for a trusted safety net for deposits to the European level. Establishing an EDIS is thus the logical complement of elevating the responsibility for bank supervision and resolution to the European level.

The establishment of an EDIS should be accompanied by further measures reducing risks and enhancing the level playing field in the banking sector, and by progress towards further integration of economic and fiscal policies at the European level. The EDIS proposal was published together with a Commission Communication which contains a number of measures aiming to further reduce risks in the banking sector. Such measures for risk reduction and risk sharing (in the form of an EDIS) are mutually reinforcing elements to strengthen the banking union and should be pursued in parallel. In addition, the need for a payout to insured depositors may to some extent also be influenced by Member States' economic or fiscal policies which can still affect banks' riskiness. An EDIS therefore needs to be accompanied by further progress on the integration of economic and fiscal policies at the European level. Notably, there is a need to align insolvency laws and procedures, so that banks and DGSs face similar conditions when pursuing their claims in insolvency proceedings. Moreover, there is also a need to progress towards more similar conditions across the euro area regarding the recovery of unpaid loans by banks, including the length of the judicial procedures.

[27] On the fact that the "single structure" of an EDIS, as proposed by the Commission, is compatible with the SSM and the SRM, given that the latter are not two-tier systems, please refer to Section 2.2.

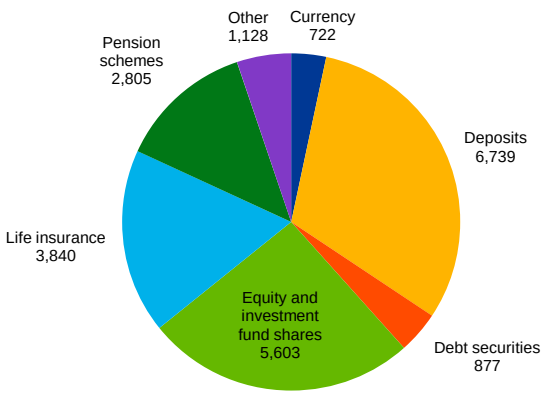
1.1.2 Economic rationale

DGSs are particularly important in the banking union, given that households have about 30% of their consolidated financial assets in the form of bank deposits (Chart 1). In addition, deposits play an important role in bank funding, amounting to about two-thirds of total bank liabilities in the banking union area (Chart 2).

Chart 1

Aggregate banking union* households' financial assets breakdown

(as of the second quarter of 2015)

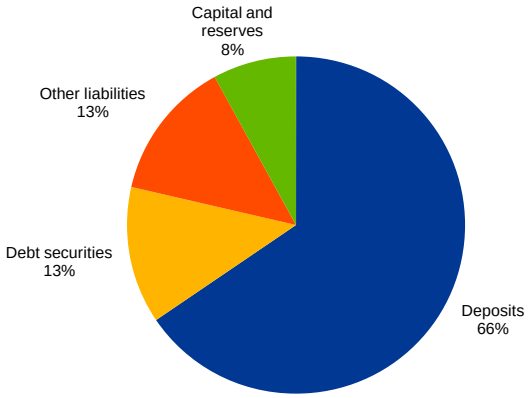


Source: Statistics Bulletin - Euro Area Statistics Online.
* This coincides with the euro area, since no EU Member States outside the euro area have joined banking union yet.

Chart 2

Aggregate banking union* banks' liabilities breakdown

(as of the second quarter of 2015)



Source: Statistics Bulletin - Euro Area Statistics Online.
* This coincides with the euro area, since no EU Member States outside the euro area have joined banking union yet.

Only the same level of confidence in the safety of deposits across the euro area will lead to a truly single banking system, which is the necessary complement to the single currency. Full monetary union and a single banking system cannot exist without "single money", which has to be fungible whatever form it takes, independent of its location within the euro area.[28] Therefore, the concept of "single money" requires deposits to inspire the same degree of confidence, regardless of the Member State of the banking union where they are located. An EDIS would be an effective tool to promote a uniform level of depositor confidence and to help ensure the true "singleness" of the euro.

A deposit insurance fund cannot be designed so as to be able to meet payout requests for all deposits in a banking system at the same time, implying that an explicit or implicit public backstop plays a crucial role to preserve confidence. Deposit insurance is both an ex ante tool to enhance confidence and

[28] Schoenmaker and Wolff (2015) showed the standard deviation of interest rates on deposits from non-financial corporations and households across the euro area normalised by the German rate, from 2003 to 2015; a very large increase of this indicator after the 2008 financial crisis suggests that the location of banks in different euro area countries is likely to have been playing a significant role in determining the riskiness of banks' deposits. See Schoenmaker, D. and Wolff, G., "Options for European deposit insurance", VOX, CEPR's Policy Portal, 2015.

prevent bank runs[29] and an ex post tool to protect against adverse consequences of individual bank failures – but not against systemic events. In this context, it is important to note that the harmonised target levels of the national deposit guarantee schemes have to be pre-financed according to the European Deposit Guarantee Scheme Directive (the "DGS Directive" 2014/49/EU, which had to be implemented in national law in 2015 and has been transposed by many, but not all, Member States) in order to increase confidence in national deposit insurance schemes. But still, national DGSs can only meet a limited amount of payout requests, and in the case of a large or systemic crisis other options have to be explored, including the possible use of a public backstop.

Therefore, the credibility of a national deposit guarantee scheme is influenced by the fiscal strength of the respective sovereign, as the DGS Directive requires that Member States must ensure that DGSs have in place adequate alternative funding arrangements to enable them to obtain short-term funding to meet claims against those DGSs. [30] An implicit assumption has always been that a public backstop will be provided if ultimately needed.[31] Thus, as long as the DGS and the backstop are national, there is still a link between banks and their sovereign. Although the harmonisation of the features of DGSs (via the DGS Directive) may serve well the purpose of creating common rules and attuning schemes across Member States, it does not change the national nature of the backstop, i.e. the ultimate responsibility of Member States to temporarily bear the burden in case of a large or systemic crisis. Therefore, mere harmonisation of national schemes is insufficient to break the link between banks and their respective sovereign, and the effectiveness in protecting deposits remains connected to the creditworthiness of their sovereign. In this regard, the sovereign-bank nexus is one of the main causes of an uneven playing field.[32]

Member States with a less favourable fiscal position may be perceived as unable to provide a credible backstop to a national DGS in case of a systemic

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29 The seminal paper by Diamond and Dybvig (1983) showed that, in the case of panic-based runs, depositors have an incentive to run on their bank if they expect a crisis, out of fear that all other depositors will do the same. Deposit insurance is a key device to reassure depositors that they will be reimbursed regardless of the withdrawal requests of other depositors, thereby preventing banks runs and panic. The Diamond and Dybvig paper is based on a number of assumptions, including the absence of moral hazard risk and the full credibility of the deposit insurance, i.e. governments will always be able to raise the financial resources to reimburse depositors. The latter hypothesis is not very realistic, and the fiscal strength of the sovereign will determine the credibility of the deposit insurance protection, as discussed in this chapter. See Diamond, D. W. and Dybvig, P. H., *Bank Runs, Deposit Insurance, and Liquidity*, University of Chicago Press, 1983.

30 Article 10(9).

31 Even though any public backstop should be designed to be fiscally neutral over the medium term (i.e. recouping any payout from the financial sector via ex post contributions), this cannot break the link between deposit insurance credibility and fiscal strength of the sovereign in the short term.

32 The sovereign-bank nexus and the ensuing uneven playing field can be exacerbated if, for example, the fiscal strength of a sovereign has been weakened by previous bank bailouts. This, in turn, might hit the domestic banking system through an erosion of the value of domestic sovereign bond holding as well as of the explicit government guarantees or an implicit safety net. For an empirical analysis of the link between bank bailouts and sovereign credit risk see Acharya, Drechsler and Schnabl (2014); on the "doom loops" between banks and sovereigns, see Cooper and Nikolov (2013) and Farhi and Tirole (2015). Acharya, V. V., Drechsler, I. and Schnabl, P., "A Pyrrhic Victory? – Bank Bailouts and Sovereign Credit Risk", NBER Working Paper, 2011; Cooper, R. and Nikolov, K., "Government Debt and Banking Fragility: The Spreading of Strategic Uncertainty", NBER Working Paper, 2013; and Farhi, E. and Tirole, J., "Deadly Embrace: Sovereign and Financial Balance Sheets Doom Loops", working paper, 2015.

crisis, which carries the risk of negatively impacting depositor confidence.[33] This financial disparity across backstops of national DGSs may create adverse incentives, contributing to market fragmentation and competitive distortion. Notably, the banks' ability and willingness to expand to other Member States and their decisions in terms of group structure (branches or subsidiaries) could be affected.[34] In addition, depositors in Member States with a less favourable fiscal position may move their deposits to banks located in, or guaranteed by, Member States with a more favourable fiscal position. This can undermine the competitiveness of banks in Member States with a less favourable fiscal position in normal times, as well as amplify deposit outflows in times of turmoil, negatively impacting financial stability.

Data on deposits of households and non-financial corporations in selected euro area Member States (Charts 3-7) suggest that uneven levels of confidence in national DGSs and their backstops might indeed play a relevant role in driving deposit inflows and outflows, together with other factors including broader economic and financial conditions. In times of crisis, deposits from foreign euro area counterparties tend to leave Member States with a less favourable fiscal position and to accumulate in Member States with a more favourable fiscal position. Deposits of domestic counterparties are overall less volatile, even though in some of the Member States with a less favourable fiscal position they also contract in crisis times, signalling a potential lack of confidence.

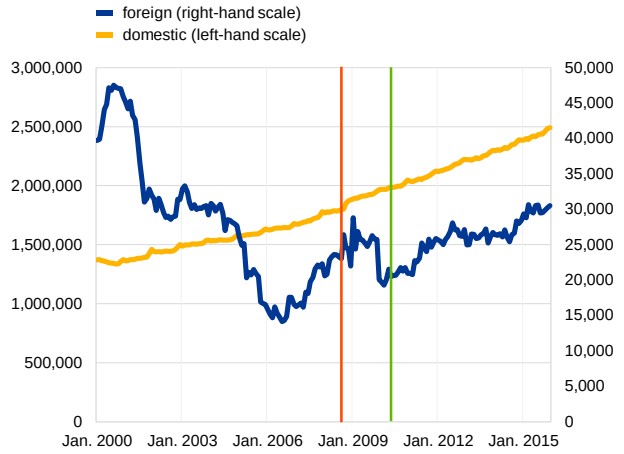
[33] Recent experiences of bank and sovereign crises, for example in Ireland, have shown that the credibility and effectiveness of public guarantees strictly depend on the strength and credibility of the sovereign. See König, P., Anand, K. and Heinemann, F., "The 'Celtic Crisis': Guarantees, Transparency and Systemic Liquidity Risk", Staff Working Paper 13-31, Bank of Canada, 2013.

[34] For example, banks headquartered in Member States with a more favourable fiscal position may choose to operate via branches in Member States with a less favourable fiscal position, benefiting from the competitive advantage of their home DGS which is backed by an in principle more solid fiscal backstop, while banks headquartered in a Member State with a less favourable fiscal position may choose to operate via subsidiaries in Member States with a more favourable one to be able to offer the same stronger level of (perceived) protection.

Chart 3

Deposits at MFIs resident in **Germany** of euro area households and non-financial corporations

(January 2000 – December 2015; EUR million)

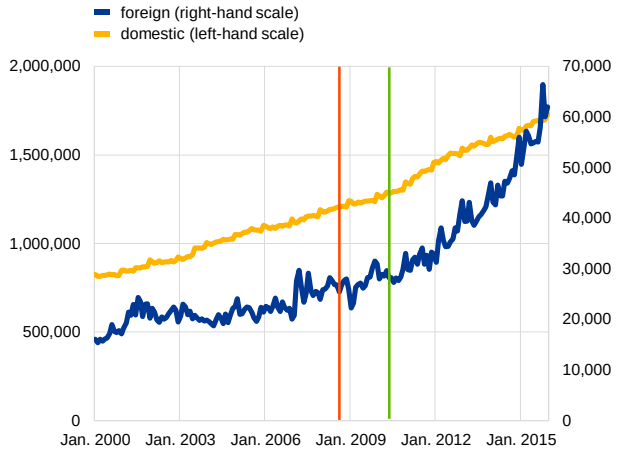


Source: ECB Statistical Data Warehouse (BSI statistics).
Notes: The orange line indicates the beginning of the global financial crisis in September 2008, while the green line marks the EU-IMF agreement on a bailout package for Greece in May 2010.

Chart 4

Deposits at MFIs resident in **France** of euro area households and non-financial corporations

(January 2000 – December 2015; EUR million)

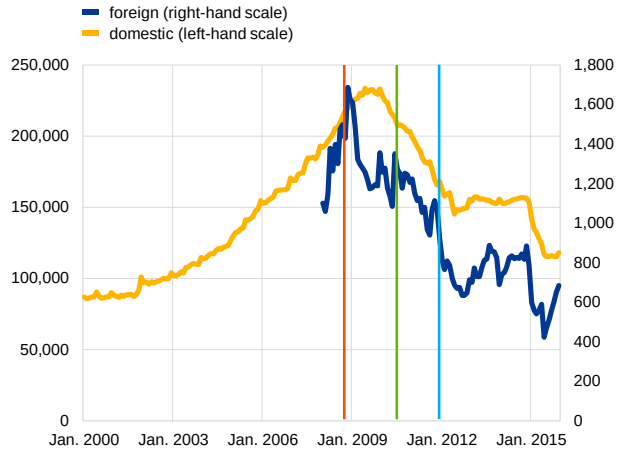


Source: ECB Statistical Data Warehouse (BSI statistics).
Notes: The orange line indicates the beginning of the global financial crisis in September 2008, while the green line marks the EU-IMF agreement on a bailout package for Greece in May 2010.

Chart 5

Deposits at MFIs resident in **Greece** of euro area households and non-financial corporations

(January 2000 – December 2015; EUR million)

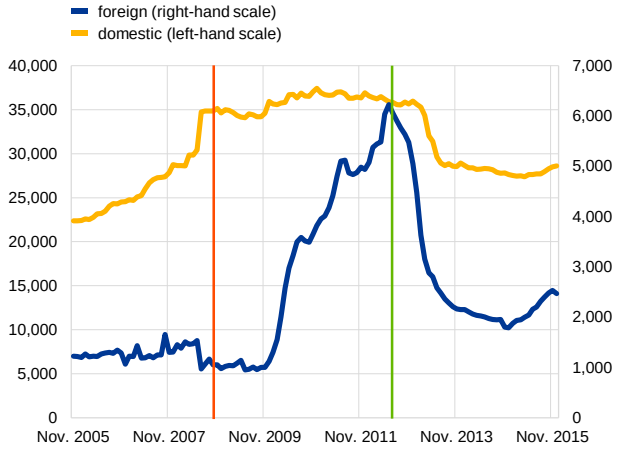


Source: ECB Statistical Data Warehouse (BSI statistics).
Notes: The orange line indicates the beginning of the global financial crisis in September 2008. The green line marks the EU-IMF agreement on a bailout package for Greece in May 2010.
The light blue line indicates the resignation of the Greek Prime Minister George Papandreou in November 2011 – acute phase of the euro area sovereign debt crisis.
Foreign deposit series start from January 2008 due to data availability.

Chart 6

Deposits at MFIs resident in **Cyprus** of euro area households and non-financial corporations

(November 2005 – December 2015; EUR million)

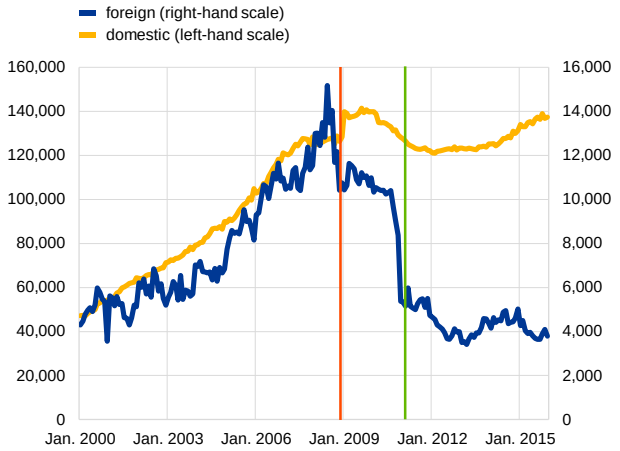


Source: ECB Statistical Data Warehouse (BSI statistics).
Notes: The orange line indicates the beginning of the global financial crisis in September 2008, while the green line marks the request by the Cypriot government for a euro area bailout in June 2012.

Chart 7

Deposits at MFIs resident in **Ireland** of euro area households and non-financial corporations

(January 2000 – December 2015; EUR millions)



Source: ECB Statistical Data Warehouse (BSI statistics).
Notes: The red dashed line indicates the beginning of the global financial crisis in September 2008, while the green dashed line marks the EU-IMF bailout programme in November 2010.

Only an EDIS coupled with a credible common backstop will underpin depositor confidence in the banking union as a whole, notably by offering protection also in the case of "large local shocks"[35] **which could otherwise overburden national DGSs.** This would reinforce depositor confidence, reduce the risk of bank runs and increase financial stability across the banking union. This important stabilising effect for the banking union as a whole, and thus the entire EMU, will be to the benefit of all of the participating Member States.

A credible common public backstop for an EDIS is necessary to reliably finance a payout event, also in the unlikely event that the available ex ante funds in the scheme are insufficient and the outstanding amount cannot be covered by ex post contributions from the banks in a timely manner. An EDIS with a common backstop will reduce the risk of panic withdrawals from banks in participating Member States and support a proper functioning of the internal market. Any use of a common public backstop needs to be fiscally neutral over the medium term, by recouping any expenses during the bank insolvency proceeding – and this is another reason why insolvency laws should be harmonised – and from the banking sector via ex post contributions. This is key to reducing the potential risks of moral hazard.[36]

Stronger and safer banking systems could also benefit from an EDIS through several channels. Indeed, the lack of a uniform level of depositor confidence across the banking union might create **dangerous contagion mechanisms**, which may jeopardise financial stability even in Member States with a more favourable fiscal position. As a consequence, banking systems in the latter would also be negatively affected by an unstable EMU, which could be the result of an unfinished banking

35 "Large local shock" means a shock in one specific (part of a) Member State's banking sector.

36 Moral hazard is not related only to the presence of a backstop: it is, more broadly, a possible effect of deposit insurance systems, whereby the guarantee might eliminate or reduce the incentives for depositors to effectively exercise monitoring and market discipline and set the incentives for banks to free-ride on deposit insurance and engage in excessively risky activities. Demirgüç-Kunt and Detragiache (2002) found that explicit deposit insurance tends to increase the likelihood of banking crises (particularly where bank interest rates are deregulated and the institutional environment is weak). See Demirgüç-Kunt, A. and Detragiache, E., "Does deposit insurance increase banking system stability? An empirical investigation", *Journal of Monetary Economics*, 2002. Demirgüç-Kunt and Huizinga (2004) found that explicit deposit insurance lowers market discipline on bank risk-taking. See Demirgüç-Kunt, A. and Huizinga, H., "Market discipline and deposit insurance", *Journal of Monetary Economics*, 2004. Allen, Carletti, Goldstein and Leonello (2015) emphasise the implications of different types of crisis – fundamental-based crisis versus panic-driven crisis – for the effects of deposit insurance on banks' risk-taking choices. Moral hazard effects, however, crucially depend on design features of deposit insurance schemes, such as the type of funding (ex ante or ex post), the coverage level and the approach to determine deposit insurance fees. Risk-based deposit insurance fees calculated on the basis of banks' risk profile (rather than flat fees for all banks) can help tackle moral hazard by making banks pay a fair price for the risks they are taking. See Allen, F., Carletti, E., Goldstein, I. and Leonello, A., "Moral Hazard and Government Guarantees in the Banking Industry", *Journal of Financial Regulation*, 2015.

union. Secondly, the **pooling of risk and increased diversification** is expected to bring advantages also for banking systems in Member States with a more favourable fiscal position. Thirdly, an EDIS would need to follow the **"polluter pays" principle** by requiring riskier banks to pay higher contributions, based on a banking union-wide methodology for risk assessment. In this context, banks perceived as more resilient would have to pay lower fees, reflecting their lower risk profile, while benefiting from the strong mutualised safety net. Finally, it is not a sustainable situation if, in the absence of an EDIS, banks located in Member States with a more favourable fiscal position **benefit from an implicit subsidy**, given the more credible public backstop behind their national DGS and the ensuing assumption that deposits will be safer simply because of their location. This is a competitive advantage which is not based on better business models or an overall sounder economic environment, but just derives from the perceived fiscal strength of a given Member State. This goes beyond incentivising "healthy" competition between Member States to provide a sound business environment to their banks by having appropriate economic policies in place and a solid fiscal position, because the difference derives directly from that (perceived) fiscal strength of the sovereign and not from sound policy choices. Such market distortion would in the longer term lead to fragmentation and erode the unity of the banking union and thus EMU as a whole.

On the other hand, situations have to be avoided in which Member States with a more favourable fiscal position, a sound banking system and well-capitalised DGSs could have to pay for the shortcomings of other Member States regarding their policy choices. Such circumstances would lead to fears of a mutualisation of losses which would only be justified if Member States can credibly exert control over each other's fiscal discipline and economic policies. Such concerns can be partly addressed by setting clear rules for an ex ante funding path regarding the national DGSs joining the EDIS, which have to be respected in order to benefit from the system as provided for in the Commission's proposal. Moreover, the above-mentioned risk-reduction measures outlined in the Commission's Communication and progress towards further integration of economic and fiscal policies at the European level are needed and should be pursued in parallel to the EDIS.

An EDIS could allow for benefits of diversification and is more likely to be fiscally neutral over the medium term for the banking union as a whole, as risks are spread more widely across a larger pool of financial institutions. Although the risk of encountering a payout event also increases with the increase in covered institutions, a larger system should lead to benefits of diversification, given that crises might hit only one or a few banking systems at a time, therefore reducing the likelihood that individual payout events will overwhelm the capacity of the system. Moreover, the capacity of the system to rebuild resources after a payout event has occurred will be enhanced, given that any single payout event will be less significant compared with the overall funding capacity.

Moreover, an EDIS would reduce the complexity of the present heterogeneous safety nets and replace the need for close interaction and cooperation between national DGSs in cross-border bank failures, which entails considerable operational

risks in resolution. Being a truly "single point of contact" for the management of a potential payout by national DGSs to the depositors in a crisis, an EDIS will supplement swift crisis management by the SRM, thus helping to stabilise the situation and to limit contagion.

Finally, an EDIS should build on and ensure the use of best practices (e.g. adequate funding and timely repayment of depositors, notably to the extent that these measures are not yet harmonised), as well as consistency and transparency in the area of depositor protection throughout the banking union. It will thus promote depositor confidence irrespective of the location of a bank, fostering a euro area-wide level playing field and furthering financial integration.

1.1.3 Legal dimension

The DGS Directive has already catered for the harmonisation of a number of features of national DGSs which will help in setting up an EDIS. For instance, the DGS Directive already provides for a harmonised target level for the pre-funding of the DGS (0.8% of covered deposits by 2024 or – on an exceptional basis – a reduced target level of 0.5% with approval by the Commission[37]), as well as the level of deposit coverage (€100,000), the type of financing, the scope of eligible deposits, the repayment period, and calls for effective cooperation between DGSs. In addition, the DGS Directive also introduces a risk-based DGS contribution system, forcing the riskier banks to pay higher contributions. Moreover, in line with the Bank Recovery and Resolution Directive (BRRD), national insolvency laws grant priority for claims of covered depositors and of the DGS based on subrogation rights.[38] However, for the time being, the creditor hierarchy more broadly remains a matter of national law, i.e. the ranking of creditor claims depends on the different creditor categories provided for in national law and their respective order. For example, some Member States recently established priority for depositors' claims more broadly. To provide for a level playing field in this respect, further harmonising national insolvency laws is an important element in the context of the broader discussion on completing the banking union, as also pointed out in the Commission's Communication.

Despite the improvements brought by the DGS Directive, harmonising and ensuring adequate funding levels of DGSs, a mere network of national DGSs is not sufficient to complete the banking union. As illustrated by events in the recent financial crisis, low levels of confidence in national depositor protection, in particular as regards the level of coverage, scope of covered depositors, type of funding and explicit or implicit backstops, can undermine financial stability. The DGS Directive and the SRM set minimum requirements which reduce these differences, but are insufficient to entirely level the playing field. Given that a network of national DGSs will thus not be able to achieve the same level of depositor confidence in a

[37] Such a target level reduction is no longer available if the DGS wants to benefit from the EDIS.

[38] Besides this "super priority" for covered deposits, the BRRD also provides for a "simple priority" for eligible deposits of natural persons and micro, small and medium-sized enterprises.

truly single banking system within the banking union, it can be argued that an EDIS is necessary for the establishment and functioning of the internal market.

The likelihood of using DGS funds for payout purposes in a bank's failure under the current resolution framework is reduced for several reasons. At the same time, the DGS has a role in resolution financing as it has to contribute to financing resolution actions up to the amount which it would have had paid out in insolvency (see Article 109 of the BRRD and Article 79 of the Single Resolution Mechanism Regulation, SRMR). However, covered deposits will be shielded from losses notably by two related factors. First, the resolution framework will require banks to maintain a sufficient loss-absorbing capacity via a minimum requirement of own funds and eligible liabilities (MREL). Second, the BRRD has enhanced the priority of covered deposits in the ranking of creditors in insolvency. Thus, the use of DGS funds for absorbing losses in resolution will be limited when banks meet MREL and the bail-in tool is applied.

1.2 Possible challenges and ways to address them

An EDIS is a crucial component of the banking union, but additional measures are needed for the smooth functioning of the banking union and EMU. In this respect, it is welcome that the Commission's Communication issued together with the EDIS proposal provides for other measures to reduce risk in the financial sector. These further steps beyond the establishment of an EDIS are required for a well-performing banking union. It is important to highlight that all these measures should be taken in parallel to ensure a level playing field. It is notably crucial for the functioning of the banking union that all relevant Union Acts, in particular the DGS Directive and the BRRD, are implemented by all Member States and that Member States make these common rules operational in their legal systems in full compliance with the spirit of the law.

An EDIS might lead to potentially large transfers between national banking sectors, if a "large local shock" materialises. This may also (at least temporarily) lead to burden-sharing between Member States if a public backstop is required or fiscal redistribution effects occur[39]. However, the financial exposure of the EDIS is considerably reduced by the priority ranking of covered deposits in the insolvency hierarchy and the overall limits to the EDIS participation in resolution, which should not exceed the losses it would have incurred in a winding-up under normal insolvency proceedings. The shareholders' financial position – and thereafter claims by other unsecured creditors – will first have to be written down via bail-in in resolution[40] or during loss allocation in insolvency proceedings before any contribution will be required from the EDIS. In addition, the new crisis management and resolution tools are specifically designed to intervene early, preserve value and

[39] Meaning that although national banking sectors will pay back any funds used from a public backstop via their ex post contributions, these contributions may lead to banks making less profit and paying less taxes or shifting the additional costs to their domestic customers.

[40] It should be noted that to enter resolution, there needs to be a public interest in such resolution. Otherwise a failing bank will be liquidated.

achieve a least-cost resolution, so that overall losses are minimised. Alongside other reforms, the implementation of adequate levels of MREL aims to ensure sufficient loss-absorbing capacity in the banks. Moreover, a well-framed additional risk sharing across the banking union is justified insofar as the control over supervision and resolution has been moved to the European level, i.e. to the SSM/SRM.[41]

Possible adverse incentives or moral hazard risks may arise, if risks accumulating in a national banking sector are shared by all banks across EMU. The design of an EDIS will need to minimise these drawbacks, e.g. via risk-adjusted contributions set on the basis of a banking union-wide methodology, through an appropriate phasing-in and by disqualifying DGSs from EDIS coverage if they do not comply with their obligations under the framework. Considerable risk sharing across the euro area is already enshrined in the SRM, notably via the Single Resolution Fund (SRF), while the SSM contributes to reducing the risks emanating from the banking system. The EDIS will be the logical complement to this system. In addition, the SSM is meant to ensure a consistent and harmonised level of supervision, also for banks directly supervised by national authorities. However, incentive problems could persist in light of other national policies which could lead to an accumulation of risks, for instance via taxation or economic policies (e.g. leading to housing bubbles).

The overall framework for EMU addresses (e.g. via the new macroprudential toolkit) and needs to continue addressing these weaknesses, for example via the fiscal and economic governance framework. The further measures to reduce risks in the banking union outlined in the Commission's Communication are of considerable importance in this respect. Thus, pursuing a parallel process of phasing in an EDIS and progressing on further risk-reduction measures and on integrating economic and fiscal policies at the European level is the best way forward to ensure a stable banking union.

2 Key features of an EDIS and their implementation in the Commission's proposal

The Commission's proposal is a milestone in setting up an EDIS for the banking union. To achieve the above-mentioned benefits and limit possible drawbacks of an EDIS, its design needs to encompass several features. The following section outlines the key elements of the Commission's proposal and how it implements the key factors for the success of an EDIS.

2.1 Key elements of the Commission's proposal

The Commission's proposal provides for a comprehensive framework for an EDIS and its setting-up in three successive stages, i.e. reinsurance, co-insurance and full insurance (see Box 1 for details). The reinsurance stage will last for the first

[41] See Section 1.1 above.

three years. During this stage, up to 20% of the liquidity shortfall and up to 20% of excess losses of a given national DGS are covered by the Deposit Insurance Fund (DIF), which is the fund for the EDIS set up from its start. Subsequently, the second stage will consist of a co-insurance scheme, where the DIF will cover a gradually increasing share (20%, 40%, 60%, 80%) of the liquidity needs and losses of participating DGSs until – in the final stage – national DGSs are fully insured at the European level. The proposal would amend the SRM Regulation, entrusting the responsibility for the EDIS in general and for the DIF in particular to the SRB.

Contributions to finance the DIF would be directly levied on banks and would be risk-based. After the re-insurance period, the risk-based contributions will be calculated on the basis of a banking union-wide methodology, hence relative to all other participating credit institutions rather than just the national institutions.

Importantly, national DGSs will only be able to benefit from the EDIS if they comply with their obligations under the draft regulation and the DGS Directive, notably to reach their target level in accordance with a prescribed funding path. This is an important element to provide for safeguards, avoid free-riding and mitigate moral hazard. However, given the eventual consequences for depositors, disqualification of a national DGS should only be considered where proportionate to the breach committed and only after the DGS in question has failed to comply with interim enforcement actions. Moreover, in case of any disqualification it needs to be ensured that the overarching aim of ensuring depositor protection is not compromised. This requires that depositors are in no event worse off than compared with the protection they would have had if their national DGS was not part of the EDIS and the contributions paid by their national banks were accumulated at national level.

Box 1

Steps proposed by the Commission in the establishment of an EDIS

Stage 1 (three years from July 2017 to July 2020): a **reinsurance scheme** will cover up to 20% of the liquidity shortfall and up to 20% of the excess loss of a participating DGS whenever payouts and losses exceed the DGS's available financial means. The liquidity funding takes the form of a loan which the DGS has to pay back, while the reinsured part of the excess loss, i.e. 20%, will not be paid back. There are additional elements to limit moral hazard: (i) there is an additional cap to the reinsurance funding of 20% of the DIF's initial target level and ten times the target level of the insured DGS, whichever is lower; (ii) it is not the existing level of liquidity in a DGS that determines whether and to what extent it can access the EDIS, but the hypothetical level of liquidity the DGS should have if it had complied with all its obligations (e.g. collecting ex ante contributions to reach the target level); and (iii) other sources available to the DGS have to be tapped before using the EDIS (e.g. raising short-term ex post contributions) and the SRB would monitor the way the DGSs pursue their claims during insolvency proceedings.

Stage 2 (four years following reinsurance until July 2024): a **co-insurance scheme** is set up where the DIF will cover a gradually increasing share (20% in year 1, 40% in year 2, 60% in year 3, 80% in year 4) of the liquidity needs and losses of participating DGSs. Co-insurance kicks-in "as of the first euro", so independently of the national DGSs' resources being exhausted. As it is the DGS which

has the claim against the DIF, any payout will be channelled through the national DGS. While the liquidity provided to the DGS has to be repaid, this is not the case for the covered loss, which will be shared pro rata between the national DGS and DIF in line with the gradually increasing coverage ratio. No cap is provided for the amount due by the DIF; however, in case of "broader financial instability or system-wide events", a procedure is foreseen for how the Board may distribute the available financial means (i.e. the contributions already collected in the DIF ex ante) between the DGSs concerned. Any remaining financial exposure would need to be covered via ex post contributions or alternative financing means.

Stage 3 (kicks in after the seven years of re- and co-insurance): in the **full insurance scheme**, the EDIS covers all liquidity needs and losses of participating DGSs, i.e. 100% mutualisation with national DGSs being fully insured by the DIF. Also in this case there is no cap provided for the amount due by the DIF. However, also in this stage the same distribution procedure as in stage 2 applies for the available financial means in case of "broader financial instability or system-wide events".

2.2 Key features needed to reap the benefits of an EDIS

The proposal establishes a single EDIS, which is needed to reap the benefits outlined above in terms of depositor confidence, while proposing an adequate phasing-in. Phasing-in is notably needed to take into account the differing starting positions of national DGSs and to allow further progress in levelling the playing field in the banking union and to further reduce risks in the banking sector. To this effect, the proposal provides for a progressive mutualisation of contributions and an increase in the share of depositor payouts which will be funded by the EDIS.

It is essential that in the final stage the EDIS will be a truly single system, ensuring uniform depositor protection throughout the entire banking union. This requires a clear legal obligation for the EDIS to meet all resource needs related to depositors' claims in the steady state (full insurance stage). The Commission's proposal states that "the participating DGS shall be fully ensured by the EDIS", which seems to stipulate the legal obligation for the EDIS towards the participating DGSs to meet all resource needs related to depositors' claims, independent of whether or not its ex ante collected available financial means are sufficient, i.e. by reverting to ex post contributions or alternative funding means. However, it would be beneficial to clarify this, by highlighting that the envisaged pro rata payout in case of several payout events and insufficient ex ante collected available financial means only concerns the distribution of the immediately available financial means and does not discharge the EDIS from its obligation to fully cover all expenses of the participating DGSs. Even more importantly, the same legal obligation should be clarified with respect to the limited share which the EDIS will have to cover in the co-insurance stage.

The EDIS needs to cover all recognised national DGSs and credit institutions affiliated to those schemes in the participating Member States, as proposed by the Commission. However, all credit institutions with access to EDIS resources

should be regulated and supervised on the basis of CRDIV/CRR. This is important to ensure a level playing field and consistency with the scope of the SSM and SRM. Excluding some banks from the joint safety net could lead to considerable competitive distortion and weaken financial integration. Moreover, past crisis experience has shown that risks can also accumulate in small banks all operating with similar business models, which can lead to financial stability concerns and warrants a uniform safety net. The Commission's proposal therefore rightly acknowledges this key design feature and envisages an all-encompassing scope for the EDIS.

The "single structure" of the EDIS, as proposed by the Commission, is compatible with the SSM and the SRM, which are not two-tier systems. The quality of being one single system derives from the fact that the SSM ensures the same level of supervisory consistency across all banks, not only the significant institutions subject to direct supervision by the ECB. Thus, all banks should be subject to an equal level of supervisory scrutiny. Moreover, the ECB can at any time assume the direct supervision of less significant banks to ensure high supervisory standards. Similarly, all banks are covered by the SRM and the SRB is responsible for the effective and consistent functioning of the SRM as a whole. As in the SSM, the SRB can decide at any time to exercise all relevant powers under the SRM Regulation with respect to any bank, independent of its size. The SRB will in any event be responsible for resolving any bank, regardless of its size, if the resolution conditions are met and the resolution requires funding from the SRF.

A strong authority at the European level is required to ensure the credibility of the EDIS, which should be independent from political influence.[42] The Commission's proposal draws on already established institutional structures, namely the SRB, which will decide on risk-adjusted contributions, monitor contribution inflows and manage payout cases. Using the SRB has the advantage of allowing for swift operational reliability and smooth interaction of the resolution and deposit protection functions if required. Thus, it seems to be a good option to assign the responsibility for resolution and deposit insurance to the same authority, namely the SRB, as suggested in the Commission proposal. The US Federal Deposit Insurance Corporation (FDIC) would be an example of a deposit insurance agency also tasked with resolution functions. Close cooperation and interaction between the resolution and deposit insurance functions is especially important in a resolution scenario, where the DIF and the SRF may both have a financing role.

Notably the SRB could administer the SRF and the DIF together and synergies seem to exist when combining responsibilities for resolution and deposit insurance.[43] While resources of the funds for resolution and deposit protection should not be commingled to ensure that funds for the EDIS are not potentially "consumed" for resolution purposes, jointly administering and investing the funds

[42] By way of comparison, the US FDIC is also an independent institution. Its independence is guaranteed by the fact that it receives no Congressional appropriations; it is funded by premiums that banks and thrift institutions pay for deposit insurance coverage and by earnings on investments in US Treasury securities.

[43] For example, better knowledge of when to choose between resolution or insolvency and, when applicable, of how to possibly use DGS contributions for resolution purposes.

may lead to a cost-saving approach in the future. Moreover, the EDIS has to cooperate closely with the SRB and national resolution authorities, both in resolution planning and in resolution implementation. In particular, it will be important to plan and have a common understanding of when the DGS may have to make depositor payouts or contribute to resolution, respectively. This is facilitated by the proposed institutional arrangement. However, sufficient safeguards have to be in place to address potential conflicts of interest, e.g. when deciding whether to use funding from the SRF or the DIF.

An adequate level of pre-funding for the EDIS needs to be established, which is sufficiently high to provide credible protection against "large local shocks". The Commission proposes an ultimate target level of the DIF of 0.8% of covered deposits of all credit institutions covered by participating DGSs, to be reached as of July 2024, which is in line with the general national target pre-funding level of 0.8% of covered deposits in the DGS Directive. Based on estimates of the total amount of covered deposits held by residents in the euro area (approximately €5.7 trillion[44]), this would lead to a size of the DIF of approximately €45 billion. When assessing the appropriateness of this target level, it has to be noted that the DIF will coexist with the SRF, which itself has a target level of 1% of covered deposits. Thus, together there will be the amount of 1.8% of covered deposits dedicated to resolution and deposit insurance purposes, corresponding to approximately €103 billion.

In comparison, the cumulative target size of the SRF and the DIF in Europe of approximately €103 billion appears broadly in line with the US FDIC target, and is thus likely to underpin credibility and confidence. The US FDIC deposit insurance fund had a balance of USD 70 billion in the third quarter of 2015, corresponding to 1.09% of the total amount of insured deposits (USD 6.4 trillion). The FDIC is mandated to achieve a minimum designated reserve ratio (DRR) of 1.35% of insured deposits by 2020 and seeks to build up 2% in the long run. In the wake of two financial crises in its history, the FDIC decided to target a 2% long-term minimum DRR as a good fund size able to prevent the fund from being exhausted. Based on the current volume of insured deposits, a 2% DRR would translate into a USD 128 billion fund. In the US, the deposit insurance fund is also used to perform resolution functions; thus, its target size should be compared with the cumulative target size in the steady state of both the SRF and the DIF.

However, under the US scheme, on top of the ex ante funds there is a credible backstop for systemic cases of USD 500 billion under the Orderly Liquidation Authority[45], which is so far missing in the banking union. The European Stability

[44] This estimate is based on deposits of euro area residents only. Total deposits of non-euro area residents amount to €2.8 trillion, of which about €1.8 trillion are held by banks. Since the percentage of covered deposits for non-euro area residents is not available, they are not considered in the estimate.

[45] According to the resolution framework in the US, the Orderly Liquidation Authority provides a backup authority to place a failed or failing systemically important financial institution (SIFI) into an FDIC receivership process. The FDIC's Orderly Liquidation Authority is intended to ensure the rapid and orderly resolution of a SIFI when no viable private sector alternative is available and a resolution through the bankruptcy procedure would have serious adverse effects on US financial stability. The backstop of USD 500 billion can only be tapped in a so-called "three keys procedure", i.e. the Treasury Secretary, in consultation with the US President, finds that the use of the OLA is appropriate, and the Federal Reserve Board as well as the FDIC Board also recommend such action.

Mechanism (ESM) has a lending capacity of €500 billion for financial assistance to member countries in distress. However, contingency funding for purposes of depositor protection can currently only be granted via the Member State. Besides having a common public backstop, which is currently missing from the Commission's proposal, the EDIS should be able to borrow from the market, which is notably of relevance in the transition phase, while funds are still building up. In order to promote efficient repayment of depositors, in addition to adequate financial resources, significant infrastructure is needed that allows for the prompt identification of covered deposits in the failing bank and ensures the compatibility of IT systems.

Risk-based ex ante contributions are required to ensure fair allocation and a robustly funded EDIS. For an EDIS, a common European methodology would need to be developed and administered centrally. A bank's individual contribution should be sufficiently risk-adjusted according to its individual, relative risk compared with all banking union banks. The Commission's proposal introduces such a banking union-wide methodology as of the co-insurance phase, which is crucial to ensure fair allocation and a robustly funded EDIS. The stronger the risk-based element, the better the "polluter pays" principle will be respected and the easier it will be to convince Member States that their banking sectors will not suffer from risk sharing with banking sectors perceived as less resilient. It is therefore crucial that the determination of an individual bank's risk accurately reflects all micro- and macroprudential factors which have an impact on the bank's soundness and its likelihood of encountering a resolution or depositor payout event. An important issue to consider will be whether, and if so to what extent, the methodology to determine the level of contributions should also reflect the likelihood to trigger deposit insurance for a credit institution, and especially the likelihood that it should be put into liquidation as opposed to resolution. The experience from designing the common methodology for the banks' contributions to the SRF should be drawn upon, especially with regard to how to handle potential differences in reporting and accounting standards. This is another area in which further harmonisation is warranted.

A fiscally neutral common public backstop for the EDIS at the latest as of the full insurance stage is important to ensure a uniformly high level of confidence in deposit protection and to effectively weaken the bank-sovereign link. If the accumulated resources of the DIF were to be insufficient to pay out to depositors, the EDIS would as a first step raise additional ex post contributions from the banking sector to cover the shortfall. Only if such ex post contributions cannot be collected quickly enough to ensure a timely payout, alternative funding sources should be envisaged and ultimately a common public backstop should be available, thus providing additional confidence that depositors will be protected under all circumstances. In order to ensure that the backstop is fiscally neutral over the medium term, any public support needs to be recouped from the banking sector via ex post contributions. As significant ex post contributions imposed on the banking sector within a short time frame may have a pro-cyclical effect, this ability may not be without limit: in line with the SRF, ex post contributions of banks could be limited to three times their yearly ex ante contributions. Synergies (such as lower administrative costs and the pooling of risks and resources) that could be achieved

by using the same backstop mechanism as for the SRF should be explored. For the transition phase, a bridge financing mechanism should be in place to enhance the borrowing capacity of the EDIS. The ESM appears to be a suitable option for a common public backstop in the transition phase and the steady state.[46] The ESM rules would have to be amended by a unanimous decision of the Member States to cater for such a possibility.

[46] Schoenmaker and Wolff (2015) proposed the establishment of a European Deposit Insurance and Resolution Authority with a European Deposit Insurance and Resolution Fund, having the ESM as a fiscal backstop. See Schoenmaker, D. and Wolff, G., "Options for European deposit insurance", VOX, CEPR's Policy Portal, 2015.

Chapter 3
Eurosystem activities for financial integration

The completion of banking union was a key policy priority for the ECB during 2015. Complementing the Single Supervisory Mechanism, the Single Resolution Mechanism became operational on 1 January 2015, which has a Single Resolution Fund available to it since 1 January 2016. In parallel, the ECB also contributed to reducing risks further within the banking sector, in particular by launching a project to level the playing field for banks by harmonising the exercise and, in some cases, reducing the timeframe for exercising national options and discretions in the prudential regulatory framework granted to competent authorities. Progress in establishing a capital markets union, as an important complement to banking union, was another policy priority. The ECB welcomes the action plan presented by the Commission and supports the accompanying actions, notably the proposals for simple, transparent and standardised securitisation. Parts of the foundation for a capital markets union was shaped on 22 June 2015, when the single settlement engine for securities, TARGET2-Securities (T2S), was launched by the Eurosystem. The sixth T2S harmonisation progress report published in March 2016 reflects the progress achieved towards integrating the securities post trade environment in 21 European markets. To foster financial integration in Europe the ECB supports the harmonisation of data semantics, structure and flow by enforcing globally recognised standards to financial information. In this context, the ECB is working on an internal Single Data Dictionary to produce clear, non-overlapping data definitions across all regulatory frameworks. Moreover, important progress was made with respect to the AnaCredit project, 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 as regards monetary policy and macroprudential supervision. A draft proposal for a regulation on the collection of granular credit and credit risk data was approved in principle by the Governing Council on 18 November 2015 and was published in early December on the ECB's website. Finally, the ECB continued to act as a catalyst for private sector initiatives, including on asset-backed securities and in the area of retail payments, where the ECB chairs the Euro Retail Payments Board.

1 Advising on the legislative and regulatory framework for the financial system

EU supervisory arrangements

Substantial progress has been made in the setting up of a banking union in Europe – a development which significantly improves financial integration. The

first pillar of the banking union, the Single Supervisory Mechanism (SSM), became operational on 4 November 2014, while the second pillar, the Single Resolution Mechanism (SRM), became operational on 1 January 2015. As regards the latter, the Single Resolution Board (SRB) has been established and has started to work on the elaboration of resolution plans and related tasks. Most of the provisions in the SRM Regulation, however, only apply as from 1 January 2016. During the course of 2015 the ECB and the SRB cooperated on a number of issues, including on a Memorandum of Understanding on exchanging relevant data. The Vice-Chair of the Supervisory Board, who is also a Member of the Executive Board of the ECB, has been designated by the ECB to be its permanent observer at the meetings of the SRB.

The Bank Recovery and Resolution Directive (BRRD) establishes tools and powers for managing failures of credit institutions and investment firms in an orderly manner throughout the EU where resolution is in the public interest. In particular, the BRRD introduces the bail-in tool, which will be of paramount importance for shifting the cost of bank failures from the taxpayer to, first and foremost, the shareholders and creditors (except covered depositors) of the failing bank. The BRRD should have been transposed into national legislation by 31 December 2014. Most but not all Member States had fully transposed the Directive by March 2016. Notably, the bail-in provisions are applicable as of 1 January 2016. As the operations of the SRB rely to some extent on the national implementation of the BRRD, the delay in the BRRD's transposition and fragmentation in national legislation as regards the hierarchy of creditor claims in bank insolvency could affect the SRB's functioning and thus hamper further progress in financial integration.

At the international level, in 2015 important decisions were taken to enhance banks' loss-absorbing capacity. The FSB's new total loss-absorbing capacity (TLAC) standard for global systemically important banks (G-SIBs) will help to enhance these institutions' loss-absorbing capacity and allow for their resolution without resorting to taxpayers' money, with the minimum TLAC requirement applicable as of 2019. The EU addressed the problem of loss-absorbing capacity in resolution via its minimum requirement for eligible liabilities (MREL), applicable to all banks in the European Union starting in 2016, subject to phase-in as needed. It will now be important to use the 2016 BRRD review in order to make MREL fully compatible with TLAC, while taking into account that MREL applies to all banks whereas TLAC will only be mandatory for G-SIBs.

Another key element for the functioning of the SRB is the establishment of the Single Resolution Fund (SRF) on 1 January 2016, which will be funded by bank contributions. Given that the SRF will be built up gradually, a bridge financing mechanism was agreed by Member States. However, as this loan facility agreement relies on national credit lines, it does not contribute to a key objective of banking union, namely to sever the nexus between banks and their sovereigns. For this reason, it is important to advance work on a common European backstop to the SRF and to set up a clear roadmap towards this objective, in parallel with a process towards risk reduction in the banking sector.

On 11 November 2015 the ECB launched a public consultation on a draft ECB regulation and draft ECB Guide on the exercise of national options and discretions (O&Ds) available to the competent authorities under Union law. The two consultative documents reflect policy stances adopted by the Supervisory Board of the ECB in July 2015. These two instruments are the result of a project initiated by the ECB in November 2014, with the objective to foster harmonisation of supervisory practices within the SSM area in order to preserve financial stability and support the integration of the banking system.

With the establishment of the SSM, the ECB became the competent authority regarding the exercise of ONDs by the significant institutions. The comprehensive assessment conducted in 2014 revealed that the way ONDs had been exercised so far had created material inconsistencies in, for example, the definition of capital across Member States, with a major impact on some banks. The impact of transitional adjustments in the Capital Requirements Regulation (most of which are ONDs included in the ECB project) on high-quality capital (CET1) across all participating banks amounted to €126 billion, with strong variation across Member States. More generally, fragmentation in the application of prudential standards can have negative implications for banks, markets and supervisors. Harmonising the exercise of ONDs is – not only in the view of the ECB but also the Eurogroup and the European Parliament – a necessity to move towards a level playing field and reduce risks in the banking sector. Based on the outcome of the public consultation and a public hearing with all the interested parties in December 2015, the ECB aims at having the ECB Regulation and the ECB Guide implemented in 2016.[47]

Box 1

Building a capital markets union − a leap towards more financial integration

The European Commission published its Action Plan on Capital Markets Union (CMU) on 30 September following the publication of a Green Paper in February which sets out the building blocks for CMU, which will contribute to financial integration.

The ECB supports the creation of a capital markets union for Europe. CMU has the potential to complement banking union and strengthen Economic and Monetary Union by improving cross-border risk sharing and making the financial system more resilient. CMU will also be key to supporting European growth by diversifying sources of funding and increasing companies' access to financing.

The ECB welcomes the early actions which accompany the Action Plan, notably the proposed European framework for securitisation, which includes differentiated prudential treatment for simple, transparent and standardised (STS) securitisation. However, a long-term vision accompanied by an ambitious agenda for further action is necessary in order to achieve a high level of financial integration, which is the ultimate goal of CMU. In its contribution to the Commission's Green Paper on CMU[48], the Eurosystem underlined that to this end all market participants with the same relevant

47 More information is provided in Special Feature B of this report.

48 Building a Capital Markets Union – Eurosystem contribution to the European Commission's Green Paper, ECB, 21 May 2015.

characteristics should face a single set of rules, have equal access to markets and be treated equally when they are active in these markets.

The ECB issued a response to the European Commission's public consultation on covered bonds.[49] The ECB is in favour of a high-quality and transparent EU covered bond market, and sees potential for harmonisation of some standards and practices across the EU. Regarding enhancements to the legal/regulatory framework underpinning the EU covered bond market, the ECB sees merit in the notion of a comprehensive covered bond legal framework over a medium to long-term horizon following a harmonisation and convergence process based on a dedicated covered bond legal framework. The ECB is of the view that further harmonisation achieved through such a convergence process would be desirable and beneficial for covered bond markets.

The ECB response also addresses more specific issues, such as a covered bond definition, the appropriateness of the regulatory treatment, loan-to-value limits, public supervision and the potential role of the SSM, dual recourse, segregation of the cover assets, resolution/insolvency proceedings, eligible assets in the cover pool, mixed pools and over-collateralisation.

A key lesson from the global financial crisis was that investors should be able to perform adequate due diligence on their investment opportunities, covering the issuer, the underlying structure, the counterparties involved and the underpinning legal arrangements. Against this background, covered bond transparency should be seen as a way of enabling market participants to investigate covered bonds and to reduce their reliance on rating agencies. The ECB would more generally welcome a joint effort by stakeholders (market participants, regulators, central banks, etc.) towards making already available information accessible in a more standardised format from a common point of access.

In parallel, the Eurosystem contributed to the European Commission's call for evidence on the EU regulatory framework of financial legislation on 3 February 2016.[50] The reply highlights that support for small and medium-sized enterprises and banks' ability to contribute to the financing of the economy should not be accomplished at the expense of watering down the robust regulatory framework resulting from post-crisis reforms. Financial stability is a necessary precondition for a well-functioning financial system and ultimately for growth, and the regulatory reform has already made the European financial sector and economy considerably more resilient to future crises. Therefore, the call for evidence should be undertaken with the following caveats. First, while a cumulative impact assessment of the various measures and ensuring that they are achieving their intended objectives is necessary, reaping long-term benefits implies both assuming temporary costs that emerge in the transition period and complementing regulation with measures to correct any unintended long-term impacts that are identified. In this context, the Eurosystem response calls for a swift implementation of certain key outstanding reforms in the EU framework, such as TLAC and the net stable funding ratio (NSFR).

In its contribution, the Eurosystem moreover fully supports the Commission on the need to review the macroprudential framework to cater for potential financial stability effects and the needs of CMU. In this regard, a comprehensive approach is needed. Better data collection, increased coordination among macroprudential authorities and an enhanced toolkit to deal with the

[49] Covered bonds in the European Union – ECB contribution to the European Commission's public consultation, ECB, 29 January 2016.

[50] Link

build-up of risks in market-based activities and entities outside the regulated banking sector should form part of the CMU agenda. This requires a wider regulatory framework that also captures systemically important non-banks.

A more diversified financial system with capital markets complementing bank-based funding could increase the shock-absorbing capacity of the European economy and strengthen cross-border risk sharing, thereby contributing to financial stability. CMU is aiming at the development of risk capital and thereby should promote increased private risk sharing in the EU. This would reduce the reliance on debt-based financing which has proven to be prone to cyclicality and sudden reversals in the face of shocks.

In sum, achieving CMU will need to entail a combination of early quick wins to maintain momentum as well as sustained efforts over a number of years in a wide range of areas which are key to the functioning of capital markets, such as tackling long standing barriers in the fields of insolvency and company law and taxation issues. The ECB has a great interest in a functioning CMU, which will enhance the resilience of EMU and also contribute to smoother transmission of monetary policy across the euro area.

EU legal framework for retail payments

Integration initiatives in the retail payments market and especially the realisation of the Single Euro Payments Area (SEPA) have relied on a harmonised EU legal framework. This is constituted by a series of EU legal acts, among which Regulation (EU) No 260/2012 that established the end-dates for migration to the common SEPA standards for credit transfers and direct debits in euro (the so-called "SEPA migration end-date regulation").[51] The transitional provisions allowing Member States to permit the use of IBAN (international bank account number) conversion services, postpone requirements related to the communication of bank identifier codes (BICs), or waive certain features like niche products, specific direct debit solutions and messaging formats for bundled transactions, ceased to exist on 1 February 2016, removing the last obstacles to harmonised credit transfers and direct debits. By 31 October 2016 the Regulation will also apply to payment service providers and payment service users in non-euro area Member States for transactions in euro.

The amended Payment Services Directive (PSD2)[52] was adopted in November 2015 and entered into force on 13 January 2016. The revision of the PSD, which has been strongly supported by the ECB, takes into account new services and new players in the payments market, thereby enhancing consumer protection, promoting innovation and improving the security of payment services. The extended scope

[51] Regulation (EU) No 260/2012 of the European Parliament and of the Council of 14 March 2012 establishing technical and business requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009, OJ L 92, 30.03.2012, pp. 22-37.

[52] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EC and Regulation (EU) No 1093/2010 and repealing Directive 2007/64/EC

includes payment services based on the access to payment accounts – the so-called "payment initiation services" and "account information services" – and providers of such services have to be authorised (payment initiation services) or registered (account information services) accordingly.

Inter alia, the PSD2 mandates the European Banking Authority (EBA), in close cooperation with the ECB, to develop regulatory technical standards on strong customer authentication and common and secure open standards for communication, guidelines on major incident reporting and guidelines on the management of operational and security risks. The EBA and the ECB use the European Forum on the Security of Retail Payments (SecuRe Pay Forum)[53] as a common platform to conduct this work.

The **Regulation on interchange fees for card-based payment transactions (IFR),** which entered into force on 9 June 2015, is welcomed by the ECB as a means to further harmonise and integrate card payments within the EU. The IFR introduces maximum levels for interchange fees as a way to contribute to the reduction of costs for retailers and consumers. It also introduces a number of business rules aiming to encourage competition and facilitate entry to the market. The Regulation is supported both from a market integration perspective, introducing a harmonised set of rules for the provision of card payments, and from an oversight perspective with respect to its impact on the smooth functioning of payment card schemes. Furthermore, the ECB is participating as an observer in the EBA's work on regulatory technical standards on the separation of payment card scheme and processing entities under Article 7(6) of the IFR.

On 10 December 2015 the Commission published a Green Paper on retail financial services[54], which was submitted to a public consultation. The outcome of the consultation, to which the Eurosystem and the Euro Retail Payment Board (ERPB) provided contributions[55], is intended to feed into an Action Plan setting out proposals to enhance choice, transparency and competition in retail financial services and to facilitate cross-border supply of such services within the Single Market. The Eurosystem welcomes this initiative and supports the objective of creating a stronger European market for retail financial services, which is also relevant for the creation of a capital markets union. ERPB, in its role as representative of both the supply and demand side of euro retail payments in the EU, supports the Green Paper which provides an additional path to foster true pan-European integration in retail payments.

53 See the ECB's website for the Forum's mandate.

54 http://ec.europa.eu/finance/consultations/2015/retail-financial-services/docs/green-paper_en.pdf

55 Eurosystem response to the Commission's green paper on retail financial services: better products, more choice, and greater opportunities for consumers and businesses

ERPB reaction to the European Commission's green paper on retail financial services

Review of the regulatory framework for payment statistics

Data published until 2014 was collected according to Guideline ECB/2007/9 of 1 August 2007 on monetary, financial institutions and markets statistics.[56] As from data covering 2014 and published on 15 October 2015, a new methodology has been implemented on the basis of the revised Guideline[57] and a new ECB Regulation[58]. The new methodology aims to increase data quality, reliability, consistency and harmonisation across countries. It also takes account of the changes brought about by the implementation of SEPA.

EU legal framework for central securities

The Regulation on improving securities settlement in the European Union and on central securities depositories (CSDs) (also referred to as the Central Securities Depository Regulation, or CSDR) entered into force on 17 September 2014**.** The aim of the Regulation is to increase the safety and efficiency of securities settlement infrastructures (i.e. central securities depositories) in the EU, thereby contributing to the stability of the financial system. The CSDR contributes to the creation of a single rulebook for securities settlement in the EU and creates, for the first time at the European level, a common authorisation, supervision and regulatory framework for CSDs. The legal and regulatory harmonisation provided by the CSDR complements the Eurosystem's catalyst role and its role in the provision of settlement services (see the post-trade harmonisation and T2S sections below). The planned adoption of the Level 2 legislation (regulatory technical standards) in 2016 will improve the functioning and soundness of cross-CSD services and thereby contribute to financial integration and stability.

EU CSDs will have six months to apply for (re)authorisation under the CSDR once the related technical standards have entered into force.

The forthcoming EU legislation for recovery and resolution of financial market infrastructures (FMIs)

The final CPMI-IOSCO[59] and FSB[60] guidance on FMIs' recovery and resolution, respectively, was published in October 2014. As part of the 2015 CCP Work Plan[61], the CPMI-IOSCO and the FSB are currently assessing the practices of

56 OJ L 341, 27.12.2007, p. 1.

57 Guideline of the ECB of 4 April 2014 on monetary and financial statistics (recast) (ECB/2014/15), as amended by Guideline ECB/2014/43 of 6 November 2014.

58 Regulation (EU) No 1409/2013 of the European Central Bank of 28 November 2013 on payments statistics (ECB/2013/43), OJ L 352, 24.12.2013, pp. 18-44. NCBs of Member States whose currency is not the euro should apply the new legal framework, based on Recommendation ECB/2013/44, OJ C 5, 9.1.2014, p. 1.

59 http://www.bis.org/cpmi/publ/d121.htm

60 http://www.financialstabilityboard.org/publications/r_141015.htm

61 http://www.financialstabilityboard.org/wp-content/uploads/Joint-CCP-Workplan-for-2015-For-Publication.pdf

central counterparties (CCPs) in this area and the potential need for additional or more granular international guidance. At the EU level, the European Commission is developing a legislative proposal for the recovery and resolution of CCPs in close alignment with the global guidance. The ECB strongly supports the implementation of effective recovery and resolution frameworks for FMIs. In this context, arrangements for close cooperation of the relevant authorities, including central banks, will also be essential.

EU legal framework for over-the-counter (OTC) derivatives, central counterparties and trade repositories

Regulation (EU) No 648/2012 on OTC derivatives, central counterparties and trade repositories (also referred to as the European Market Infrastructure Regulation, or EMIR) and related regulatory technical standards entered into force in August 2012 and March 2013, respectively. In its role as central bank of issue, the Eurosystem is represented in CCP colleges of authorities for all EU CCPs with major euro-denominated business (representation in the colleges is shared between the ECB and the NCBs). Furthermore, the ECB and national central banks (NCBs) participate in CCP colleges, in view of their supervisory and/or oversight functions.

In 2015 the Commission carried out a review of the EMIR framework, with a public consultation launched in May 2015. In September 2015 the ECB published its response to the Commission's consultation. The ECB proposes amending the Regulation in order to fully recognise the role taken up by the ECB in the field of banking supervision, to address issues related to the quality and availability of derivatives data, and to further enhance the requirements for mitigating pro-cyclicality. Moreover, the ECB supports the inclusion of macroprudential intervention tools in EMIR, in order to prevent the build-up of systemic risk resulting, in particular, from excessive leverage, and to further limit the pro-cyclicality of margins and haircuts.

In August 2015 the Commission adopted regulatory technical standards that make certain OTC interest rate derivative contracts subject to mandatory clearing by CCPs. It is the first such delegated regulation to implement the clearing obligation under EMIR. In October 2015 the European Securities and Markets Authority (ESMA) delivered to the Commission a new set of standards that make certain OTC credit derivatives on indices subject to the clearing obligation and in November 2015 it delivered a new set of standards that further expand the classes of interest rate derivative contracts that are subject to the clearing obligation. Depending on the type of counterparty, the rules foresee phase-ins of between six months and three years.

As regards the recognition procedure for CCPs established outside the EU (so-called third-country recognition under EMIR), in January 2016 ESMA updated its list of CCPs established in non-EEA countries that have applied for recognition. A precondition for recognition in accordance with EMIR is the adoption

of equivalence decisions by the European Commission on third-country regulatory and enforcement regimes. After its first four equivalence decisions for the regulatory regimes of CCPs last year, the European Commission adopted further equivalence decisions for Canada, Mexico, South Africa, South Korea and Switzerland in November 2015. As of the end of January 2016 sixteen out of 44 third-country CCPs that applied for recognition were recognised by ESMA under EMIR.

Development of an international reference data utility

The Global LEI System (GLEIS) has the objective of providing unique identification – a Legal Entity Identifier (LEI) – of parties to financial transactions across the globe, as well as data on relationships among those entities. Once sufficient coverage is reached, the LEI will support multiple financial stability objectives, including improved risk management by financial institutions and better assessment of micro- and macroprudential risks by regulators. The establishment of the GLEIS also promotes market integration, supports a higher quality and accuracy of financial data overall, and reduces financial industry costs for internal reporting and risk management, and for collecting, cleaning, aggregating and reporting data to regulators.

In pursuing these objectives, the FSB (Financial Stability Board) Plenary, in its capacity as founder of the Global Legal Entity Identifier Foundation (GLEIF), approved in 2014 the creation of the GLEIF as a Swiss not-for-profit foundation. The Regulatory Oversight Committee (ROC) has played a very active role in the preparatory work to establish the Foundation and has now taken on the responsibility of overseeing the GLEIF in the public interest. The FSB Plenary also endorsed the appointment of the inaugural Board of Directors of the GLEIF in line with the statutes of the GLEIF. The establishment of the GLEIF[62] marks the completion of the three-tier structure for the GLEIS as endorsed by the FSB and the G20 in June 2012.

The GLEIS operates as a global network, akin to a franchise, managed by the GLEIF, of currently 27 entities offering registration services, or Local Operating Units, which compete in the market. The GLEIS thus combines the benefits of a monopoly and competition.

The ECB has been instrumental in launching the LEI initiative and is now a member of the ROC with a permanent seat on the ROC's Executive Committee. The ECB has recognised the importance of the LEI for its own statutory functions and the financial system at large, and encourages broad LEI adoption.

With regard to the regulatory adoption of the use of the LEI, in addition to its use for derivatives reporting in a number of countries, authorities are extending reporting requirements for the LEI, still for specific uses, to the banking sector, issuance, investment holdings for insurers and funds, and other uses;

[62] Further documentation can be found at www.leiroc.org and www.gleif.org. The GLEIF offices are located in Frankfurt.

mandating so far remains fairly narrow and falls short of industry expectations[63]. In the European Union, credit and financial institutions are required to obtain an LEI and to use it to fulfil their reporting obligations. The same applies since June 2015 for insurance corporations subject to Solvency II, and will apply as of 30 June 2016 for other institutions in the insurance sector in the EU. From the end of 2016 (depending on the date of their authorisation under the CSDR), EU central securities depositories will be required to identify themselves, as well as issuers, CSD participants and settlement banks, by using LEIs for reporting purposes to the national authorities. From the end of 2017 settlement internalisers will have to use LEIs when reporting to national authorities. From the beginning of 2017 investment firms that wish to trade in financial instruments traded in the EU will be required to obtain an LEI and ensure that the reference data related to their LEI is renewed according to the terms of any of the accredited Local Operating Units of the GLEIS. However, full LEI coverage will be needed to represent the group structures of institutions and the relationships among them, which is key for the LEI to deliver its potential to the authorities and the industry alike.

Contribution to harmonisation of standards for OTC derivatives data

Finally, the ECB as well as several Eurosystem NCBs and other authorities have been closely working together in a working group set up by CPMI-IOSCO to develop guidance on the harmonisation of key OTC derivatives data elements, including a uniform global Unique Product Identifier (UPI) and Unique Transaction Identifier (UTI). Harmonisation of these key data elements aims to facilitate aggregation of the data reported across trade repositories and to ensure that authorities can obtain a comprehensive view of the OTC derivatives market and its activity. Three consultative reports were published by CPMI-IOSCO in 2015 regarding respectively the harmonisation of a UTI, that of a UPI, and a first batch of other key OTC derivatives data elements.

2 Catalyst for private sector activities

While public authorities are responsible for providing an adequate framework conducive to financial integration, progress on European financial integration ultimately depends on private sector initiatives making full use of cross-border business opportunities. Competition among market players is a major driving force in this regard. In addition, progress made in the field of financial integration also depends on effective collective action, notably where heterogeneous market practices and standards need to be overcome. However, possible coordination problems may hamper such cooperative approaches among market participants. In such cases, public sector support for private sector coordination efforts may help to overcome possible difficulties.

63 A list of rules, active or proposed, mandating the use of the LEI can be found on the GLEIF website.

Given its institutional characteristics, the Eurosystem is particularly well placed to play an active role as a catalyst for private sector activities in the field of European financial integration. The ECB is both a public authority with a pan-European remit and, in its capacity as the central bank of the euro area, an active market participant, with knowledge of and business contacts in the financial markets. In addition, TARGET2-Securities, which was launched in June 2015, fosters the role of the Eurosystem as catalyst in post-trade harmonisation and integration in Europe.

In 2015 the catalytic activities of the ECB and the Eurosystem focused mainly on the following initiatives.

Retail payment initiatives

SEPA exemplifies how integration can be successfully pursued despite the heterogeneity of starting points, as was the case with national retail payments markets in Europe regarding not only instruments and infrastructures, but also users' payment habits. The Single Euro Payments Area comprises the 28 EU Member States, plus Iceland, Norway, Liechtenstein, Monaco, Switzerland and San Marino. In order to support the last phase of SEPA migration (see above), the Eurosystem is continuing to monitor the process[64], remaining in close dialogue with the market players at the national and European levels.

The Eurosystem has aimed to provide the market with clarity with regard to innovative payment technology. In March 2015 the ECB published its second report on virtual currencies. The report followed on from the analysis done in 2012 providing perspective and detail on virtual currency schemes (VCS), while reiterating and confirming the general consideration of the previous report that, although VCS can have positive aspects in terms of financial innovation and the provision of additional payment alternatives for consumers, it is clear that they also entail risks.

The Eurosystem notes that dialogue among all of the stakeholders is crucial to promote integration and prevent the fragmentation that the SEPA initiative aims to overcome in the field of payment innovation. The Euro Retail Payments Board (ERPB) plays a strategic role in this respect. **Chaired by the ECB, the ERPB is a high-level forum where both the supply and the demand side of the retail payments industry gather to address retail payment issues, with a wide mandate, large representation[65] and strong output-driven approach**. In 2015 the

64 Migration traffic lights for waivers for euro area countries and migration percentages for non-euro area (EEA) SEPA countries are published on the ECB's website.

65 Along with members from the supply and demand sides of the industry, the ERPB features the European Commission as an observer and NCBs as active participants.

focus of its work was on pan-European euro instant payments[66], person-to-person mobile payments and mobile and card-based contactless payments.

Concerning instant payments, the ERPB invited the European Payments Council (EPC) to design a pan-European instant SEPA credit transfer scheme (SCTinst). On the basis of the design discussed in November 2015, the ERPB invited the EPC to develop the SCT^{inst} scheme by November 2016 and implement it by November 2017. On person-to-person mobile payments, the ERPB invited mobile payment solution providers to cooperate in order to achieve pan-European interoperability of European solutions and in particular to facilitate a standardised proxy look-up service to map IBANs and aliases (e.g. phone number, e-mail address) used in different solutions. With regard to contactless mobile and card payments, the ERPB called for further standardisation and the adoption of already existing standards by stakeholders as well as a joint campaign to increase awareness among consumers and merchants.

Retail payment integration and innovation also rest on supporting clearing and settlement infrastructures. To support the development of pan-European instant payments in euro, in its catalyst role the ECB hosted two meetings to discuss clearing and settlement of instant payments, with the aim to prepare financial market infrastructures for instant payments, supporting the ERPB's and EPC's work at the scheme level.

From a wider perspective, common trends in retail payments have been identified at the global level. **Within the Committee on Payments and Market Infrastructures (CPMI), the ECB and some ESCB central banks have contributed to analytical work on retail payment topics.** In this context, the CPMI published three reports in 2015: one on what authorities are doing to promote financial inclusion in their jurisdictions[67], one on correspondent banking[68] and one on digital currencies[69]. Fast payments[70] are currently being studied by a working group of the CPMI and a report is expected in 2016. Work on instant payments in Europe and at the global level, especially in the context of the CPMI, shows the interest that the ECB and other central banks around the world have in this issue.

Post-trade and financial integration

The Eurosystem's catalyst role in post-trade market infrastructures is strongly linked to the TARGET2-Securities (T2S) services. T2S has initiated an extensive

66 "Instant payments" are defined as electronic retail payment solutions available 24/7/365 and resulting in the immediate or close-to-immediate interbank clearing of the transaction and crediting of the payee's account with confirmation to the payer (within seconds of payment initiation). This is irrespective of the underlying payment instrument used (credit transfer, direct debit or payment card) and of the underlying arrangements for clearing (whether bilateral interbank clearing or clearing via infrastructures) and settlement (e.g. with guarantees or in real time) that make this possible.

67 *Payment aspects of financial inclusion*, CPMI, 2015.

68 *Correspondent banking*, CPMI, 2015.

69 *Digital currencies*, CPMI, 2015.

70 "Fast payments" are what the Eurosystem refers to as "instant payments".

post-trade harmonisation agenda where the public and the private sector collaborate to harmonise market practices and procedures going beyond securities settlement. There are three main reasons for the Eurosystem's engagement in the post-trade harmonisation agenda: first, because of the way T2S has been designed, i.e. a "lean" platform which avoids replication of national specificities; second, because the T2S community of stakeholders (central banks, market infrastructures and users) expressed their strong interest in a harmonised and efficient adaptation by national markets to the new T2S environment; and third, because of the momentum the T2S harmonisation agenda creates for other initiatives in the post-trade field.

No functionalities have been developed in T2S in order to support purely national features and practices. Instead, processes have been identified that allow markets to continue to support their different needs using a basic T2S functionality. Participation in T2S increases the incentives to further remove specificities which might still exist, and thereby reach wider harmonisation in order to be more competitive in the European arena.

Post-trade harmonisation is one of the primary objectives pursued by the T2S Advisory Group, a forum comprising senior market and public authority members that advises the Eurosystem on T2S-related issues. More specifically, the T2S community of stakeholders, via the T2S Advisory Group, works towards creating a single rulebook for post-trade processes across all the markets that will operate in T2S. The aim is to ensure the safety and efficiency of cross-border settlement. Fields of work include, among others, messaging protocols based on the ISO 20022 global standard, legal rules, operating hours and deadlines, opening days, and processing of corporate actions. The T2S community of stakeholders endorses, monitors and implements harmonised standards before connecting to T2S in order to operate in a harmonised way from the outset. The work of the T2S Advisory Group is not limited to agreeing on jointly used standards. The group also monitors the actual implementation of those standards by all actors concerned. The process is transparent and results are published annually in the T2S harmonisation progress reports, providing a detailed analysis of the status of each harmonisation activity and the compliance status of each T2S market. The latest progress report (Sixth T2S Harmonisation Progress Report[71]) was published in March 2016. The advent of T2S and its transformational potential have been an important factor in giving special impetus to other important initiatives that contribute to post-trade market integration in Europe, such as the CSD Regulation (CSDR) and the CMU Action Plan (see above).

The CSDR goes hand in hand with T2S. The Regulation breaks down national barriers for the provision of CSD services and imposes harmonisation in a number of key areas relating to settlement, such as settlement cycles and settlement discipline. In this regard, in February 2015, T2S stakeholders provided input to ESMA on the CSDR technical standards regarding the creation of a single securities settlement discipline regime in the EU.[72] In August 2015, and following a call for further

[71] Available on the ECB's website.

[72] Response to the T2S Advisory Group on ESMA's Consultation Papers on Technical Standards and Technical Advice under the CSD Regulation

consultation, the T2S Advisory Group provided ESMA with further comments on the buy-in aspect of the settlement discipline regime.[73]

CMU is the key EU policy initiative which could foster further integration in the post-trade securities environment. The Eurosystem's work on post-trade harmonisation is cited by the CMU Action Plan as one of the reasons why a review of the barriers to cross-border clearing and settlement will be undertaken by the Commission by end-2017. Some of the key issues foreseen in this work by the Commission, i.e. analysis of legal and tax barriers which continue to exist, are covered in the T2S harmonisation list. During the second half of 2015 the T2S Harmonisation Steering Group (HSG), as part of the T2S governance arrangements, undertook a survey with the T2S National User Groups (NUGs) regarding the identification of concrete conflict-of-law cases in the 21 European markets covered by T2S. The results were shared with the Commission services.[74] The CSDR and the CMU initiative will be complementary to each other by ensuring that all relevant actions support the common objective of removing the remaining barriers to cross-border settlement.

In the context of the CMU Action Plan, the Commission established in February 2016 a new group of experts on post-trade issues.[75] The objective of the European Post Trading Forum (EPTF) is to support the work of the Commission to review the developments in post-trading, including collateral management services, in line with CMU, in order to promote more efficient and resilient market infrastructures in the EU. The ECB welcomes this initiative and is contributing to the objectives within its competency.

Structured finance markets

The ECB acts as a catalyst in a number of initiatives related to this market segment, with the goal of reviving the European structured finance market and recognising its role as a funding channel for issuers/originators. This, in turn, is intended to foster the provision of loans to the economy and, consequently, long-term economic growth throughout the euro area. In particular, the ECB supports the development of sound and high-quality products that could attract a wide array of investors from the private sector with a medium to long-term investment horizon. In this vein, the ECB has played a role in some initiatives related to asset-backed securities (ABSs) and covered bonds, recognising the importance of these markets in Europe. In general, the ECB aims to support initiatives that increase transparency and strives to develop and support best practices in these market segments so as to promote high-quality assets that help increase euro area financial integration.

In September 2014 the Governing Council of the ECB decided to launch a new covered bond purchase programme (CBPP3), and also to purchase a broad

73 AG Reply on ESMA Consultation Paper on CSDR RTS on the Operation of the Buy-in Process

74 Conflict of laws issues in T2S markets - a fact finding exercise

75 http://ec.europa.eu/finance/financial-markets/clearing/eptf/index_en.htm

portfolio of simple and transparent ABSs with underlying assets consisting of claims against the euro area non-financial private sector under an ABS purchase programme (ABSPP)**.** Both programmes, which started in October and November 2014 respectively, are intended to further enhance the transmission of monetary policy, facilitate credit provision to the euro area economy, generate positive spillovers to other markets and, as a result, ease the ECB's monetary policy stance and contribute to a return of inflation rates to levels closer to 2%.

With regard to the ABSPP, the Eurosystem has developed a set of high-level, non-binding and non-exhaustive guiding principles that illustrate its preferences in relation to the ABSs that it considers for purchase. These principles were published on 6 July 2015 on the ECB's website and the Eurosystem remains committed to the set of principles and their scope. Notably, these principles are largely aligned with the framework published by the European Commission for simple, transparent and standardised securitisation (STS) and form part of the concerted efforts to revive securitisation, while incorporating the lessons from the financial crisis.

STEP+

The STEP+ initiative, which is carried out by ACI – The Financial Markets Association and the European Money Markets Institute (EMMI), aims to revitalise the unsecured European money market by enhancing the current functioning of the short-term European paper (STEP) market. In 2014 the promoters of the STEP+ initiative launched a public consultation to gauge market participants' views on the revitalisation of the unsecured European money market. The ECB acts as an observer on the STEP+ Steering Committee. The STEP initiative was originally launched in 2006, with the ECB acting as observer, to foster the integration and transparency of European short-term paper markets. In December 2015 STEP-compliant securities amounted to €403.9 billion. ECB statistics on this market segment are available on the ECB's website.

3 Knowledge about the state of financial integration

The ECB is in a unique position to provide in-depth economic analysis and comprehensive statistics regarding the state of financial integration in the euro area and its development. The ECB is also able to sponsor coordinated analytical research – together with other members of the Eurosystem and academics – and can make use of its experience and knowledge as an active market participant. Enhancing knowledge and raising awareness regarding the need for European financial integration, and measuring the progress achieved in this regard, are thus a major part of the ECB's contribution to fostering financial integration.

Indicators of financial integration in the euro area

Quantitative measures of financial integration provide essential tools for monitoring the status and the progress of financial integration in Europe. Since September 2005 the ECB has published statistical indicators of integration in the euro area financial markets. These price and quantity-based indicators cover the money market, the government and corporate bond markets, the equity market and the banking sector. Market infrastructure indicators are included as well.

In this issue of the report, distribution measures are displayed for several of these indicators, as well as being presented for all the euro area countries grouped together. For example, these measures show the highest, lowest and intermediate values of long-term sovereign interest rates for bonds with a remaining maturity of approximately ten years. This provides more granular information across a wide range of market segments.

The indicators are updated and published semi-annually on the ECB's website. The last update was carried out in December 2015, and the next one will take place in May 2016.

ECB and European Commission joint conference on financial integration and stability

In 2015 the European Commission organised the annual conference on financial integration and stability together with the ECB which was held in Brussels. At this conference, the European Commission and the ECB reported on the latest developments in financial integration in Europe and presented their annual reports with details on financial integration and stability. The Commissioner for Financial Stability, Financial Services and Capital Markets Union, Jonathan Hill, kicked off the conference with a speech on refocusing financial integration on growth and jobs. He was followed by the Chair of the Supervisory Board of the ECB, Danièle Nouy, who focused on banking union and financial integration. Then, the Vice-President of the ECB, Vítor Constâncio, addressed the possible impact of the ECB's macroprudential powers on financial integration in a keynote speech in the afternoon. Moreover, a select group of key policy-makers, financial market leaders and academics discussed in two high-level panels: (i) the state of play of banking union and the impact so far on financial integration; and (ii) how a single market for capital can contribute to a more inclusive, competitive and resilient financial system. The financial integration conference in 2016 will be organised by the ECB in cooperation with the European Commission and will take place on 25 April in Frankfurt.

Statistics on the euro money markets

Work is under way to implement a new framework for the collection of statistics on the segments of the euro money market. A Regulation concerning

statistics on the money market was approved by the Governing Council in November 2014 (ECB/2014/48). From July 2016, after a three-month transitional period starting in April, daily transaction-by-transaction data will be reported by 52 large banks, covering the main segments of the money market, namely borrowing and lending transactions in the secured and unsecured markets as well as transactions in foreign exchange swaps and in euro overnight index swaps. The overall dataset will be based on transaction data collected from credit institutions for transactions with other monetary financial institutions, other financial intermediaries, insurance corporations and pension funds, central banks for investment purposes, and the general government, as well as for wholesale transactions with non-financial corporations. The main purpose of collecting such daily, highly timely statistics is to provide the ECB with comprehensive, detailed and harmonised statistical information on the money markets in the euro area for monetary policy analysis and operation purposes.

With a view to ensuring high data quality, minimising the reporting burden and developing synergies, reporting instructions including XML schemas have been set up in interaction with the industry and are compliant with the ISO standard 20022.

By contrast, also to keep the reporting burden minimal, the annual euro money market survey run since 2000 has been discontinued. The last survey results for the second quarter of 2015 were published on the ECB's website on 30 September 2015. Instead, there will be regular publications using money market statistical reporting (MMSR) data once the data quality has been assured.

Statistics on institutional investors

In 2015 the ECB and the NCBs of the euro area, as well as the NCBs of most non-euro area EU countries, continued the production of an enhanced set of statistics concerning MFI balance sheet items and interest rates. In addition to this, the ECB also regularly publishes euro area balance sheet statistics for credit institutions (which together with money market funds constitute almost the whole of the MFI sector, excluding the Eurosystem).

In addition, the ECB continued to publish harmonised statistics on the balance sheets of financial vehicle corporations engaged in securitisation transactions (FVCs) and on investment fund assets and liabilities. The latter statistics consist of two separate datasets: one covers investment funds as an institutional sector and the other separately covers money market funds as part of the MFI sector.

The collection frameworks for these monetary and financial statistics datasets were recently updated to reflect the new international statistical standards, notably the European System of Accounts 2010 (ESA 2010) and the sixth edition of the IMF's Balance of Payments Manual (BPM6). These changes are relevant to keep the frameworks fit for policy-making purposes and to optimally support the new presentation of the national and euro area financial accounts and balance of payments statistics, for which the monetary and financial statistics represent an important source of information. In particular, new ECB regulations have been

implemented in the area of MFI balance sheet and interest rate statistics and of statistics on the assets and liabilities of investment funds and FVCs. These changes reflect the revised international statistical standards, as well as new user requirements. The new data requirements cover more granular breakdowns in counterparty sectors and instrument categories and thereby enhance the monitoring of financial integration.

The reporting under these new legal acts has begun with data for the reference period December 2014, and the resulting statistics were published in July 2015. While there are several enhancements, a prominent new feature of MFI balance sheet statistics is the collection of intra-group positions of MFIs, which now make it possible to identify positions in loans/deposits with MFIs belonging to the same corporate group. Further breakdowns are also collected on the positions between central banks and other deposit-taking corporations. These new breakdowns allow the split of inter-MFI positions according to the sub-sector of the counterparty and also cover information on the counterparties' area of residency, thus bringing new insights into the financial integration across countries. For MFI interest rate (MIR) statistics, data on renegotiated loans to households and corporations as part of the new business are now collected. These data allow for an estimation of the gross flows of genuinely new loans and thus facilitate the identification of the monetary policy transmission to the real economy and any possible fragmentation in the bank lending and deposit markets. Moreover, new breakdowns for FVC, investment fund and securities issues statistics are available, which further enhance data availability and possible uses for these statistics. Regarding insurance corporations and pension funds (ICPFs) statistics, in 2015 the ECB continued the regular publication of quarterly statistics for ICPFs in the euro area under a "short-term" approach.[76] The statistics, derived mainly from supervisory sources, contain information on the assets and liabilities of ICPFs resident in the euro area; the main aggregates are also available separately for insurance corporations and pension funds. Based on the outcome of a "merits and costs procedure", a new ECB Regulation (ECB/2014/50) for statistical requirements on insurance undertakings was published in the Official Journal of the EU in December 2014. The first data to be collected in accordance with this Regulation will refer to the first quarter of 2016. In order to minimise the reporting burden on insurance undertakings, the Regulation foresees, to the extent possible, the use of supervisory data sources. For this purpose, the ECB has been closely cooperating with the European Insurance and Occupational Pensions Authority (EIOPA) on the integration of statistical and new Solvency II supervisory reporting requirements and on the development of a common XBRL taxonomy for the data exchange. The reporting requirements on pension funds are addressed in Guideline ECB/2014/15.

The regular production of these statistics contributes to a better, more harmonised measurement of activity in the financial sector as a whole, including that of non-bank financial corporations, across the euro area countries, as well as in some other EU

[76] "Short-term approach" in this context means that euro area aggregates are derived from data that are currently available at a national level but which are not harmonised.

Member States. This ensures greater transparency and comparability in the assessment of developments in this sector and each sub-sector.

Statistics on securities

Since 2014 the European System of Central Banks (ESCB) has been collecting securities holdings statistics (SHS), which provide granular quarterly information on holdings of securities by euro area sectors and by selected reporting banking groups in the euro area. The statistics also contain information on holdings of euro area securities by non-euro area investor countries. The holding information is enriched with reference data on individual securities obtained from the ECB's Centralised Securities Database (CSDB), so that granular information on both the holder and the issuer side is available in one single dataset. This in turn allows the construction of new quantity-based indicators of financial integration, as presented in Special Feature D of this report.

AnaCredit (Analytical Credit Dataset)

The recent financial crisis highlighted that, **although a wide range of data on credit are already available, more granular, frequent and flexible credit and credit risk data are considered highly relevant** within the ESCB for monetary policy analysis and operations, financial stability analysis, macroprudential policy and research, as well as for the development and production of ESCB statistics.

At present, such granular data are typically provided via central credit registers (CCRs) at national level or similar granular credit reporting systems which are considered major data channels. These registers are databases, operated by NCBs in some Member States, which contain loan-level or borrower-level information and are locally tailored to provide for an exchange of credit information within the financial system to different degrees, especially among banks to help them assess the creditworthiness of their counterparts. They also often support micro-prudential analysis.

The ESCB has explored the potential of granular credit datasets, in particular to understand the extent to which their content may be enhanced and adapted to euro area and EU statistical and policy analysis needs, i.e. to meet the above-mentioned user requirements, while at the same time alleviating respondents' reporting burden and increasing transparency. In this context, several related ESCB initiatives (e.g. a workshop on lending exposures and indebtedness in 2010, and a Task Force on Credit Registers in 2011-12) have not only proven the analytical usefulness of such granular datasets but have also shown that the differences across existing granular credit datasets in terms of coverage, attributes and data content are often substantial, pointing to the need for harmonisation of concepts and definitions, as well as convergence in data coverage and content.

On this basis, an ESCB Task Force on Analytical Credit Datasets, comprising experts from both the statistical and the credit register areas, was mandated to: (1) identify a core set of information to meet main users' needs in the long term and elaborate on its scope; (2) further analyse and consider harmonised concepts and definitions and methodological enhancements to core data, metadata and attributes; (3) estimate the costs for the ESCB and the reporting agents; and (4) consider the governance, legal and confidentiality issues prevailing at the national and EU levels and prepare the appropriate legal instrument.

The task force work confirmed the very high importance placed on granular credit and credit risk data for a number of ESCB and European Systemic Risk Board tasks. The availability of a granular credit dataset would:

- better address a number of issues relevant to monetary policy analysis and relating to the provision of credit with a variety of counterparty breakdowns (size of firms, economic activity, undrawn credit lines, etc.) and the functioning of the transmission mechanism, especially in fragmented markets;
- play an important role in supporting the direct use of credit claims in monetary policy operations and in calibrating potential credit support measures to be able to monitor bank lending and liquidity in the euro area money market;
- allow an adequate calibration of the different risk control and collateral management measures of the Eurosystem, including adequate pricing, credit risk assessment and haircuts, and allow an in-depth analysis of credit claims pledged in Eurosystem credit operations;
- support financial stability surveillance and macroprudential analysis, as well as quantitative risk assessment, notably in the context of macro stress testing;
- help in the assessment of borrower creditworthiness (via probabilities of default) by credit institutions using an internal ratings-based approach;
- meet ever stronger and multi-form statistical and policy analysis needs, and allow breakdowns which require agility through granular datasets;
- serve research purposes by supporting credit risk analysis across euro area countries and various other financial research work; and
- enable a multitude of usage options in the supervisory process (off- and on-site supervision, including usage in risk assessment systems) and permit analysis options not otherwise covered by regular reporting, while complementing other reporting systems' information.

With a view to effectively, efficiently and flexibly supporting the achievement of the long-term objectives, on 24 February 2014 the ECB's Governing Council adopted Decision ECB/2014/6[77] on the organisation of preparatory measures for the collection of granular credit data by the European System of Central

[77] http://www.ecb.europa.eu/ecb/legal/pdf/oj_jol_2014_104_r_0008_en_txt.pdf

Banks. The Decision defines the preparatory measures which are necessary to establish, in a step-wise manner, a long-term framework for the collection of granular credit data based on harmonised ECB statistical reporting requirements. On this basis, as with the preparation of all ECB regulations under Council Regulation (EC) No 2533/98, the ESCB has intensively worked on the definition of the relevant user requirements via the launch of a merits and costs exercise, which was carried out in 2014.

Such a merits and costs procedure is required to support the decision-making process with a view to designing a cost-effective approach that best fulfils user needs while minimising the reporting burden. In this regard, it has the same aim as the impact assessment conducted by the European Commission.

Specifically, on the basis of the cost assessment carried out by NCBs and the merits assessment conducted by user committees and other potential users, as well as following informal consultations with stakeholders, a concrete proposal for requirements to be addressed to reporting agents was elaborated. It was concluded that the introduction of the AnaCredit requirements (gradual development of new systems and/or enhancement of existing ones, for both NCBs and reporting agents) would follow a step-wise approach with regard to the reporting population, counterpart sectors, reporting frequency, reporting threshold, instruments and attributes.

In this context, on 18 November 2015 **the Governing Council agreed in principle with the overall scope of the data collection in the first stage and the draft regulation was published on the ECB's website on 4 December 2015 for comments.** The draft regulation strikes an appropriate balance between user needs and the time schedule, since it meets strong ESCB needs, as expressed by the relevant ESCB user committees, while the proposed timeline allows for a gradual introduction of the necessary changes and preparations by NCBs and by reporting agents. Any possible future enhancements will materialise only on the basis of Governing Council assessments and following the adoption of legal acts, and at least two years will be left to NCBs and reporting agents for implementing each of any subsequent stages, as laid down in the draft regulation. The Governing Council plans to take a final decision on the draft regulation by May 2016.

The first stage of the data collection is scheduled to commence in late 2018 with reference data on September 2018 and it is expected to lead to the release of a significant dataset on credit granted by credit institutions to legal entities, in particular small and medium-sized enterprises which form the backbone of the economy, needed for the performance of ESCB tasks.

Box 2
Financial market data standards – a common data language for the financial industry

Benefits for integration

To foster financial integration in Europe, the ECB supports the standardisation of financial information. With the increasing importance of and need for granular information for policy-making, supervision and the financial markets themselves, the quality and consistency of micro data require special attention.

Without common standards, barriers to integration emerge. The demands of the digital economy and regulators for standards are leading to the creation of individual and "local" standards, which are limited to their specific use case. Local standards are inefficient in terms of data-sharing and digital processing and lead, in turn, to incomplete and inconsistent information, hampering market integration and growth.

The obstacles involved in arriving at EU-wide data standards range from cultural differences, differences in legal concepts, the effort required to agree on the semantic definitions and profound changes in information systems to the establishment of the overall governance and maintenance process for financial market data standards.

Investment in EU Member States requires an understanding of the local market. Cross-border transparency and comparability are essential for the mutual trust that is pivotal to opening up borders. Financial integration requires transparency, i.e. easy access to financial information across the Single Market.

The way forward

"Who trades what?", "Who holds what?", "Who holds which risk?" and "Who is exposed to which counterparties?" are common questions from regulators, risk managers and policy-makers alike. The development and usage of global identifiers - e.g. on counterparties (LEI), transactions (UTI) and products (UPI) - are a prerequisite to be able to answer these questions. Without common identifiers, the authorities and risk managers in the industry cannot match reported information. Risk managers will not get the comprehensive view of markets and market activities required to fulfil their mandate.

Chart A
Who trades what?

Over the past four years a global partnership between the financial industry and the authorities has developed the global Legal Entity Identifier (LEI) for identifying parties to financial transactions. They recognised the benefit of counterparty identification for managing risk to the financial system. The unique identification allows the origins and transmission of threats to the system to be identified and assists investors, firms and supervisors in mitigating them. The development of the important Unique Transaction Identifiers (UTI) and Unique Product Identifiers (UPI) has been mandated for OTC derivatives data elements by the Financial Stability Board.

The development of these identifiers is a crucial first step, but more needs to be done. The need for high-quality, comparable and timely data, on the one hand, and cost-efficiency in regulatory reporting on the other hand, is the motivation for the European Reporting Framework (ERF) and Banks' Integrated Reporting Dictionary (BIRD), both initiated by the ESCB. The ERF aims to establish a single and integrated reporting framework for monetary, supervisory and other reporting, for the EU. In cooperation with the banks, BIRD aims to streamline the overall reporting process from banks to authorities. BIRD intends to provide a formal documentation describing both the information that banks need to extract from their operational systems and the transformation rules applied to these supplied data. In parallel, the ECB is working on a Single Data Dictionary (SDD) to provide a unique metadata definition for the reporting frameworks managed within the ECB.

An EU-wide repository of data definitions (metadata) would be a big step towards establishing a common data language. Such a federated metadata inventory would not only enable the combination and linking of financial data in the Single Market, it would also allow the re-use of existing standards. Further effort is required to find a way to capture financial contract characteristics and store contracts in a transparent, consistent and precise way, thus making them searchable for data on investment opportunities and risk management.

Conclusion

The financial industry and the relevant authorities are calling for standards to match information reported by firms, to assess investment opportunities and threats to the financial markets and to reduce reporting burdens. The usage of common financial data standards would be a major step forward in fostering financial integration in Europe. Considerable effort will be required and many obstacles will have to be overcome by both the industry and the authorities to establish a unique data language. Common EU-wide standards would be powerful in their effective impact on integration, by providing transparency, fostering growth and promoting innovation in the Single Market.

4 Central bank services that foster integration

The Eurosystem is also a provider of central bank services that enable a harmonised and seamless flow of funds and assets across borders. These are TARGET2, the pan-European platform for settlement of payments in euro in central bank money; TARGET2-Securities (T2S), the pan-European platform for securities settlement in central bank money; and the correspondent central banking model for managing collateral in Eurosystem credit operations.

These services provide a technically and operationally integrated environment which is a precondition for an integrated financial market. The main purpose of such services is the performance of the Eurosystem's basic central banking tasks; at the

same time, the Eurosystem pays close attention to ensuring that such services are also conducive to deeper financial integration.[78]

During 2015 the ECB and the Eurosystem focused their activities in the field of central bank services on the following areas.

TARGET2

TARGET2 continues to make a crucial contribution to European financial integration. As the first market infrastructure which was completely integrated and harmonised at the European level, TARGET2 eliminated the fragmented situation that previously existed in the management of central bank liquidity and the real-time settlement of euro payments. The move to a system based on a single technical platform represented a significant step towards a highly efficient, competitive, safe and fully integrated European payments landscape. TARGET2 introduced a level playing field for all market participants offering equal conditions and services regardless of location. Moreover, banks can effectively manage their central bank reserves owing to the liquidity efficiency measures available in TARGET2.

At present, 25 central banks of the EU and their respective national user communities use the single shared platform of TARGET2: the 19 euro area NCBs, the ECB, and 5 NCBs of non-euro area EU Member States[79].

TARGET2 provides a harmonised set of cash settlement services in central bank money for all kinds of financial market infrastructures (FMIs), such as retail payment systems, money market systems, clearing houses or securities settlement systems. More than 80 FMIs are connected to TARGET2. The main advantage of FMIs' participation in TARGET2 is that they are able to settle their cash positions in central bank money via standardised settlement procedures, thus allowing a substantial harmonisation of business practices. In 2015 TARGET2 had a service availability of 100%, helping to ensure a reliable and smoothly operating market infrastructure across the euro area.

In 2015 the TARGET2 market share remained stable, with 91% of the total value and 61% of the total number of euro-denominated large-value and urgent payments[80] executed via TARGET2. The average daily number of payments processed by the system in 2015 was 327,110, while the average daily value was €1,970 billion. Customer payments accounted for the largest share in terms of the number of TARGET2 payments (58%), while interbank payments were the highest contributor in terms of turnover settled (24%). In 2015 each euro in TARGET2 was used to make approximately 3.40 euro worth of payments per business day, showing the high velocity of money in the system. The overall share of value that was settled

78 An illustration of how integrated market infrastructure and harmonised rules contribute to market integration in Europe can be found in the video "Integration of market infrastructure".

79 The central banks of Bulgaria, Croatia, Denmark, Poland and Romania.

80 Payments, generally of very large amounts, which are mainly exchanged between banks or between participants in the financial markets and usually require urgent and timely settlement (see the TARGET2 glossary).

on a cross-border basis was 34% in 2015. While TARGET2 is a core market infrastructure for the euro, the overall figures also make TARGET2 one of the largest systems for large-value and time-critical payments in the world, alongside Fedwire in the United States and Continuous Linked Settlement (CLS), an international system for settling foreign exchange transactions.

As part of its commitment to transparency, the ECB started in 2015 the monthly publication of the individual figures for the claims and liabilities of euro area NCBs vis-à-vis the ECB that arise from cross-border payment flows settled through TARGET2, which are also known as the TARGET balances. The emergence of large TARGET balances during the crisis broadly reflected the distribution of non-cash central bank liquidity within the Eurosystem as, from the start of the crisis, the Eurosystem accommodated the euro area banking sector's liquidity needs, providing ample liquidity through its refinancing operations via TARGET2. Interpreting the balances within an integrated financial system like the euro area requires caution however. For instance, balances also reflect payment flows caused by TARGET participants that are not eligible Eurosystem counterparties or by a banking group that distributes liquidity across its member banks via TARGET2.

TARGET2-Securities

The development of T2S is the Eurosystem's response to the lack of integration in the infrastructure that underlies capital markets in Europe. On 22 June 2015 the T2S platform went live. Five European markets – namely Greece, Italy, Malta, Romania and Switzerland – migrated to T2S and the platform is running smoothly.[81] Another 18 markets are expected to migrate to T2S by September 2017.

The T2S project was launched by the Eurosystem to address the persistent fragmentation of the securities settlement process (i.e. the transfer of securities between intermediaries). So far, this process has been based on national infrastructure, rules and market practices. By contrast, T2S is a single piece of market infrastructure capable of settling securities transactions in central bank money across borders, CSDs and currencies.

The deep fragmentation of the EU post-trade market, coupled with the existence of procedures that have not yet been harmonised across national markets, is a well-known issue that was studied as early as a decade ago in the reports on "Cross-border Clearing and Settlement Arrangements in the EU" issued by an expert group sponsored by the European Commission (the so-called Giovannini Reports, 2001 and 2003).[82] This fragmentation has resulted in complexity, costs and inefficiencies, particularly in cross-border securities transactions. Ultimately, it has hindered the realisation of a genuine single capital market and created a competitive disadvantage for European capital markets.

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81 More information on the project status can be found on the ECB's website.

82 See Second Report on EU Clearing and Settlement Arrangements, Giovannini Group, April 2003.

The T2S platform has helped solve this problem as it has delivered a horizontal securities settlement functionality that offers the same price for all domestic and cross-border transactions. T2S is able to perform settlement of all securities, both debt securities and equities, in central bank money. In T2S, transactions can be settled against the euro as well as any other currency, provided that there is agreement with the respective central banks.

The T2S platform will be fully rolled out in the coming two years. By then, 23 European CSDs, covering 21 EU markets, will have connected to the T2S platform, for both securities and euro cash settlement, as set out in the migration plan.[83] As of 2018, T2S will also start settling securities transactions against the Danish krone, as agreed with the Danish central bank. The high level of participation in T2S, including nearly 100% of the securities volumes currently settled in the euro area in central bank money, will lead to significant economies of scale and lower settlement costs, and will ensure a wide spread of the efficiency benefits brought about by T2S. Other central banks and securities depositories are expected to join the platform in the future, extending the reach of T2S to new markets and currencies.

T2S is widely recognised by institutions and market participants as a key initiative for accomplishing a single capital market in Europe, bringing down costs and generating savings as a result of the possibility to pool liquidity, assets and collateral at the European level.

Eurosystem collateral management

Since its implementation in 1999, the correspondent central banking model (CCBM) has fostered financial market integration by enabling all euro area counterparties to use a common set of eligible marketable assets as collateral in Eurosystem credit operations, regardless of the location of the underlying assets or the counterparty. In line with the addition of non-marketable assets to the common set of eligible assets in 2007, specific procedures for the cross-border use of such assets under the CCBM were developed.

The CCBM is the main channel for the cross-border use of collateral in Eurosystem credit operations. During 2015 it accounted for 46% of the collateral used across borders and 14% of the total collateral provided to the Eurosystem.

83 http://www.ecb.europa.eu/paym/t2s/progplan/html/index.en.html

Special Feature A
Financial integration and risk-sharing in a monetary union[84]

The global financial crisis, and especially the sovereign debt crisis, have raised two questions about what may be called the "quality" of financial integration, which are paramount for the euro area. First, what aspects of integration ensure its resilience, i.e. ensure that it does not unravel and become itself a source of instability, in the face of large shocks to the financial sector and economic activity? Second, what is the contribution of financial integration to aggregate welfare, and which type of integration is most conducive to the sharing of risks across countries, both during booms and during busts? This Special Feature argues that financial integration in assets with state-contingent payoffs, such as equity and foreign direct investment (FDI), and longer maturity debt is likely to be particularly desirable. Likewise, retail banking integration is more resilient to shocks and beneficial than integration in wholesale interbank lending. In the last few years, the share of both equity and long-term debt instruments in intra-euro area cross-border portfolios has somewhat increased. Cross-border bank lending to firms also increased mildly in the last two years, but its level remains way below interbank lending, even though the latter contracted. It may be desirable that these resilience-enhancing developments proceed further. One of the key economic benefits of financial integration stems from the ability of integrated asset markets, by making it possible to hedge against country-specific sources of risk, to smooth income and consumption growth, also known as cross-country risk sharing. Even though the introduction of the euro has fostered risk sharing, the latter still remains at relatively low levels in the euro area and is also unstable over time. Research suggests that reducing home bias in equity holdings (and fostering retail bank integration) can enhance risk sharing opportunities. This underlines the importance of the European Commission's capital markets union initiative (and also of its recent Green Paper on retail financial services) for fostering risk sharing across countries.

1 The resilience of European financial integration

Before the crisis, financial integration in the euro area was widely assumed to be structural and not readily reversible, despite differences in the degree and pace across market segments.[85] However, the crisis has shown that gains in financial integration can be vulnerable to market conditions.[86] Overall, at the heights

[84] Prepared by R. Beck, L. Dedola, A. Giovannini and A. Popov.

[85] The first issue of this report in March 2007, looking at the previous ten years, acknowledged that the "evidence suggests that the degree of integration varies greatly depending on the market segment and is, inter alia, correlated with the degree of integration of the underlying infrastructure".

[86] See "European financial integration in times of crisis", speech by Peter Praet, Member of the Executive Board of the ECB, at the ICMA Annual General Meeting and Conference, Milan, 25 May 2012.

of the crisis, the process of integration was brought to a halt or even reversed. Almost all financial market segments in the euro area recorded sizeable fragmentation, driven by a partial renationalisation process.

Despite the improvements of the recent years, some structural weaknesses in the resilience of financial integration have not been fully resolved. As a result of, inter alia, the establishment of the banking union and the series of unconventional monetary policy actions taken by the ECB, the process of fragmentation has started to reverse again since 2014 in most market segments. This year, as this report finds, the process has further strengthened. Despite these positive developments, the crisis showed that the integration obtained at that stage did not have those characteristics of "resilience" which are essential to reaping, both in normal and crisis times, the full benefits of cross-border movements of capital and financial services.

The concept of resilience captures the ability of financial integration to resist and not unravel in the face of economic and financial shocks. Financial integration can be regarded as resilient when abnormal arbitrage opportunities do not arise in cross-border asset markets under financial stress, or when the ability to issue and purchase financial instruments in these markets does not change abruptly. Along these lines, the following sections discuss two elements that, according to the literature, are indeed two factors contributing to ensuring such resilience, namely the composition of cross-border asset holdings and their direction.

1.1 The composition of cross-border asset holdings in the euro area

The economic literature is quite unanimous in concluding that the composition of international asset holdings appears to be crucial in determining to what extent financial integration is beneficial.[87] Several analyses, by considering a broad set of financial assets through which integration takes place, were able to reconcile the prediction of standard economic models with apparent conflicting evidence, which showed lower than expected benefits from financial integration.[88]

Three main dimensions emerge, namely the type of cross-border financial instruments traded (debt or equity), their maturity (short or long-term) and the layers of intermediation involved in the cross-border investment. This dimension is relevant for FDI vis-à-vis portfolio investment, whereby the former is usually held directly by foreign firms for control purposes, while the latter is typically intermediated by e.g. investment funds. But it is also relevant for cross-border banking assets (a sizeable bank balance sheet component in the euro area) depending on whether the exposure towards the foreign counterpart is direct or intermediated by another financial institution abroad.

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87 See Goldberg, L., "Financial-sector FDI and host countries: New and old lessons", NBER Working Paper No 10441, National Bureau of Economic Research, 2004, and Henry P. B., "Capital Account Liberalization: Theory, Evidence and Speculation", *Journal of Economic Literature*, Vol. XLV, December 2007, pp. 887-935.

88 Among the most recent contributions to this debate, see Blanchard, O., Ostry, J. D., Ghosh, A. R. and Chamon, M., "Are Capital Inflows Expansionary or Contractionary? Theory, Policy Implications, and Some Evidence", NBER Working Paper No 21619, National Bureau of Economic Research, 2015.

One widely recognised feature of European financial integration is that it is biased towards debt finance, and especially towards intermediation by banks. As also documented by Rogoff (1999), this is not a unique feature of the euro area, as it concerns global financial integration in general.[89] As a result of the Asian crisis, this bias has been widely discussed with respect to international financial flows to emerging and developing economies in the late 1990s.[90] By looking at the leading global economies, Lane and Milesi-Ferretti (2007) highlight significant differences in the composition of countries' external portfolios.[91] Many advanced economies are "short on debt, long on equity" (most notably the United States and the United Kingdom), while Japan and the euro area (but more generally the European Union) have the greatest concentration of debt portfolio investments. In the euro area, the ratio of portfolio equity and FDI liabilities to total liabilities stood at around 40% in 1998 and remained broadly unchanged over the following ten years. While this debate on the composition of external balance sheets thus has a natural global dimension, it nonetheless also has substantial implications when discussing the resilience of financial integration in the euro area.

The pro-cyclical and highly volatile nature of debt finance, relative to equity, can magnify the adverse impact of negative shocks on economic growth. Debt tends to be more prone to runs than equity; it is thought that liquidity crises have often been triggered by sudden stops in debt investment, rather than equity-like forms of finance.[92] There are both theoretical and empirical groundings for such a view. At a conceptual level, debt finance lacks the state-contingency of payoffs of equity-like flows. State-contingency is key to ensure that a financial instrument entails a degree of risk insurance and thus contributes to completing markets by spanning relevant risks. Therefore, equity payoffs tend to be naturally lower during bad times, such as a recession. Debt payoffs are generally independent of economic conditions and hence tend to exacerbate the adverse effects of a recession. Moreover, the main contingency of debt contracts – default risk – makes borrowing more difficult in bad times, precisely when countries need insurance the most. Another difference between debt and equity is maturity. As debt is provided for a limited period only, it imposes rollover risks on the borrower. By contrast, equity is provided by investors for unlimited periods and does not imply rollover risks. These theoretical considerations are also mirrored by the empirical literature, which finds that equity flows are likely to generate greater advantages from financial

89 Rogoff, K., "International institutions for reducing global financial instability", *Journal of Economic Perspectives*, Vol. 13, 1999, pp. 21-42.

90 For a literature review on this debate, see among others Agenor, P.-R., "Benefits and costs of international financial integration: theory and facts", Vol. 2699, World Bank Publications, 2001.

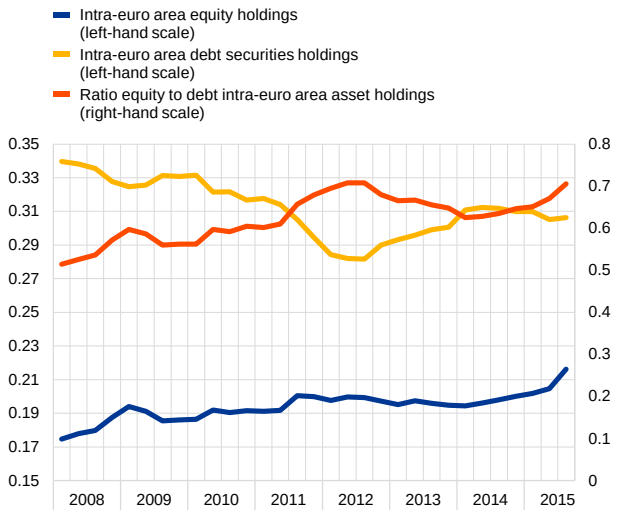
91 See Lane, P. and Milesi-Ferretti, G.-M., "The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004", *Journal of International Economics*, Vol. 73, 2007, pp. 223-250.

92 Kose at al. (2009) provide a possible unified conceptual framework for organising this vast and growing literature on the benefits and costs of financial globalisation and for reconciling the apparently conflicting results. In particular, they conclude that this literature is unanimous on the point that debt generates the greatest risks from financial openness. See Kose, M. A., Prasad, E., Rogoff, K. and Wei, S.-J., "Financial Globalization: A Reappraisal", IMF Staff Papers, Vol. 56(1), Palgrave Macmillan, April 2009, pp. 8-62.

integration.[93] More recent findings also conclude that both FDI and portfolio equity exhibit much lower volatility around financial crises than portfolio debt and especially debt finance intermediated by banks.[94]

Chart 1

Intra-euro area asset holdings: foreign equity investment versus foreign debt investment



Source: ECB.
Notes: the blue line plots the evolution of holdings by euro area investors (all sectors) of equity) issued by other euro area countries as % of the total euro area holdings of equities. The yellow line plots the evolution of holdings by euro area investors (all sectors) of debt securities issued by other euro area countries as % of the total euro area holdings of debt holdings. The red line plots the ratio of the two shares.

Looking at intra-euro area holdings, equity investments are becoming more and more relevant than foreign debt. As documented in Chart 1, despite the partial reversal of flows witnessed in the aftermath of the sovereign debt crisis, the composition of intra-euro area asset holdings has changed over the most recent years: equity and FDI investments are becoming more and more relevant than foreign debt. Chart 1 also shows that the ratio of intra euro area foreign equity investment (FDI and portfolio equity stock liabilities, including investment in fund shares) to intra euro area debt securities holdings has been increasing since the third quarter of 2014. This evolution is driven by an increase in the numerator (+2%) accompanied by a decline in the denominator (-1%). As a result, the composition of the intra-euro area holdings now appears to be going in the direction of creating a more "resilient" financial integration.

The weight of bonds has also gradually decreased in favour of more equity portfolio investment.

Similar evidence emerges from Chart 2, which focuses on intra-euro area portfolio holdings of bonds and equity instruments. Bonds account for the bulk of the increase in intra-euro area trade in capital. Nevertheless, following a drop during the global financial crisis mainly due to valuation effects, the share of equity instruments in the total amount of portfolio cross-border assets has been gradually increasing. This happened not only as a result of a larger decrease in bond holdings. In fact, since 2009 intra-euro area equity portfolio holdings increased by around 35% from low levels, in contrast to an overall contraction of around 10% in debt securities. Looking at their distribution across euro area economies, Chart 3 shows that the composition of intra-euro area holdings of portfolio investment securities still appears systematically different. The share of equity portfolio investment in total portfolio investment in euro area countries that experienced a significant deterioration in long-term credit rating since the onset of the financial crisis (group B) is indeed systematically lower than that for the remaining euro area

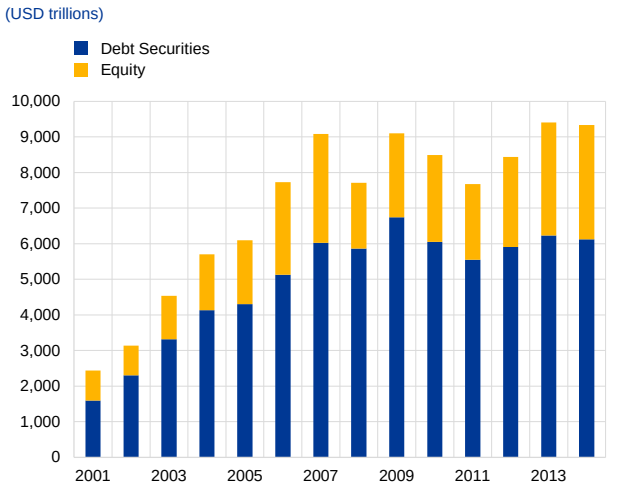
[93] Bekaert et al. (2001) find that equity market liberalisation induces a significant increase in the growth rate of output and Henry (2000) documents that it leads to a substantial increase in the growth rate of investment. See Bekaert, G., Harvey, C. R. and Lundblad, C., "Emerging equity markets and economic development", *Journal of Development Economics*, Vol. 66(2), Elsevier, December 2001, pp. 465-504, and Henry, P. B., "Do Stock Market Liberalizations Cause Investment Booms?", *Journal of Financial Economics*, Vol. 58, No 1-2, 2000, pp. 301-34.

[94] See Becker, T., Jeanne, O., Mauro, P., Ostry, J. and Ranciere, R., "Country insurance: The role of domestic policies", IMF Occasional Paper No 254, 2007.

countries (group A).[95] Nevertheless, since 2008, this dissimilarity has been gradually receding, suggesting a gradual convergence in the composition of the stocks.

Chart 2

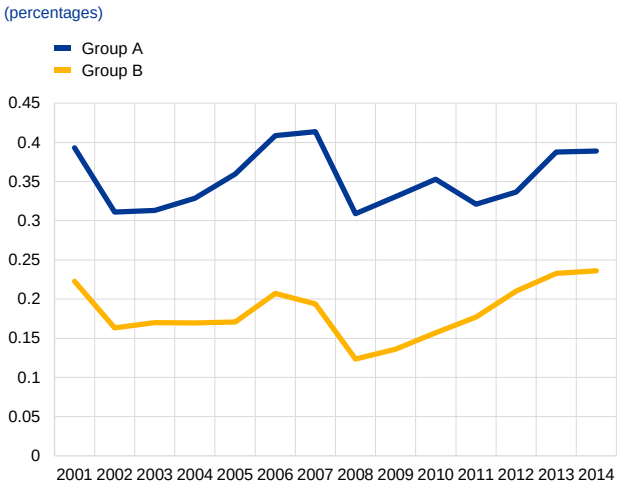
Intra-euro area portfolio holdings of bonds and equity instruments



Source: IMF data.
Note: the chart reports holdings of portfolio investment securities (equity and debt instruments) as reported in the Coordinated Portfolio Investment Survey. The sample is composed of the original 12 euro area countries.

Chart 3

Intra-euro area holdings of portfolio investment securities: share of equity portfolio investment in total portfolio investment



Source: IMF data.
Notes: The chart compares the share of equity portfolio investment in total portfolio investment in countries in Group A and B. The methodology for such country groupings is described in the Statistical Annex

A second key facet of the composition of capital flows concerns their maturity, as short-term flows are thought to be more volatile. The literature has extensively debated the benefits and risks associated with capital market liberalisation processes, also in this regard with a focus on developing and emerging economies. One of the conclusions is that the risks stemming from capital market liberalisations do not seem to be mainly driven by the presence of foreign capital, but rather by the fact that most of these flows are of a short-term nature.[96] The work of Montiel and Reinhart (1999) shows that greater short-term exposure is associated with more severe crises when capital flows reverse and with a higher risk of sudden and massive reversals in these flows.[97] From this perspective, short-term capital flows have a pro-cyclical effect that increases macroeconomic instability, leading to a systematic empirical link between exposure to short-term debt and the likelihood (and severity) of financial crises of financially integrated countries.[98] In discussing

[95] The methodology for such country groupings is described in the Statistical Annex.

[96] Stiglitz (2000) argues that in the case of short-term capital flows, the risks are recognised to be greater and the benefits to be lower. See Stiglitz, J. E., "Capital market liberalization, economic growth, and instability", *World Development*, Vol. 28(6), 2000, pp. 1075-1086.

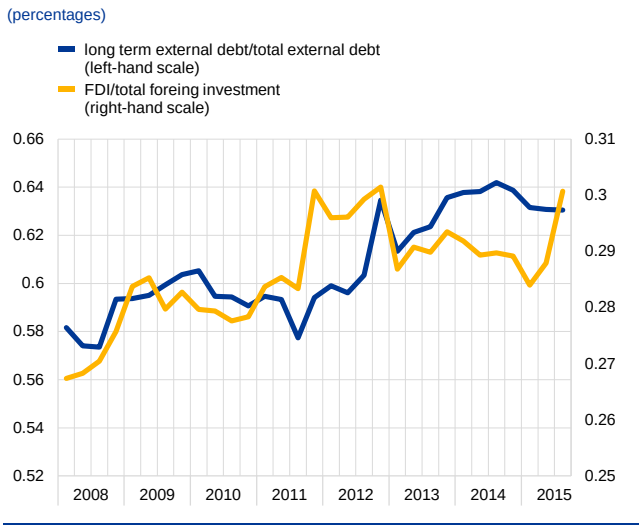
[97] See Montiel, P. and Reinhart, C. M., "Do capital controls and macroeconomic policies influence the volume and composition of capital flows? Evidence from the 1990s", *Journal of International Money and Finance*, Vol. 18(4), 1999, pp. 619-635.

[98] Rodrick and Velasco (1999) provide a conceptual and empirical framework for evaluating the effects of short-term capital flows and show that short-term debt is a robust predictor of financial crises and that greater short-term exposure is associated with more severe crises when capital flows reverse. See Rodrik, D. and Velasco, A., "Short-term capital flows", NBER Working Paper No 7364, National Bureau of Economic Research, 1999.

these findings, it is worth mentioning the complementary view of Diamond and Rajan (2001) on why short-term liabilities are more unstable than long-term liabilities.[99] According to this view, short-term debt reflects – rather than causes – financial distress. The higher likelihood of crisis stems from the fact that the incidence of short-term debt is higher, the more illiquid and less creditworthy the investment being financed, as well as the lower the debt capacity. This aspect has important policy implications, which will be discussed in the last section of this Special Feature.[100]

Chart 4

Intra-euro area asset holdings: share of long-term debt in total external debt and share of FDI in total foreign investment



Source: IMF data.
Note: The sample is composed of the initial 12 euro area countries and only takes into account portfolio investment.

The relative stability of FDI compared with other forms of capital inflow may reduce the risk of a sudden stop and abrupt outflow. Another way of looking at the importance of the composition of cross-border assets is to differentiate between FDI and portfolio equity investment. Given its long-term and relatively fixed nature, FDI appears to be the least volatile category of foreign capital and plays essentially no role in current account reversals.[101] By contrast, portfolio investment (and, as previously discussed, especially portfolio debt) appears more prone to abrupt reversals, being more sentiment-driven and hence less stable as a source of foreign capital.[102] Chart 4 summarises the two measures. First, long-term debt stocks accounted for more than half of intra-euro area total external debt in 2008, but the share has also significantly increased since 2013. This increase has not been driven by a reduction of short-term debt, but rather by a stronger increase of long-term debt (+59% versus +29% over the period Q1 2008-Q3 2015). Second, the share of intra-euro area FDI in total foreign investment increased over the same period by almost 5 percentage points and these flows now represent around one-third of overall foreign investment. Also in this case, the gradual increase has been mainly driven by the numerator, i.e. by stronger increase in the value of intra-euro area FDI.

Finally, the composition of intra-euro area foreign bank lending is indeed a crucial element when discussing the degree of financial integration in Europe. Fecht et al. (2007)[103], by comparing different forms of inter-regional financial risk

99 See Diamond, D. W. and Rajan, R. G., "Banks, short-term debt and financial crises: theory, policy implications and applications", Carnegie-Rochester Conference Series on Public Policy, Vol. 54(1), North-Holland, 2001.

100 Benmelech, E. and Dvir, E., "Does Short-Term Debt Increase Vulnerability to Crisis? Evidence from the East Asian Financial Crisis", *Journal of International Economics*, Vol. 89(2), March 2013, pp. 485-494.

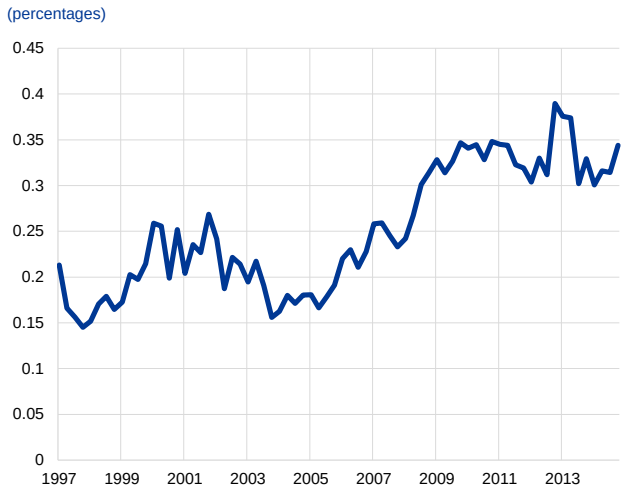
101 See Becker, T., Jeanne, O., Mauro, P., Ostry, J., and Ranciere, R., "Country insurance: The role of domestic policies", IMF Occasional Paper No 254, 2007.

102 Prasad et al. (2003), by analysing separately financial flows to more and less financially integrated economies, show that the volatility of FDI flows is much lower than that of other types of flow. See Prasad, E., Rogoff, K., Wei, S.-J., and Kose, M. A., "Effects of Financial Globalisation on Developing Countries: Some Empirical Evidence", *Economic and Political Weekly*, Vol. 38(41), 2003, pp. 4319-4330.

103 See Fecht, F., Grüner, H. P. and Hartmann, P., "Welfare Effects of Financial Integration", CEPR Discussion Papers 6311, 2007.

Chart 5

Composition of intra-euro area foreign bank lending: direct foreign bank lending



Source: ECB.
Notes: The chart shows the median among euro area countries of the ratio of foreign bank lending to households and NFCs (retail lending) to other foreign bank lending to banks (wholesale lending). This measure does not consider lending to households and NFCs by local branches and subsidiaries of foreign banks.

sharing, show that penetration of retail markets is the preferred type of integration. The secured interbank market appears to be a particularly good risk-sharing device when banks report liquidity needs truthfully. However, the crisis has called this assumption into question and showed how free-riding on the liquidity provision in this market restrains the achievable risk sharing. Given this moral hazard problem, unsecured interbank lending or, ultimately, the penetration of retail markets is the preferable integration mechanism, especially for large markets. While following the introduction of the euro, interbank money markets integrated very quickly, cross-border integration in banking and retail financial services occurred at a slower pace. Chart 5 below shows how cross-border direct lending to households and non-financial corporations (without considering lending by local branches and subsidiaries of foreign banks) still accounts for a small share of total foreign bank lending in the euro area. Signs of improvement have been visible since the crisis, driven by an increase of direct foreign bank lending (+11% since 2008), but also a sharp reduction of wholesale lending (-32%). Recent improvements are correlated especially with the launch of the banking union and ECB monetary easing: in the first six months of 2015 wholesale lending increased by 1.4%, compared with an increase in retail lending of 5%.

1.2 The direction of capital flows in the euro area

A key finding from the recent literature is that cross-border flows tend to be more stable and create a more balanced integration when they have a bi-directional structure. This applies to banking[104] and portfolio flows, which tend to be more volatile than other flows (see Section 1.1), in particular when they flow persistently in one direction. Such one-directional (net) capital flows are in general beneficial when moving “downhill” from richer, more capital-abundant countries to less rich and less capital-abundant ones, since they are likely to fund economic catching-up in this case.

There is indeed evidence for the euro area which suggests that net capital was largely flowing downhill to the economies with a lower per capita GDP than the average, during a period of high growth expectations in these countries.[105] However, such flows can also entail vulnerabilities and risks if they lead to excessive

[104] See Allen, F., Beck, T., Carletti, E., Lane, P., Schoenmaker, D. and Wagner, W., “Cross-border banking in Europe: Implications for financial stability and macroeconomic policies”, CEPR Report, London, 2011.

[105] See Herrmann, S. and Kleinert, J., “Lucas paradox and allocation puzzle: Is the euro area different?”, Deutsche Bundesbank Discussion Paper No 06/2014, 2014.

borrowing mainly in debt-like instruments during booms and sudden reversals in bust periods. Such risks materialised within the euro area as capital flows were partly directed towards unproductive uses.[106] Once these flows were reversed due to rising external and internal imbalances, euro area capital flows sharply reversed, partly flowing towards safe-haven countries within the euro area.[107]

1.2.1 Assessing financial integration in EMU via gravity model benchmarks

One way to illustrate that the pre-crisis literature on financial integration in the euro area did not pay sufficient attention to the direction of capital flows within the currency union is to re-estimate gravity models for global bond investments proposed, for example, by Lane (2006).[108] This exercise suggests that the evidence for a positive effect of Economic and Monetary Union (EMU) on financial integration in the euro area before the sovereign debt crisis mostly reflected large downhill investments from the European core to the periphery, rather than broad-based integration in capital markets fostered by the single currency.

The motivation for such empirical gravity models stems from the notion that global investment patterns tend to be more concentrated in nearby markets, due to segmentation of product and capital markets, information asymmetries, transaction costs, differences in institutions (such as tax and legal systems) and other frictions.[109] In addition, since hedging against currency risk is costly, there may be a preference for bonds issued in the investor's home currency. Moreover, to the extent that a group of countries shares a common financial infrastructure, this should raise intra-group financial trade relative to other destinations that may involve higher transaction costs.[110] According to Lane (2006, p. 4), these two factors were especially relevant for the euro area, to the extent that the single currency has both eliminated nominal exchange rate risk among the member countries and lowered transaction costs by improving liquidity through a deepening and broadening of the consolidated euro area bond market, relative to the individual national bond markets that operated prior to the launch of EMU. Consequently, Lane finds that in a gravity model of international portfolio investment, cross-investments (in terms of levels and changes between 1997 and 2004) among euro area countries are substantially higher than among other country pairs.

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106 See Benigno, G., Converse, N. and Fornaro, L., "Large capital inflows, sectoral allocation, and economic performance", *Journal of International Money and Finance*, Vol. 55, 2015, and Gopinath, G., Kalemli-Ozcan, S., Karabarbounis, L. and Villegas-Sanchez, C., "Capital Allocation and Productivity in South Europe", NBER Working Paper No 21453, National Bureau of Economic Research, 2015.

107 See Beck, R., Georgiadis, G. and Gräb, J., "The geography of the great rebalancing in intra-euro area bond markets during the sovereign debt crisis", *Working Paper Series*, No 1839, ECB, August 2015.

108 See Lane, P., "The Real Effects of European Monetary Union", *Journal of Economic Perspectives*, Vol. 20(4), 2006.

109 See also Lane and Milesi-Ferretti (2008, op. cit.), who review these mechanisms and study international investment patterns for portfolio equity investments.

110 See Martin, P. and Rey, H., "Financial integration and asset returns", *European Economic Review*, Vol. 44(7), 2000, pp. 1327-1350.

The specific positive effect of EMU on portfolio investment mainly stemmed from the massive one-way flows from non-vulnerable to vulnerable euro area countries in 2004, which drastically reversed direction in 2013. Table 1 presents a re-estimation of the empirical model developed by Lane (2006), using similar gravity-type control variables (such as trade linkages, distance and common languages) and a pair-wise dummy variable which takes the value of 1 if both the source and host countries are members of the euro area and 0 otherwise, for the level of cross-border portfolio investment in both 2004 and 2013 (columns 1 and 3). In both years, the euro area pair-wise dummy variable is significantly positive, pointing to a large effect of EMU on the size of portfolio investment even during the sovereign debt crisis. However, the results change when this dummy is replaced with one that distinguishes between vulnerable and non-vulnerable euro area countries. Table 1 suggests that the specific positive effect of EMU on portfolio investment mainly stemmed from the massive one-way flows from the latter to the former in 2004 (column 2), which drastically reversed direction in 2013 (column 4). During the sovereign debt crisis, investment was running uphill, reflecting a sudden stop accompanied by a flight to safety within the currency union.

Table 1

Gravity model for global capital flows

(dependent variable: changes in cross-border portfolio investment)

	(1) 2004 b/se	(2) 2004 b/se	(3) 2013 b/se	(4) 2013 b/se
Imports	0.091*	0.083	0.163**	0.157**
	(0.052)	(0.052)	(0.066)	(0.066)
Dist	-0.693***	-0.673***	-0.650***	-0.671***
	(0.105)	(0.104)	(0.106)	(0.105)
Colony	0.283	0.216	0.442*	0.347
	(0.320)	(0.309)	(0.231)	(0.222)
Language	0.305	0.424	0.207	0.336
	(0.333)	(0.323)	(0.224)	(0.217)
Contiguity	-0.208	-0.078	0.059	0.193
	(0.235)	(0.226)	(0.244)	(0.237)
EA_Pair	0.543**		0.714***	
	(0.233)		(0.238)	
Non-vulnerable to vulnerable		1.494***		0.445
		(0.241)		(0.299)
Vulnerable to Non-Vulnerable		0.137		0.401*
		(0.222)		(0.245)
Observations	880	880	846	846
R2	0.79	0.80	0.82	0.82

Notes: The estimates are based on an IMF dataset from its Coordinated Portfolio Investment Survey (CPIS) including 70 investor and around 200 destination countries. The colony dummy variable is a standard variable in gravity models and assumes the value of zero for all euro area country pairs.

Looking ahead**, it is worth measuring to what extent countries receive inflows and outflows and how well their investment and source destinations are**

diversified.[111] These measures would provide a better gauge of whether cross-border investments within the euro area are balanced or are creating vulnerabilities.

2 The risk-sharing implications of financial integration

Achieving a more resilient financial integration in the euro area is not an end in itself. **One of the key benefits of financial integration stems from the ability of integrated markets to allow consumption growth to be smoothed.**[112] Income and consumption smoothing between countries, also known as risk sharing, can increase welfare by hedging consumption against country-specific sources of risk.

The basic idea of risk sharing can be viewed as the cross-sectional counterpart of the permanent income hypothesis. In the same way that forward-looking economic agents would like to smooth their desired consumption path over time, e.g. using financial markets to transfer their income between two dates, risk-averse agents would like to insure their level of desired consumption across possible contingencies at a given point in time, e.g. by pooling idiosyncratic risk in financial markets. The main implication of the presence of full risk sharing is that individual consumption should not vary in response to idiosyncratic (wealth) shocks, e.g. due to "bad luck". At the more aggregate level, for example regions within a country (or nations if one takes an international perspective), full risk sharing implies that consumption across jurisdictions (regions or countries) should be insensitive to purely local income and wealth fluctuations, and should move proportionally if its relative price is equalised. An implication of this efficiency condition is that, more generally, positive consumption growth differentials between two jurisdictions should reflect negative inflation differentials in the respective prices of consumption baskets.[113]

For countries in a monetary union, risk sharing is particularly important because the single monetary policy is unable to address asymmetric shocks. Asymmetric shocks or asymmetric responses to common shocks may generate inflation and output differentials in a currency union. However, such differentials should concern policy-makers when they are reflected in large consumption differentials, adjusted for purchasing power differences. In this respect, reducing volatility of aggregate consumption via risk sharing should provide welfare gains for those countries hit by specific shocks, but also for the monetary union as a whole, by reducing internal divergences and facilitating macroeconomic adjustment. It is well

[111] These indicators were suggested by Schoenmaker and Wagner (2011) in the context of cross-border banking. See Schoenmaker, D. and Wagner, W., "The impact of cross-border banking on financial stability", Tinbergen Institute Discussion Paper No 11-054/2/DSF18, 2011.

[112] See Obstfeld, M. and Rogoff, K., *Foundations of International Macroeconomics*, Harvard University Press, 1996.

[113] More precisely, consumption will be proportional across regions only if utility functions and the price of the consumption basket in the same currency units are the same. If these relative prices fluctuate, as happens in the euro area, cross-country consumption differentials will not, in general, signal a departure from full risk-sharing. It is interesting to note that this condition characterises the highest amount of risk-sharing achievable even if the actual relative price of the consumption basket differs from the marginal cost.

understood that the high degree of effective risk sharing in the United States is instrumental in making it a successful monetary union.[114]

The presence of cross-border flows is a necessary but not sufficient condition for achieving a high degree of effective risk sharing. The empirical literature finds ambiguous evidence that countries increased consumption smoothing and risk sharing despite widespread financial liberalisation at the global level.[115] This suggests the importance, as previously discussed, of establishing cross-border flows mainly relying on those financial assets that are more able to improve risk sharing. Artis and Hoffman (2012) find that the effects of international cross-holdings of equity on long-term risk sharing and capital income flows appear stronger than for debt assets.[116] Building on this background, the rest of this section discusses the main channels through which risk sharing takes place in a currency area, presenting the relevant evidence for the euro area.

2.1 The risk-sharing channels − market transactions and policy institutions

Different risk-sharing opportunities are provided through market transactions or through policy institutions. For instance, if financial markets are complete – i.e. a set of securities exists with payoffs that span all possible contingencies – full risk sharing can be achieved in a decentralised fashion. However, at the microeconomic level, it is clear that markets for insurance against many contingencies are not available because of moral hazard and other incentive problems. It is governments that also play an active role, e.g. by providing unemployment benefits or health insurance schemes. Likewise, in an economic and monetary union insurance across regions can be provided both by central fiscal institutions via tax transfer schemes and by market mechanisms, where different types of risk can be more or less effectively insured by one or the other mechanism.[117] For instance, when a region in a genuine economic and monetary union suffers an adverse shock, its tax contribution to the federal budget diminishes, while federal transfers and grants remain unchanged, and some such as unemployment insurance even rise.

However, the evidence shows that in a monetary union like the United States, regions pool risks more substantially through capital and credit markets too. When a positive shock hits a member of a currency union, the non-residents will

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114 Sala-i-Martin, X., and Sachs, J., "Fiscal federalism and optimum currency areas: Evidence for Europe from the United States", in Canzoneri, M., Masson, P. and Grilli, V. (eds.), *Establishing a Central Bank: Issues in Europe and Lessons from the U.S.,* Cambridge University Press: London, 1992.

115 For a detailed discussion, see Kose, M. A., Prasad, E. S. and Terrones, M. E., "Does financial globalization promote risk sharing?", *Journal of Development Economics*, Vol. 89(2), 2009, pp. 258-270.

116 Artis, M. J. and Hoffmann, M., "The Home Bias, Capital Income Flows and Improved Long-Term Consumption Risk Sharing between Industrialized Countries", *International Finance*, Vol. 13(3), 2012, pp. 481-505.

117 See e.g. Cochrane, J. H., "Volatility Tests and Efficient Markets: A Review Essay", NBER Working Paper No 3591, National Bureau of Economic Research, 1991, and Atkeson, A. and Bayoumi, T., "Do private capital markets insure regional risk? Evidence from the United States and Europe", *Open Economies Review*, Vol. 4(3), 1993.

share the benefits with the residents to some extent, as many holders of financial claims on regional assets located in different jurisdictions will receive a positive payment flow and will see an increase in the valuation of these assets. In addition, residents of a region experiencing a boom would find it easy to borrow from non-residents to finance investment to the extent that banking and credit markets are highly integrated, as they are in the United States.

More precisely, if financial markets are sufficiently developed and integrated, even if not complete according to the theoretical definition above, members of a currency union can obtain insurance against idiosyncratic shocks, via cross-border holdings of productive assets, of government bonds or of other types of financial assets whose payoffs depend on those shocks. In addition, well-functioning credit markets can contribute to smoothing consumption against relative income fluctuations, via inter-temporal borrowing and lending. Finally, relative prices in goods markets can also help in hedging risk, by moving appropriately and contributing to insulating income and wealth from idiosyncratic shocks. This is the case, for example, if the relative price of a country's output in terms of that of its trading partners increases when its production decreases, leaving the relative value of cross-country output broadly unaffected.

The United States has traditionally been characterised by a very high degree of income and consumption smoothing across regions. Early evidence for the period 1963-1990 suggested that the bulk of shocks to the per capita gross product of individual states were smoothed, with 13% smoothed by the federal tax transfer and grant system, 39% smoothed by insurance or cross-ownership of assets, and 23% smoothed by borrowing or lending. In other words, 62% of state-specific shocks in the United States are smoothed through market transactions – almost five times the contribution of the federal government to income smoothing.[118] Thus, by promoting capital mobility as well as financial and real integration, EMU could encourage risk sharing through all these market channels.

2.2 The level of risk sharing in Europe

It is natural to conjecture that countries in the euro area would exhibit somewhat lower levels of risk sharing than a long-standing monetary and economic union such as the United States in which state borders do not matter. This was the case in the years leading up to the introduction of the euro, with comparatively less developed financial markets, in the absence of a federal system of taxes and transfers, and with more rigid labour markets. Empirical evidence for that period indicates limited risk sharing in relation to country-specific GDP shocks among European countries, with roughly half of the smoothing achieved through

[118] 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; Athanasoulis, S. and van Wincoop, E., "Risk sharing within the United States: What do financial markets and fiscal federalism accomplish?", *Review of Economics and Statistics*, Vol. 83, 2001, pp. 688-698. See also Del Negro, M., "Asymmetric shocks among US States", *Journal of International Economics*, Vol. 56(2), March 2002, pp. 273-297.

national government budget deficits and half achieved by corporate saving patterns. This analysis found no cross-country consumption smoothing through personal savings.[119] These low levels of risk sharing contrasted with very high levels within individual European countries; for example, in pre-unification Germany, virtually all shocks to per capita state gross product were smoothed, with 50% smoothed through the federal tax transfer and grant system, and a further 19% smoothed through capital markets and 17% through credit markets.[120]

It was generally believed that the creation of the common currency might in itself enhance income and consumption smoothing by fostering cross-border asset holdings. A common currency, by removing exchange rate volatility, is in principle likely to reduce the costs of trading and information gathering, and therefore lead to higher cross-ownership of financial assets. The removal of currency risk might further stimulate foreign direct investment, and a deeper integration of bond markets would imply deeper and more liquid markets for borrowing and lending. It is well understood that larger holdings of foreign equities are associated with more international risk sharing,[121] and so is the integration of banking markets.[122] It was therefore believed that the euro would improve risk sharing by nurturing capital market integration among EU Member States, fostering cross-border ownership of assets and reducing home bias in equity holdings.

At the same time, a monetary union may lead to more regional specialisation, increasing the prominence of region-specific shocks. Empirical evidence from before the introduction of EMU showed that the US regions were more specialised than European countries of comparable size.[123] However, an increasing asymmetry of shocks would not necessarily pose a challenge to a monetary union in the presence of better risk-sharing opportunities.[124] Nevertheless, it is important to recall that in a second-best environment, increasing financial integration may not be completely beneficial. This could be the case of a monetary union, in which

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119 Sorensen, B., and Yosha, O., "International risk sharing and European monetary unification", *Journal of International Economics*, Vol. 45, 1998, pp. 211-238; Afonso, A. and Furceri, D., "EMU enlargement stabilization costs and insurance mechanisms", *Journal of International Money and Finance*, Vol. 27, 2008, pp. 169-187.

120 Hepp, R. and von Hagen, J., "Interstate risk sharing in Germany: 1970-1991", *Oxford Economic Papers* 65, 2013, pp. 1-24.

121 Sorensen, B., Wu, Y.-T., Yosha, O. and Zhu, Y., "Home bias and international risk sharing: Twin puzzles separated at birth", *Journal of International Money and Finance*, Vol. 26, 2007, pp. 587-605.

122 Demyanyk, Y., Ostergaard, C. and Sorensen, B., "U.S. banking deregulation, small businesses, and interstate insurance of personal income", *Journal of Finance*, Vol. 62, 2007, pp. 2763-2801.

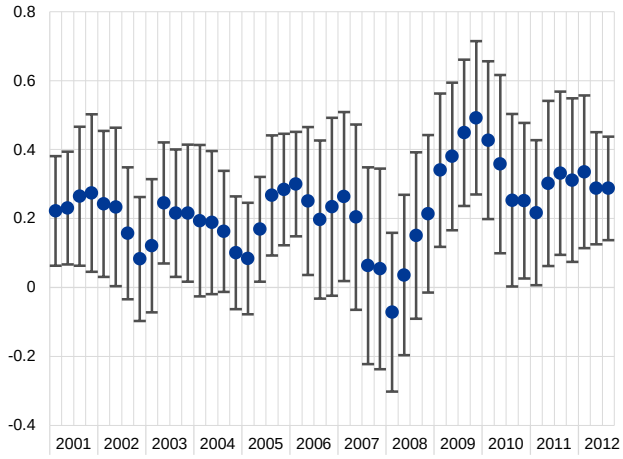
123 Krugman, P., *Geography and Trade*, MIT Press: Boston, MA. Other authors (e.g. Frankel and Rose, 1998) have argued that the net effect of a currency area is to bring about more symmetry of business cycles through increased trade interdependence. See Frankel, J. and Rose, A., "The Endogeneity of the Optimum Currency Area Criteria", *Economic Journal*, Vol. 108, 1998.

124 Kalemli-Ozcan et al. (2003) argue that higher financial integration may at the same time lead to income insurance and specialisation, i.e. countries will be able to pursue their comparative advantages with fewer concerns about risk exposure. This would in turn make specialisation in production more attractive and potentially lead to more industry specialisation and more asymmetric macroeconomic fluctuations. However, given the evidence that the degree of synchronisation of the business cycle across euro area countries has remained unchanged (e.g. Giannone and Reichlin, 2006), it is not clear whether this effect may be currently at work. See Kalemli-Ozcan, S., Alfaro, L. and Volosovych, V., "Why doesn't Capital Flow from Rich to Poor Countries? An Empirical Investigation", Working Papers 2003-01, Department of Economics, University of Houston, 2003, and Giannone, D. and Reichlin, L., "Trends and cycles in the euro area: how much heterogeneity and should we worry about it?", *Working Paper Series*, No 595, ECB, 2006.

eliminating exchange rate flexibility can result in both a limited adjustment of relative prices and reduced state-contingency in the valuation of output and assets. Hence, in a monetary union the structure of financial markets affects risk-sharing opportunities, but also shapes the dynamics of inflation rates and the welfare costs of nominal rigidities, potentially reducing the overall benefits from financial integration.[125] These conflicting theoretical hypotheses make the question about the effect of the euro on risk sharing an empirical one.

Chart 6

Correlation between consumption and output across euro area countries



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 euro area consumption and in relative prices (the ratio of the respective country consumer price index relative to the euro area consumer price index), using a 12-quarter rolling window. The data sample comprises the original 12 euro area countries and runs from Q1 2001 to Q2 2015. Each point and bar is estimated for data from the time indicated on the horizontal axis until 12 quarters later (rolling window).

The analysis of the patterns of risk sharing in the euro era produces mixed findings. Some studies have indicated that initially risk sharing among EU Member States increased in step with the introduction of the euro and reached much higher levels than during the pre-euro period.[126] The amount of unsmoothed shocks in periods of recession is, however, significantly larger than in normal times, and this is particularly true for severe downturns that are persistent and unanticipated.[127] This has been confirmed in the context of the recent sovereign crisis, with evidence showing that risk sharing more or less collapsed in countries under fiscal stress in 2010.[128] A problem with these estimates is that they are highly sensitive to the underlying shocks and thus unstable across time periods.

An empirical analysis of the euro area since 1999 suggests that cross-country risk sharing is somewhat unstable over time and in many periods quite limited or absent. Chart 6 illustrates this with one specific indicator of risk sharing across euro area countries estimated on the basis of a sample running from Q1 2001 to Q2 2015. The chart plots the point estimates and 95% confidence interval from a panel regression of changes in per capita consumption on changes in per capita GDP of euro area countries, controlling for changes in euro area consumption and in relative prices (country price indices relative to the euro area price index), using a 12-quarter rolling window.[129] The null hypothesis is that for a high degree of risk sharing, country-specific consumption growth is uncorrelated with country-specific GDP growth as

[125] See Auray, S. and Eyquem, A., "Welfare Reversals in a Monetary Union", *American Economic Journal: Macroeconomics 2014*, Vol. 6(4), pp. 246-290.

[126] Kalemli-Ozcan, S., Sorensen, B. and Yosha, O., "Asymmetric shocks and risk sharing in a monetary union: Updated evidence and policy implications for Europe", in Huizinga, H. and Jonung, L. (eds.), *The Internationalization of Asset Ownership in Europe*, Cambridge University Press: New York, NY, 2005.

[127] Furceri, D. and Zdzienicka, A., "The euro area crisis: Need for a supranational fiscal risk sharing mechanism?", IMF Working Paper No 13/198, 2013.

[128] Kalemli-Ozcan, S., Luttini, E., and Sorensen, B., "Debt crises and risk sharing: The role of markets versus sovereigns", NBER Working Paper No 19914, National Bureau of Economic Research, 2014.

[129] A dot and bar in the chart therefore refers to an estimate with data that quarter onwards until three years later.

idiosyncratic shocks are smoothed by various forms of cross-border risk sharing.[130] The correlation is positive and significant, rejecting the null, for many quarters during the sample period. This finding is particularly pronounced for the most severe phases of the financial and sovereign debt crises, which affected all euro area countries in a similar way. The results for other periods, however, in which the coefficient is not significant, are consistent with the presence of cross-country risk sharing in the euro area (for the shocks prevailing in those periods). All in all, there seems to be room in the euro area to improve the benefits of financial integration in terms of cross-border risk sharing and also for making this risk sharing more stable over time.

2.3 Risk-sharing channels and reform areas

It is also instructive to look closer at the mechanisms responsible for the overall pattern of risk sharing. After all, if the scope of monetary policy to smooth consumption is limited in a monetary union by design, the need for other mechanisms to pick up the slack becomes higher. **After the introduction of the euro, smoothing through factor income flows – resulting from cross-border ownership of assets – increased after being negligible in the past, but remained at low levels, while smoothing of consumption through government counter-cyclical saving declined sharply but remained at high levels**.[131] The overall evidence suggests that saving during booms and spending during busts remains the primary mechanism by which countries achieve the smoothing of income shocks, rather than through state-contingent payoffs due to cross-border equity holdings. The contribution of capital markets and credit markets is still limited, and tends to decline further during recessions – an observation consistent with the fact that in the event of a large shock, citizens and governments would need to borrow amounts that they may not be able to obtain. This is particularly true during severe downturns which are persistent and unanticipated.

The rules on fiscal deficits imposed by the Stability and Growth Pact set limits on governments for smoothing large shocks via borrowing. If governments do not build up adequate buffers during booms, this may have an impact on their ability to temporarily increase their spending in response to output shocks and thus smooth the shock. This is why the full and consistent implementation of the Stability and Growth Pact is key for ensuring fiscal coordination as well as consumption smoothing via government intervention. Some have also advocated the introduction of a supranational fiscal risk-sharing mechanism at the euro area level, which would provide greater international insurance through a common stabilisation fund.[132] In addition, the Five Presidents' Report publicly recommends – as the culmination of a process of convergence and further pooling of decision-making on national budgets

[130] Strictly speaking, this approach allows rejecting or accepting the presence of risk sharing but cannot reliably establish the extent of risk sharing.

[131] Balli, F. and Sorensen, B., "Risk sharing among OECD and EU countries: The role of capital gains, capital income, transfers, and savings", MPRA Working Paper No 10223, 2007.

[132] Furceri, D. and Zdzienicka, A., "The euro area crisis: Need for a supranational risk sharing mechanism?", IMF Working Paper No 13/198, 2013.

– putting in place a "common macroeconomic stabilisation function to better deal with shocks that cannot be managed at the national level alone".[133] Although from a legal perspective, these suggestions would require amendments to the European Treaties which may be hard to agree upon, this claim would find further support, to the extent that financial frictions and incomplete financial markets hinder international risk sharing and that risk sharing through fiscal tools can substitute for risk sharing through markets.

Another approach – and one that is currently high on the policy-makers' agenda – is the promotion of deeper capital markets. As already mentioned, more than half of the effective consumption smoothing in the United States is achieved through the cross-ownership of equity and other assets, substantially more than what is achieved through credit markets or through taxes and transfers. The single currency in the euro area did reduce some of the information barriers and transaction costs, improving overall capital market integration, but the cross-border ownership of assets, especially equity, in the EU is still limited. Corporate financing through bond and equity markets is much more limited in Europe, with banks the undisputed primary source of funding for firms. Home bias in equity holdings is also substantial, with about 50% of outstanding shares being domestically owned.

Accordingly, to strengthen the functioning of the private risk-sharing channels, the Five Presidents' Report contains an ambitious blueprint aimed at the completion of the banking union and the acceleration of the initiative to promote a capital markets union (CMU). The next section discusses these initiatives in more detail.

3 Fostering financial integration in the euro area through the banking union and the capital markets union

A key source of risk sharing is cross-regional/cross-border asset holding, notably various forms of equity holdings/firm ownership claims, which is followed by the integration of banking markets. It is also well understood that while direct cross-border bank lending to firms and households is helpful, cross-border interbank lending is not resilient as a risk-sharing mechanism. Hence, greater progress in risk sharing in the euro area would require both more pan-European banks and significantly more developed and integrated capital markets.

Completing the banking union has the potential to structurally reinforce the resilience of financial integration in the euro area. A fully fledged banking union is expected to reinforce these effects and build more resilient integration by further increasing the cross-border lending to non-financial corporations and households. Cross-border banking brings important stability and risk-sharing benefits, through its effects on risk diversification. From this perspective, the presence of foreign lending

[133] See Juncker, J.-C., Tusk, D., Dijsselbloem, J., Draghi, M. and Schulz, M., "Completing Europe's Economic and Monetary Union", European Commission, 2015.

in a country appears to be a strong stabilising force.[134] In this respect, completing the banking union has been one of the key recent priorities on the European policy agenda. Different measures have been operationalised, such as establishing a genuine single rulebook. The Single Supervisory Mechanism has launched forceful measures with a view to reducing and aligning, as necessary, the exercise of national options and discretions: this will further reduce home bias and shape the microeconomic incentives of banks to become fully European.[135] Moreover, the consistent application of the Bank Recovery and Resolution Directive's bail-in rules across the banking union, as well as the establishment of a permanent backstop for the Single Resolution Mechanism, are essential in helping to weaken the bank-sovereign nexus, reinforcing the singleness of money within the euro area (i.e. having a single money independent of its location) and fostering integration of the euro area banking sector. Nevertheless, the main current policy priority in this field is the establishment of a European Deposit Insurance Scheme that would be the necessary third pillar of a fully fledged banking union, ensuring consistency with regard to the Single Supervisory Mechanism and the Single Resolution Mechanism within the euro area.[136] The current national deposit guarantee schemes, despite the further harmonisation introduced by the recent European Directive (2014/49/EU, which has not yet been transposed in all euro area countries), still present relevant differences that may hamper the banks' willingness to expand to other euro area countries and affect their choice of group structure (branches or subsidiaries in other member countries), resulting in a sub-optimal level of financial integration in the euro area.

The second essential building block to complete the financial union is to further integration of euro area capital markets. There is already a substantial body of evidence suggesting that the direct cross-border ownership of assets, especially equity, is the "gold standard" in achieving risk sharing. Consequently, the idea of CMU is to achieve the completion of the single market for capital through both regulatory and non-regulatory actions, including the harmonisation of key legal acts and policies related to financial products. At the same time, CMU – by removing the obstacles to the development of deep and integrated EU capital markets – is expected to further broaden the sources of financing in Europe towards non-bank financing by giving a stronger role to capital markets. Compared with the US or Japan, the volumes of outstanding bonds and shares (measured in terms of economic output) are considerably lower in the EU. For example, equity financing in the EU, relative to overall GDP, is at present only around half the level of equity financing in the United States. This limited use of market financing sources by European firms is not necessarily an immutable EU characteristic, as several euro area countries (Luxembourg, Ireland and the Netherlands) have, in relative terms, larger capital markets than the US. Against this backdrop, a number of concrete

134 For a discussion on the costs and benefits of cross-border banking, see Allen, F., "Cross-border banking in Europe: implications for financial stability and macroeconomic policies", CEPR, 2011.

135 See Special Feature B for a full discussion of the national options and discretions (O&Ds) in the prudential legal framework.

136 See Chapter 2 for a full discussion of the benefits of establishing a European Deposit Insurance Scheme and for a discussion of the Commission's legislative proposal. See also Gros, D., "Principles of a two-tier European deposit (re-)insurance system", CEPS Policy Brief No 287, April 2013.

measures are envisaged in the Commission's Action Plan to create the supporting conditions in the EU for the further development of large capital markets.[137]

Looking forward, a high level of ambition in the establishment of the CMU is needed to remove structural barriers and ensure policy effectiveness. Early measures for the revitalisation of the securitisation market proposed in the CMU Action Plan can be conducive to capital relief for originators, thus contributing to freeing up banks' balance sheet and facilitating funding for corporates in general and for SMEs in particular. In parallel, the development of an European comprehensive covered bond legal framework over a medium to long-term horizon, following a harmonisation and convergence process based on enhancements to the existing EU covered bond regulatory definitions, has the potential to achieve an even more integrated European covered bond market. More importantly, the Commission's initiative on retail financial services has the potential to foster integration in this area, where structural barriers still remain and consumers and businesses are still not able to harness the full potential of a functioning Single Market. It is essential that these barriers continue to be removed, also in the light of the aforementioned findings in the literature showing that penetration of retail markets is able to act as optimal risk-sharing device in specific circumstances.

The completion of CMU in Europe is facing a number of serious challenges related to the structure of the financial industry and the overall business environment. For example, Americans save mostly through stock markets and pension funds, while Europeans traditionally save in bank deposits. Developing CMU implicitly relies on changing long-run saving patterns, which is notoriously difficult, as it would involve asking savers to operate under different risk-return objectives. The proper regulation of financial products and supervision of financial entities, such as insurers and pension funds, as well as full transparency of new financial products, are essential to convince savers to shift savings away from bank deposits. In this respect, to fully capture the financial integration benefits of the CMU project, coordination between the European Supervisory Authorities and the national competent authorities should be enhanced so as to strengthen the implementation and enforcement of rules. This reinforced supervisory framework would preferably lead ultimately to a single European capital markets supervisor.[138] Therefore, while the measures proposed in the Commission's Action Plan are important in order to build momentum, the necessary high level of ambition also in reforms that go beyond the Action Plan's agenda should be maintained to achieve the long-term objective of CMU.[139]

Thanks to CMU-related policy initiatives, Europe could benefit from a more balanced financial structure in terms of market-based financing relative to bank-based financing, with a view to also bolster equity financing over debt financing. Moreover, the CMU agenda should not be seen in isolation, but should

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137 See "Action Plan on Building a Capital Markets Union", Commission Communication, Brussels, 30 September 2015.

138 For a detailed discussion of this point, see "Building a Capital Markets Union – Eurosystem contribution to the European Commission's Green Paper", ECB, May 2015.

139 See Chapter 3 for a complementary discussion of the CMU Action Plan.

go hand in hand with other European policy initiatives, such as the Investment Plan for Europe. Both policy initiatives are mutually reinforcing and share the final goal of channelling financial resources toward productive investment projects.[140]

The presence of cross-border equity flows can significantly improve risk sharing and contribute to the resilience of financial integration. In this respect, financial integration and financial development are distinct but inter-related and mutually reinforcing objectives of CMU. Integration of markets across borders, for example, fosters development by enhancing competitive pressures, while contributing to integration, as the development of new financial instruments may incentivise cross-border investment.

4 Concluding remarks

The crisis has shown that the road to closer financial integration is not always one-way. The achievements in terms of the depth of financial integration obtained since the creation of the euro have been substantial. Nevertheless, the crisis has shown that the financial integration achieved up to that point was not necessarily resilient. The significant financial fragmentation following the crisis had considerable negative effects on the euro area economy. The gradual reintegration of European financial markets witnessed in the last three years could – with the necessary reforms and strong policy decisions – be sustained and result in a more resilient financial integration compared with pre-crisis times.

Continuing to move forward in deepening and improving the resilience of euro area financial integration is therefore a goal that must remain high on the European policy agenda. More resilient financial integration, hence higher risk sharing, will not only help in smoothing asymmetric shocks, it will also help in preventing the emergence of wide macroeconomic divergences within the euro area following those shocks. Only through forceful policy initiatives at the European level will it be possible to reap the full benefits of the integration process and strengthen the link between financial integration, risk sharing and higher aggregate welfare. The achievement of genuine financial integration will, in turn, lead to a more stable, smooth and equitable functioning of EMU.

[140] On February 2016, François Villeroy de Galhau and Jens Weidmann in a joint article argued in favour of an ambitious "financing and investment union" to strengthening the euro area. See: https://www.banque-france.fr/uploads/tx_bdfgrandesdates/Joint-Article-FVG-20160208.pdf

Special Feature B
National options and discretions in the prudential regulatory framework for banks[141]

The presence of options and discretions (O&Ds) in the EU prudential regulatory framework has been identified as a potential source of fragmentation of the regime in which banks operate, creating an uneven playing field. The ECB, via its dedicated project on harmonising O&Ds for significant institutions, has developed its policy on two provisions which are crucial for financial integration: First, it intends to grant waivers from liquidity requirements on a cross-border basis, subject to certain limitations with regard to a few important subsidiaries within the SSM. Second, it intends to fully exempt intragroup exposures from the large exposure requirements. Given that the subsidiaries belonging to cross border groups would have to comply with liquidity and large exposure regulations, the ECB policy on granting liquidity waivers and exempting large exposures reduces the lock-up of liquidity on an individual level. Thus, it is expected to facilitate the free flow of funds among entities belonging to cross-border groups and thereby foster integration, while also maintaining an appropriate balance of catering for safety and safeguarding financial stability, though maintaining a minimum liquidity requirement for a few subsidiaries of systemic importance.

Harmonisation of supervisory practices, to ensure a coherent and consistent application of the single rulebook across the SSM, was identified as a crucial component in achieving further financial integration in last year's report on financial integration. In order to achieve deeper integration, fragmentation among national banking sectors within the SSM needs to be addressed and there needs to be a policy framework conducive to cross-border banking. Well-diversified bank assets and liabilities – including along the cross-border dimension – make banks better able to withstand shocks and ensure private sector risk sharing. More resilient financial institutions and integrated financial markets promote the efficient allocation of resources, as well as the smooth transmission of monetary policy across the euro area.

One possible source of fragmentation could be the options and discretions that Union law grants to the national competent authorities (NCAs) and to Member States. These O&Ds are legal provisions contained in the prudential regulatory framework[142] which, unlike most other legal provisions contained therein, leave some flexibility to the NCAs and Member States on whether or how to apply specific rules.

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[141] Prepared by M. Ampudia, D. Bakopoulou, A. Beyer, M. Hoerova, M. Mangone and M. Wedow

[142] The prudential regulatory framework comprises the Capital Requirements Regulation, the Capital Requirements Directive IV and the corresponding Commission Delegated Acts.

The purpose of this special feature is to describe the specific work undertaken by the ECB on harmonising exercise of the options and discretions available in Union law and granted to competent authorities only. The Special Feature explains what O&Ds are, why they are part of the prudential framework and how they affect it. It then describes the scope and the objectives of the SSM's O&D project, focusing on the O&Ds which are crucial for financial integration, and looks ahead to the prospective achievements of the O&D project. It concludes with the future challenges that need to be met to further harmonise supervisory practices and reduce fragmentation in the banking sector.

1 National options and discretions in the prudential framework: a source of discrepancies with effects on the SSM and the banking union

Options and discretions which are not justified by their benefits in terms of bank stability remain a factor causing an uneven playing field and are hampering the achievement of the objectives of the single rulebook and ultimately the banking union. These provisions were inserted in the prudential regulatory framework, in order to overcome the complexity of consolidating all prudential rules within a coherent system, to cater for a transitional period, to accommodate national specificities or to meet a need for operational flexibility with regard to case-by-case assessments.

Over 160 O&Ds NCAs or for Member States have been identified in the CRD IV/CRR package and they affect all areas of the prudential framework, covering a very wide range of treatments. A large part of these relate to the definition of own funds and to capital requirements for credit, counterparty and market risks, but there are also important provisions concerning large exposures, liquidity and governance arrangements.

The previous application of O&Ds at a national level has resulted in a heterogeneous and, at times, a more lenient application of the provisions of the CRD IV/CRR package within Member States participating in the SSM than among participating and non-participating Member States, with adverse consequences for banks, markets and supervisors. More specifically, the heterogeneous implementation of O&Ds impairs the comparability of reported figures, most notably (but not only) capital ratios, which in turn reduces the reliability of any comparison of capital targets among peers and competitors and impairs important business model and IT decisions. In addition, the lack of consistency of some rules with international standards (mainly by the Basel Committee) and the wider variability across SSM banks could give rise to uncertainties for market participants as regards the actual capital (and liquidity) positions of banking institutions, having a potential impact on banks' funding costs and, in the event of financial turmoil, their actual capacity to get the funding they need, potentially severely affecting market volatility.

With the O&D project, the ECB aimed to address precisely these consequences, following the SSM mandate, to render prudential supervision more effective and allow financial integration to contribute to the smooth functioning of the internal market for banking services.

2 SSM project on options and discretions

The ECB's work consisted of the following phases: (i) mapping the scope of the O&D Project; (ii) designing and adopting the policy recommendations and specifications for each O&D; and (iii) implementing the adopted policy. After mapping the available O&Ds (Table 1);, the work focused on 122 O&Ds granted to competent authorities falling within the ECB's direct competence.

Table 1
O&D mapping.

Mandate	CRR	CRD IV	LCR Delegated Act
Competent Authority ONDs	94	16	12
Member States or macroprudential ONDs	20	25	-

The second step of designing the prudential policy has been based on high-level guiding principles: Firstly, the most prudent policy was chosen in order to preserve financial stability. Secondly, the policy was aligned to European and Basel Committee standards. Thirdly, the general principles of Union law were taken into account. For all O&Ds within scope, the ECB has conducted a thorough analysis of current national implementation and practices and agreement was reached for 122 O&Ds, with the extensive participation of the SSM NCAs.[143]

As a third step, the policy has been drafted into ECB instruments which will become operational within 2016. Following the approval of the ECB's policy[144] from a substantive point of view, the third implementation phase was initiated, during which a Regulation and a Guide were prepared, implementing the agreed policy Both instruments were submitted for a public consultation, after which they were finalised and approved in early 2016 and published din March 2016.[145]

[143] In some cases, further analysis will be needed in order to take into account future European and international developments at the level of the EBA, the European Commission and the Basel Committee. A second ongoing phase of the project will complete the mapping and policy work in two respects. The first is the development of policy and specifications for the O&Ds where either the respective provision entails a less clear and varying degree of discretion for the competent authority, or where there was no operational need for prioritisation in the initial phase. The second aspect relates to the updating and development of the existing policy which rely on ongoing policy work within EU fora.

[144] Decisions SB/15/43/07, 17 July 2015 with regard to the policy approval and SB/16/59/07 on 18 February 2016 for the final approval of the legal instruments by the Supervisory Board of the SSM after the public consultation. The ECB Regulation will become applicable from 1 October 2016, while the ECB Guide will become operational in spring 2016.

[145] Regulation (EU) 2016/445 of the European Central Bank of 14 March 2016 on the exercise of options and discretions available in Union law (ECB/2016/4) and the ECB Guide on options and discretions available in Union law, published on 24 March 2016.

3 Options and discretions most relevant for financial integration

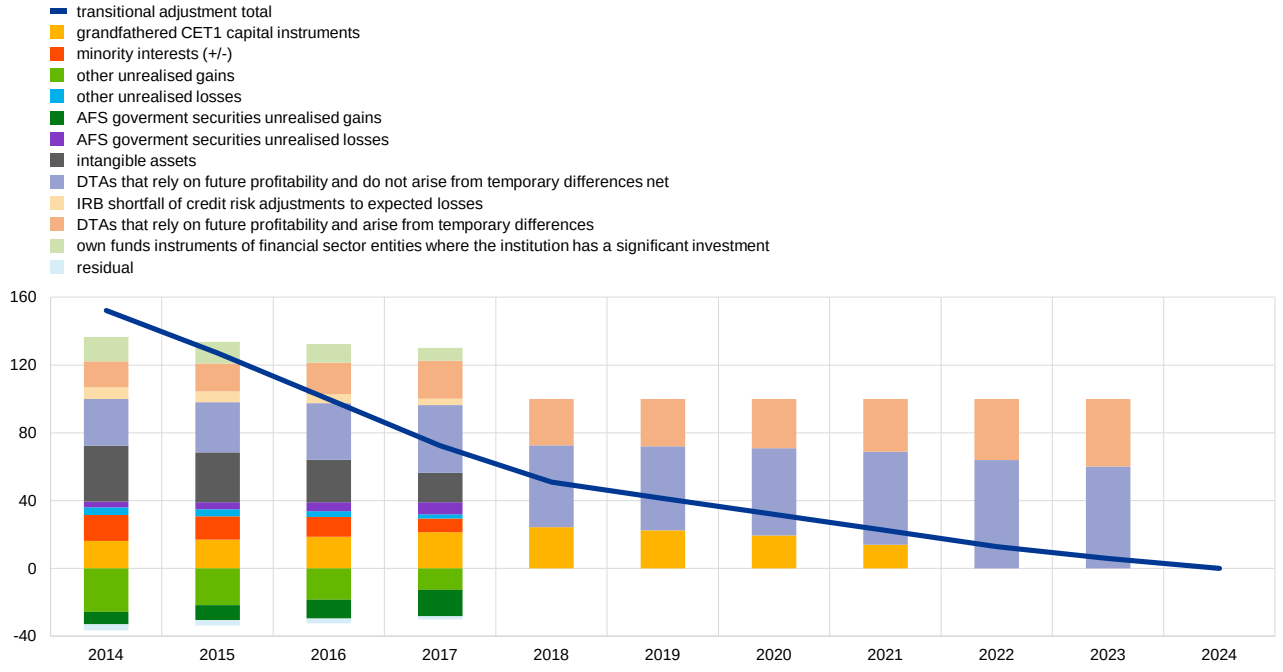
3.1 Transitional arrangements for capital requirements in the CRR

The CRR, in line with the innovations of Basel III, imposes new rules which require banks to hold "higher and better capital" compared with the standards previously in force. As a consequence, according to CRR rules, some of the capital elements which were previously considered as eligible own funds no longer qualify as such. In the same vein, certain asset items, such as intangible items[146] or deferred tax assets (DTAs) that rely on future profitability,[147] have to be deducted from the relevant tiers of capital, since it is considered uncertain whether they can fully absorb losses should the bank enter a distressed situation.

Chart 1

Impact of transitional rules of the CRR on capital of SSM significant institutions

Right scale shows the total impact of CRR transitional rules on capital of significant institutions supervised by the SSM (in basis points). In 2014, the impact of the transitional adjustment is at 1.5 percentage points, i.e. the weighted average current CET1 ratio for SSM Significant Institutions amounts to 12.7%, while the fully loaded equivalent stands at 11.2%, i.e. 1.5 percentage points lower.
Left scale shows the relative impact of each capital instrument covered by CRR transitional rules to the total impact for each year (in percentage points, adding up to 100%).



Source: ECB

To ensure a smooth transition of banking institutions towards this more rigorous regime, the CRR framework provides for a gradual phase-in of the

146 E.g. goodwill.

147 Deferred tax assets are the amounts of income taxes recoverable in future periods. The DTAs that rely on future profitability are deducted from CET1 capital, since they do not ensure full loss absorbency in all scenarios as required by Basel III.

new rules. The ultimate objective of these provisions, most of which are O&Ds, is to allow banks to move gradually towards higher and better capital, whilst avoiding an excessive burden on banks by giving them enough flexibility to plan capital needs arising from the application of the new rules. Chart 1 shows the impact of the rules as implemented by the NCAs and broken down into the different own funds elements regulated in the CRR. The common equity Tier 1 (CET1) ratios of significant institutions would be 1.5 percentage points lower without the application of the transitional arrangements, most of which are O&Ds.

The comprehensive assessment highlighted that these CRR transitional provisions resulted in fragmentation. It was shown that there was significant variation in the way these O&Ds were applied across the SSM, thus resulting in a differentiated impact on the CET1 ratios of banks in different Member States Each bank can be impacted to a different extent by the phase-in of the new capital rules, depending on the different implementation of the transitional regime chosen by the respective national competent authorities, also taking into account the impact on the national market, as well as elements which are linked to the capital composition of each individual bank. While these other factors contribute to the unevenness of the playing field, the divergent application of the arrangements across the Member States is the most relevant for the effort towards regulatory harmonisation.

The divergence in implementation and thus the impact on the banks could compromise comparability, insofar as banks with the same balance sheet structure and risk profile can be perceived by the market as more or less risky. This has implications for the level playing field in terms of capital market advantages for banks which appear to be better capitalised. A lack of comparability would distort the allocation of resources.

Against this background, in the context of the banking union, while it is important to keep allowing a degree of flexibility for banks, it is also important to ensure that they move towards the new rules at a consistent and harmonised pace, in order to avoid, to the extent possible, maintaining the fragmentation and uneven playing field across participating Member States during the years of the transition. To this end, **in the context of the O&D project, it was agreed to adopt a common approach for the treatment of all the transitional arrangements.**

3.2 Cross-border integration: liquidity waivers and intragroup exposures

The CRR contains a number of O&Ds which can substantially affect cross-border banking business activities and the free flow of funds within the euro area. These O&Ds take the form of derogations from regulation on liquidity and large exposures, introduced in the EU prudential framework in order to incorporate the respective standards issued by the Basel Committee. The aim of liquidity regulation is to ensure a higher stock of liquid assets and smaller asset/liability maturity mismatches than prior to the financial crisis. Therefore, minimum liquidity

requirements are set at a solo level, (i.e. also for subsidiaries within a cross border banking group, but not for branches), in order to reduce the risk that an individual bank runs into liquidity problems. In addition, under large exposures rules, the CRR introduces limits on an individual bank's exposure to a single counterparty. The aim of the regulation on large exposures is to reduce concentration risk, as the latter is not adequately captured by the risk-based capital standard. The flexibility which these O&Ds[148] allow is crucial for financial integration, as the free flow of funds is a precondition for cross-border operations.[149] Moreover, the free flow of funds is at the core of one of the fundamental freedoms of the European Union.[150]

The free flow of funds is important for the realisation and functioning of the internal market – a stated objective of the banking union.[151] It is expected that the establishment of the SSM should create the basis and conditions for banks to achieve economies of scale and reduce the relevance of national borders in terms of the regulatory environment, simplifying cross-border activities and facilitating the most efficient allocation of capital and liquidity.[152] However, beyond these objectives, there are a number of prudential considerations which deserve attention.

In particular, one may argue that centralised liquidity management at the group level following a decision by the Competent Authority to waive liquidity requirements and large exposure limits, can improve the resilience and viability of the single regulated entities.[153] This, however, could also increase the interconnectedness and dependence within the banking group, which might fuel

148 Reference is made in particular to Article 8(3) and Article 400(2)(c) of the CRR, as explained in the next sections. Article 8(3) grants the option to the competent authority to waive fully or partially, on an individual or sub-consolidated basis, the fulfilment of the liquidity requirements imposed by the CRR, while Article 400(2)(c) allows the competent authority to fully or partially exempt banks from CRR limits on the amount of intragroup exposures, including cross-border exposures, provided that certain conditions are met.

149 For example, De Haas and van Lelyveld (2010) provide evidence on the flows of capital within cross-border banking groups. They document that multinational bank subsidiaries with financially strong parent banks are able to expand their lending faster and, during a financial crisis, foreign subsidiaries do not need to rein in their credit supply as much as domestic banks. See De Haas, R. and van Lelyveld, I., "Internal capital markets and lending by multinational bank subsidiaries", *Journal of Financial Intermediation*, Vol. 19, 2010, pp. 1-25. Giannetti and Laeven (2012) document that international banks' participation in the international credit markets is time-varying, with home bias increasing when funding conditions deteriorate; see Giannetti, M. and Laeven, L., "Flight Home, Flight Abroad, and International Credit Cycles", *American Economic Review*, Vol. 102(3), 2012, pp. 219-224.

150 Articles 63 to 66 of the Treaty on the Functioning of the European Union (TFEU).

151 See Article 1 of the SSM Regulation, in particular recitals 2 and 12 thereof.

152 Dell'Ariccia and Marquez (2006) present a model that assesses the costs and benefits of the international harmonisation of bank regulation. They find that harmonising the regulation internalises the externalities generated by different local regulations, but it entails a cost due to the loss of flexibility associated with uniform standards. Hence, harmonised regulation is more likely to emerge in relatively symmetric jurisdictions/countries where the cost is relatively small. See Dell'Ariccia, G. and Marquez, R., "Competition among regulators and credit market integration", *Journal of Financial Economics*, Vol. 79, 2006, pp. 401-430.

153 In a series of papers, Cetorelli and Goldberg (2012a, 2012b) show that (US) global banks actively use cross-border internal funding to respond to local shocks. They further investigate whether global banks' liquidity management strategies are driven mainly by balance sheet support to the parent bank (rather than considerations about foreign operations). If this is the case, then host country regulators may have a reason to restrict global banks' liquidity management and impose local requirements. Cetorelli and Goldberg document, however, that global banks' liquidity strategies are instead driven by overall portfolio considerations, which take into account the relative costs and benefits of the marginal dollar at each location. See Cetorelli, N. and Goldberg, L., "Liquidity management of US global banks: internal capital markets in the Great Recession", *Journal of International Economics*, Vol. 88, 2012, pp. 299-311; and Cetorelli, N. and Goldberg, L., "Banking globalisation, monetary transmission, and the lending channel", *Journal of Finance*, Vol. 67, 2012, pp. 1811-1843.

intragroup and ultimately cross-border contagion, with a possible adverse impact on financial stability.[154]The basic trade-off is one of efficiency versus stability:[155] It has been shown that there is a significant welfare effect of risk sharing within cross-border banking groups, which has to be balanced against the potential cost contagion within these groups, as both are linked to an increased degree of integration.[156] Therefore, the supervisor of the cross-border market should strive to achieve the optimal balance through the use of policy choices on such as the O&Ds, so that the existence of new channels of contagion does not hamper further financial integration.[157]

In addition, decisions on waivers for liquidity and large exposure limits need to be consistent with the resolution strategy. The underlying assumption of the Bank Recovery and Resolution Directive (BRRD), which contains specific rules for group resolution, is that entities of a banking group that are part of the same resolution group will support each other in a failing or likely-to-fail situation. The assumption that an entity has a minimum level of loss-absorbing capacity in order to provide this support is applicable for both possible resolution strategies, i.e. single point of entry (SPE) and multiple point of entry (MPE) strategies. [158] However, the existence of limits to intragroup large exposures is identified as a possible obstacle to the efficient functioning of an SPE strategy in particular, given that, in such a strategy, the level of integration within the group is important: A refusal to grant intragroup waivers and exemptions for entities within the same resolution group may hinder the capacity of entities within the group to support each other, absorb losses and recapitalise in resolution. On the other hand, granting intragroup waivers and exemptions for entities in two different resolution groups operating under a MPE resolution strategy of a banking group may reduce the necessary resilience at the entity level and create contagion within the banking group, which the resolution strategy does not cater for.

Ultimately, concerns may be raised as regards the interests of a group's management and of the safety net providers given that burden-sharing within the SSM is still incomplete. In particular, a bank management's decision to allocate capital and liquidity buffers within the group will also determine the burden that will

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154 See Angeloni, I., "Banking supervision and the SSM: five questions on which research can help", speech at the Centre for Economic Policy Research's Financial Regulation Initiative Conference organised by Imperial College Business School/CEPR, London, 30 September 2015.

155 There is some academic literature which can be used as a basis for discussing this trade-off. Guembel and Sussman (2014) conduct a welfare analysis to net out the two effects outlined above in the context of the free flow of liquidity between two countries. They conclude that fragmentation is useful to cope with a mild financial crisis, but it is counterproductive when more severe ones take place. Thus, when the two types of event have the same probabilities of occurrence, fragmentation has a negative welfare effect. Another point raised by the authors is that unilateral fragmentation may lead to a coordination failure, since, for some shocks, a country can be saved from a crisis by accessing idle liquidity from another country without danger of contagion. See Guembel, A. and Sussman, O., "A Welfare Analysis of Fragmented Liquidity Markets", March 2014.

156 See for an extensive analysis of this tradeoff, Fecht, F., Gruener, H. P. and Hartmann, P., "Financial Integration, Specialization and Systemic Risk", ECB Working Paper Series, No 1425, February 2012.

157 See Fecht, F., Gruener, H. P. and Hartmann, P., "Welfare effects of financial integration", Deutsche Bundesbank Discussion Paper Series 2: Banking and Financial Studies No 11/2007, 2007.

158 Depending on the resolution strategy chosen, a banking group may consist of one or more resolution groups (a resolution group consists of the resolution entity, to which the resolution tools are applied, and any direct or indirect subsidiaries of the resolution entity which are not themselves resolution entities).

be borne by the different national safety net arrangements (e.g. bailouts, liquidity guarantees, deposit guarantees).[159] The interests of the consolidated entity's management, which in many cases would be responsible for making those transfers, would in many cases not be aligned with the public interests of the Member States where subsidiaries are established. The Member States would aim to maintain sufficient capital items and liquid assets at the level of the subsidiaries located within their territory, since the latter would then legally fall within the scope of any extraordinary measure that the Member State would take in the event, for example, that a deposit guarantee scheme would need to be activated in a crisis situation, which would provide valuable support to the publicly managed systems. By contrast, the parent company could view the maintenance of these items or assets unfavourably, since it could deem it more favourable to centralise them or transfer them to subsidiaries in another Member State which are more important from a business perspective.

Against this background, the ECB has adopted, in the context of the O&D project, policies in order to exercise in a balanced way its supervisory judgement under Article 8(3) and Article 400(2)(c) of the CRR.

3.2.1 Liquidity requirements in the CRR and cross-border liquidity waivers (Article 8(3))

Within the CRR framework, all credit institutions will be obliged to comply with new specific liquidity requirements set out in Part Six of the CRR and, in particular, with the liquidity coverage ratio (LCR) requirement. These new requirements will have an impact on financial integration. On the one hand, they will reduce national differences in this field after the phase-in period ends in 2018. On the other hand, they will require banks at the individual level to hold high-quality liquid assets (HQLA) consistent with their liquidity risk that can be converted easily into cash, in order to meet liquidity needs in a stress scenario. These requirements, while justified for prudential reasons in order to increase the resilience of banks and avoid contagion risk, will as a consequence limit to some extent the circulation of liquidity.[160] In practical terms, banks have to invest part of their funds in certain types of asset eligible for LCR purposes, while the same funds could be used to undertake business activities, which would foster financial integration.

Against this backdrop, Article 8 of the CRR grants the competent authority the power to waive, fully or partially, on an individual or sub-consolidated basis, the application of the LCR, if certain conditions are met. In particular, Article 8(3) foresees the possibility for the competent authority to grant such a waiver to cross-

[159] Calzolari, Colliard and Loranth (2015) present a model in which multinational banks can strategically adapt their organisational structures and the structure of their liabilities to the supervisory environment they face, with a view to extracting more benefits from national deposit insurance funds. The paper points out that tough supranational supervision may lead multinational banks to choose a branch structure instead of a subsidiary structure or, in some cases, may even discourage foreign expansion, thus decreasing financial integration. See Calzolari, G., Colliard, J.-E. and Loranth, G., "Multinational Banks and Supranational Supervision", working paper, 2015.

[160] Angeloni, I. (2015), op. cit.

border groups. This means that subsidiaries based in a different Member State than the parent company can be exempted from complying with LCR requirements at the solo level. As a consequence, those entities would be supervised as a single cross-border liquidity sub-group, which enables the centralisation of liquidity management within such a group.

The ECB intends to grant waivers under Article 8, subject to certain limitations. Among the CRR conditions, Article 8(3)(b) and (c) states that the competent authority, before granting the waiver, has to assess both the distribution of amounts, location and ownership of the required liquid assets to be held within the single liquidity sub-group and the determination of a minimum amount of liquid assets to be held by the waived institutions. While the ECB will always assess on a case-by-case basis whether a minimum floor or a different distribution of liquidity is needed, it was decided that, for the first years of application of the new liquidity requirements and while the banking union has not yet been completed, a minimum LCR floor should always be maintained for subsidiaries that are significant on a stand-alone basis based on the criteria of the SSM Regulation. The purpose of this policy is to capture all the subsidiaries that, due to their size and importance, may create financial stability concerns and spillover effects when facing liquidity issues, and to make them subject to a minimum LCR floor (i.e. hold a minimum of HQLA) in a pre-emptive manner, should they apply for waivers. This floor should be at least equal to the lower of (i) the percentage of HQLA required at the ultimate parent company level or (ii) 75% of the amount of HQLA that would be required in order to comply with the fully-phased-in LCR requirements at solo or sub-consolidated level in accordance with the Commission Delegated Regulation (EU) 2015/61. In this way, these subsidiaries will be in a position to respond to a localised need for liquidity. The policy as it currently stands reflects two specific concerns. Firstly, liquidity regulation is a recent development and the ECB intends to tread cautiously for the first years of its application. Secondly, the banking union is not yet complete, given that not all pillars are fully in place. Thus, it is prudent for the supervisor to take some temporary precautions for a scenario where the free flow of funds across borders could be impeded.

In the coming years, while progressing towards the full establishment of the banking union, the ECB intends to move towards more openness with regard to the calibration of LCR for those subsidiaries that are significant on a stand-alone basis, by lowering the minimum floor to 50% by 2018 for those, when dealing with applications for cross-border liquidity waivers. This would be fully aligned with the Commission's plans, according to which in possible future revisions of the CRR and CRD it might be useful to re-examine the effect of discretionary powers exercised by competent authorities on the free flow of capital within groups and, if necessary and where possible, frame these powers with a view to leaving less discretion for potential measures restricting the free flow of capital.[161]

[161] "Report from the Commission to the European Parliament and the Council – Legal Obstacles to the Free Movement of Funds between Institutions within a Single Liquidity Sub-group", European Commission, 5 June 2014.

To note, this Special Feature considers only the impact of liquidity waivers granted in accordance with Article 8 CRR. The ECB also developed an approach for the preferential treatment of cross-border intragroup outflows and inflows to be recognised in accordance with Articles 29 and 34 of the LCR DA. In addition, the ECB will also implement, within 2016, its policy for the exercise of the option in Article 33(2) LCR on exempting intragroup exposures from the cap on inflows. This O&D, if applied in combination with the O&D of Article 34 LCR on preferential treatment for intragroup outflows, could have a comparable effect to the waiver of Article 8 CRR in some cases, however the ECB intends to adopt a consistent approach for all liquidity options, in particular when exercised on a cross-border basis. Therefore, the proposed policy ensures that O&Ds in liquidity regulation that would produce a similar effect shall be subject to the same conditions. **Therefore, it is expected that the observations made in this special feature remain valid once all O&Ds have been implemented.**

Box 1
Impact of single-entity LCR requirements on cross-border lending

This box provides a preliminary assessment of the potential impact of an LCR requirement for cross-border subsidiaries on financial integration. The main objective is to provide a high-level estimate of the potential lock-up of liquidity in cross-border subsidiaries as a result of an LCR requirement[162]. As a secondary issue, the collateral mobilised by subsidiaries and their parent banks in the context of Eurosystem monetary policy operations is assessed with a view to understanding whether the LCR requirement could also play a beneficial role, leading to a more diversified pool of collateral, and more generally of asset holdings, at the consolidated bank level.

Cross-border intragroup bank lending accounts for a significant share of total cross-border lending to banks in the euro area. Chart A illustrates that over the period from December 2014 to November 2015, intragroup cross-border lending accounted for more than 60% of all cross-border bank lending. This illustrates the relevance of intragroup liquidity for financial integration and the need to assess the potential effects of regulatory requirements on financial integration. Moreover, intragroup cross-border lending has been shown to be more resilient to financial shocks and less volatile than interbank lending.[163] In addition, it should be noted that the aggregate figure masks significant differences across euro area countries (see Chart B).[164] This implies that the implementation of cross-border LCR waivers could have a divergent impact on the financial integration of euro area countries.

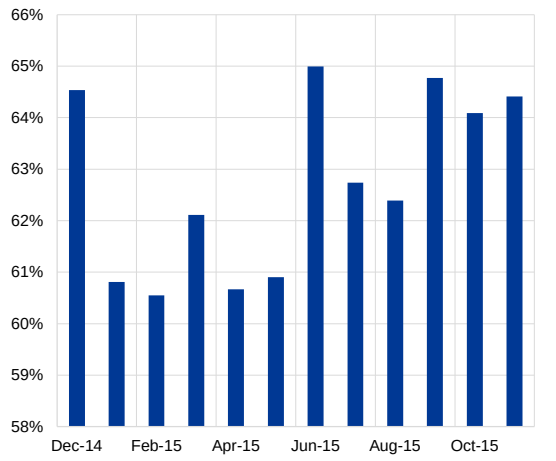
[162] Liquidity is considered locked up in the following simulation when resources cannot be lent due to the minimum LCR requirement and instead have to be held in the form of HQLA.

[163] See Reinhardt, D. and Riddiough, S. J., "The two faces of cross-border banking flows: an investigation into the links between global risk, arms-length funding and internal capital markets", Bank of England Working Paper No 498, 2014.

[164] Total cross-border lending amounted to €1.36 trillion in November 2015.

Chart A

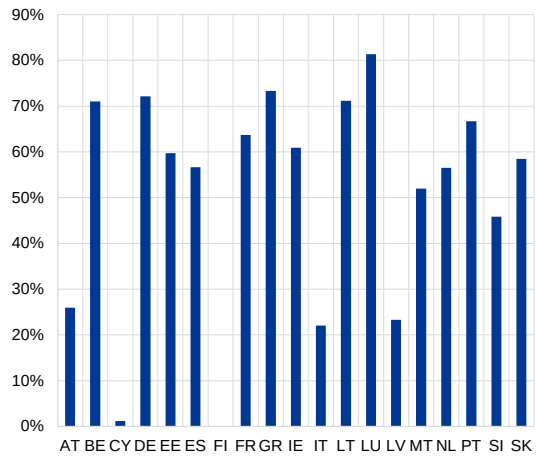
Intragroup cross-border lending over total cross-border lending in the euro area



Source: ECB.

Chart B

Intragroup cross-border lending over total cross-border lending in the euro area



Source: ECB.

A key issue related to the impact of an LCR requirement on cross-border lending is the potential lock-up of liquidity in cross-border subsidiaries. In order to approximate the potential effect, a simplified simulation of introducing an LCR was carried out. It should be kept in mind that this simulation assumes that there was no liquidity requirement before the introduction of the current LCR: in practice, however, national liquidity requirements were imposed on most banks in the euro area also in the past. Chart C highlights that the lock-up of liquidity crucially depends on the level of outflow factors, which vary with the type of business activity of banks. For business models relying on stable retail deposits and hence obtaining low outflow factors of 5% according to the current LCR provisions,[165] the lock-up of liquidity will be relatively contained. By contrast, the lock-up of liquidity can be of a larger magnitude for business models relying on less stable forms of funding with correspondingly higher outflow factors, and can also rise with the gradual increase of minimum LCR requirements until 2018.[166] This and the importance of intragroup lending highlighted in Chart A illustrate that to the extent that banks would – in the absence of an LCR requirement at the subsidiary level – lend the resources cross-border to other members in the group, there could be a non-trivial adverse impact on financial integration if the LCR is applied separately for each entity in a banking group.[167]

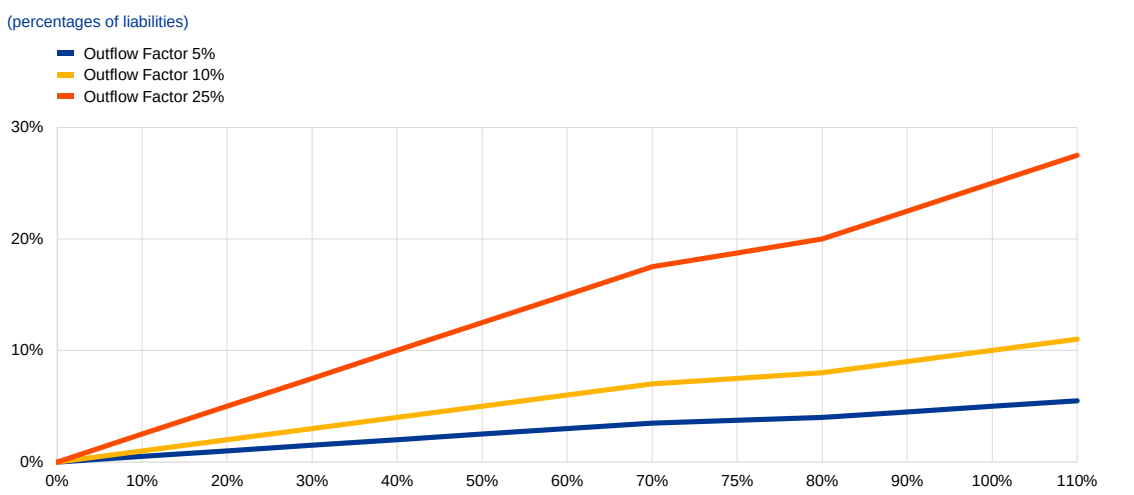
[165] The EU Delegated Act on the LCR sets an outflow factor of 5% for stable deposits that are covered by a deposit insurance scheme, are part of an established relationship and are held in a transactional account.

[166] The EBA's Basel III monitoring report documents that gross outflows for Group 2 banks as a percentage of total assets is around 10%. Taking into account offsetting inflows further reduces this figure by approximately 2.5 percentage points.

[167] The lock-up of liquidity is based on the product of the outflow factor and the minimum LCR requirement.

Chart C

Lock-up of liquidity for different LCR requirements and outflow factors



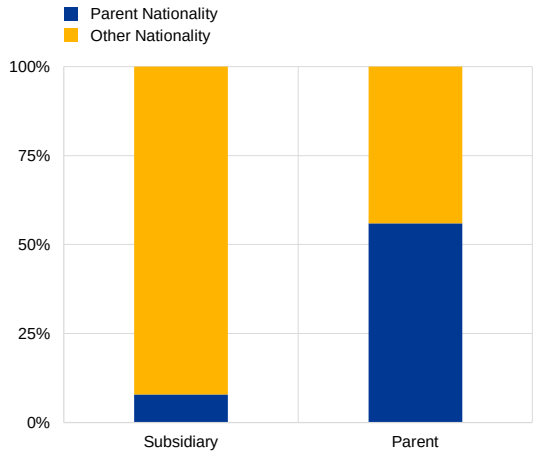
Source: ECB.
Note: The x-axis is for the minimum LCR requirement and the y-axis for the lock-up of liquidity over liabilities.

While a lock-up of liquidity could have an adverse impact on financial integration, there may also be a potential benefit from local liquidity buffers. Besides the improved resilience of subsidiaries against adverse liquidity shocks, subsidiaries may also hold a different set of HQLA for LCR purposes due to a home bias. As a result, the pool of liquid assets at the consolidated bank level could become more diversified than in the absence of an LCR requirement for cross-border subsidiaries. Charts D and E compare the shares of assets issued in or outside the home country of the parent, for cross-border subsidiaries and their parents. The figures are based on a sample of assets mobilised as collateral with the Eurosystem at the end of December 2015 and represent 57% of the total Eurosystem collateral volume posted. In fact, cross-border subsidiaries in aggregate hold a significantly smaller share of assets issued in the home country of the parent as compared with their parent. This supports the view that an LCR requirement can potentially lead to a more diversified portfolio of liquid assets at the consolidated level. At the same time, it should be noted that subsidiaries account for only a small part (8%) of the total collateral pledged with the Eurosystem. As a consequence, the beneficial effect of a more diversified HQLA buffer from a risk-sharing perspective across euro area countries is unlikely to be large. Moreover, if the country-level locking-up of liquidity now or in the future is higher than it was in the past for some banking groups, then these banking groups may fragment their liquidity management across euro area countries and, among other things, they may take more recourse to Eurosystem liquidity-providing and liquidity-absorbing operations at the country level. This may have adverse consequences for the implementation of monetary policy even though the Eurosystem's monetary policy implementation framework is well suited for addressing such possible consequences if needed.

Chart D

Portfolio allocation of parent and subsidiary banks

(percentages)

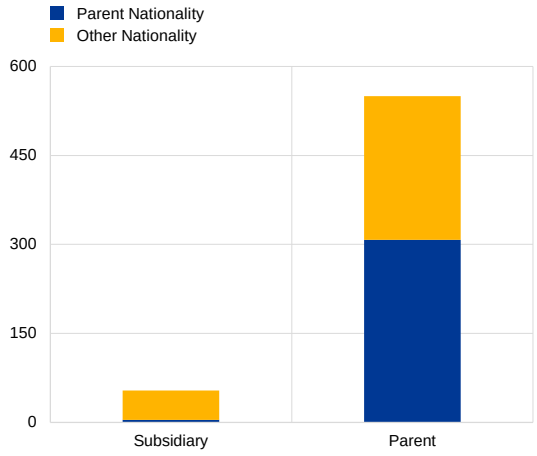


Source: ECB.

Chart E

Portfolio allocation of parent and subsidiary banks

(EUR millions)



Source: ECB.

To conclude, the box highlights the importance of carefully assessing the impact of minimum LCR requirements for cross-border subsidiaries given the significance of intragroup lending in total cross-border lending in the euro area. The preliminary simulations suggest that the lock-up of liquidity is likely to be relatively contained but may vary across banks, and particularly for those with less stable deposits. Moreover, the application of an LCR requirement below 100% for cross-border subsidiaries would reduce the lock-up of liquidity. Going forward, the lowering of the minimum floor at the subsidiary level will further support the free flow of liquidity within the euro area, facilitating the law of one price and ultimately financial integration. Moreover, further analysis of the holdings of HQLA of cross-border subsidiaries is needed given the possible beneficial effect coming from more diversified portfolios of liquid securities.

3.2.2 Intragroup large exposures (Article 400(2)(c))

Article 400(2)(c) of the CRR outlines that competent authorities may fully or partially exempt certain intragroup exposures, including intragroup cross-border exposures, from the application of the large exposure limits[168] provided that two conditions set out in Article 400(3) of the CRR are met: (a) the specific nature of the exposure, the counterparty or the relationship between the institution and the counterparty eliminate or reduce the risk of the exposure; and (b) any remaining concentration risk can be addressed by other equally effective means

[168] Large exposures are regulated in Part Four of the CRR. Article 395 sets a limit to the value of the exposure that a bank can have towards a counterparty (single client or group of connected clients) of 25% of the bank's eligible capital. Where the counterparty is a credit institution, the exposure is capped at either 25% of the bank's eligible capital or €150 million, whichever is higher.

such as the arrangements, processes and mechanisms provided for in Article 81 of Directive 2013/36/EU.[169]

The ECB approach is to fully apply this exemption provided that all the criteria are met, meaning that credit institutions are free to take on cross-border intragroup exposures without any limits. The fulfilment of the conditions will ensure that prudential concerns arising from concentration risks are addressed. The policies developed in the context of the O&D project aim to substantiate the conditions set out in Article 400(3) of the CRR[170] in a way to establish supervisory safeguards which should ensure that the management of the concentration risk is consistent with the group's wide risk management, its resolution strategy, as well as its the recovery and resolution plan. Banks are expected to comply with the conditions at any time they exceed the regulatory limits and the ECB has to verify this. It should be noted that an exemption from the limits does not also imply an exemption from the reporting requirements for large exposures (as foreseen in Commission Implementing Regulation No 680/2014).

The above policies would allow banks to freely take on intragroup exposures, which means they could more easily transfer funds across borders. At the same time, they would allow the ECB to closely monitor concentration risk and, where necessary, intervene by requiring a reduction of the exposures or additional capital.

Despite the adoption of the ECB policy, the harmonisation of the regime on large exposure exemptions in the SSM can only be partial, due to a transitional rule in the CRR which allows Member States to adopt a divergent policy. Article 493(3) of the CRR assigns the power to Member States to exercise the same option[171] until 2028. In these jurisdictions, especially in those where the exemptions are exercised via general rules, the ECB, owing to the legal constraint of the option being granted exclusively to the Member State, cannot exercise any discretion and is obliged to apply the national rule. Therefore, a clear level playing field issue arises given that institutions established in these Member States will not follow the ECB approach but, instead, the national one. The level playing field issue arises because there are discrepancies in the way that several countries are applying this exemption (e.g. they are favouring partial exemption in contrast to the ECB's policy of allowing full exemption) or, for those applying the full exemptions, in the way that the conditions foreseen in the CRR are assessed (see Table 2 with regard to the divergent exercise of the option in the SSM).

[169] According to this provision, the Competent Authority must ensure that concentration risk is adequately addressed and controlled through internal processes of the institution,

[170] For each condition, a set of criteria has been developed building mainly on (i) the criteria set out in Article 113(6) of the CRR to apply a 0% risk weight to intragroup exposures in the standardised approach, and (ii) the practices currently in use by the NCAs.

[171] The Member State option of Article 493 is the same with regard to the different types of exposure covered. However, the legal requirements to qualify for the exemption are less strict than the mirroring option for the competent authority.

Table 2

Stock-take of national implementation of large exposure limits

Table information

Intragroup large exposure limits	Countries where harmonisation is possible because of Article 400(2)	Countries where harmonisation is not possible because of Article 493(3)
Full exemption (14)	EE, IE, NL, SK, LT, EL	AT, FR, LU, ES, PT, IT (restricted scope), MT, FI
Partial exemption (4)	BE (weighting of 25% for exposures to foreign mother and sister credit institutions); LV	DE (75% upon request to the competent authority); SI (max. 75% depending on the type of counterparty)
No exemption (1)	CY	

3.2.3 Interplay between cross-border liquidity waivers and large exposures and the potential impact on financial integration

Overall, the interplay between the exercising of these two options according to the policies developed by the ECB should ensure a well-balanced compromise between ensuring the free flow of capital and the prudential liquidity soundness of banks.

Increased integration is expected to occur after the implementation of the ECB policy within the new regulatory environment. First, the implementation of cross-border liquidity waivers will limit to a certain extent the effects of liquidity regulation on financial integration. In fact, banks benefiting from waivers will be allowed to meet the requirements only at the group or sub-group level. This means that they will need to hold less HQLA to meet the minimum LCR requirements and could use a greater part of their assets for lending and other market activities. The beneficial effects on financial integration from this policy will be more evident in 2018, when the LCR minimum requirement will be fully phased in at 100%, although the ECB could grant a cross-border waiver of up to 50% for subsidiaries that are significant on a stand-alone basis. Second, the exemption of cross-border intragroup large exposures will make it easier to transfer liquidity within groups. For cross-border banking groups, this will imply more freedom to efficiently allocate resources across countries and increase operations across the EU, thus contributing to financial integration and the law of one price.

Finally, it is important to highlight that the interplay between the policies on the two matters addresses prudential concerns. The stricter conditions that need to be met for the purpose of granting a liquidity waiver should act as a backstop to the full exemption of large exposures within a group. Banks may obtain liquidity waivers and be supervised as a liquidity sub-group and, at the same time, transfer liquidity across borders given that they can be exempt from the limit on large exposures. To obtain liquidity waivers, however, the banks must demonstrate that a sound and prudent centralised liquidity management is in place and a prudent management of concentration risk arising from the large exposure is ensured.

4 Challenges going forward

The implementation of the O&D package described above, will be completed with a second package of additional O&Ds in the course of 2016 which concludes the O&D mapping. This is expected to deliver convergence as regards the supervisory practices that are in scope. The harmonisation will foster financial integration for significant institutions across the SSM. This notwithstanding, achieving full supervisory convergence is still a long way off and will depend on the completion of the banking union.

While harmonisation via supervisory actions is an important step forward, it will not be sufficient to complete the single rulebook and to ensure a true level playing field, given that there are remaining sources of discrepancy outside the supervisory reach. In addition to the supervisory O&Ds, the discretion that Member States have in transposing European banking directives is another remaining source of discrepancies hampering the achievement of the goal of having a common single rulebook. Similarly, there are also differences across Member States as regards the O&Ds in the CRR addressed to the Member States, leading to an uneven playing field.

Finally, the scope of the ECB's work only extends to significant institutions. In order to reap the full benefits from reducing national options and discretions, it is necessary to promote convergence towards these common policy stances also for less significant institutions. Against this background, the ECB, following its mandate to ensure a consistent functioning of the SSM, is assessing whether and to what extent similar policy recommendations could be applied to less significant institutions for consistency reasons, or whether a specific approach is warranted due to the differences in business models, also taking into account the principle of proportionality.

Special Feature C
The future of the European retail payments market[172]

This Special Feature considers innovation in retail payments in relation to the Eurosystem integration objective. Several innovative payment solutions have been launched in Europe, starting at the national level. In order to avoid introducing fragmentation in the euro retail payments market, work at the strategic level is required to achieve pan-European reach and to ensure a true single market in such innovative payment solutions. In this regard, governance arrangements involving all relevant stakeholders, while remaining lean to ensure agreement on strategic objectives, are key, as illustrated by some recent achievements under such a governance framework by the Euro Retail Payments Board (ERPB) for euro retail payments in the EU. Looking ahead, two main factors are expected to have an impact on the euro retail payments market in Europe, namely regulatory changes with new entrants on the supply side and the possible use of distributed ledger technologies.

1 Introduction

In the field of retail payments, the key objective of the Eurosystem is to achieve a genuine single market for retail payments in euro in which there is no difference notably in terms of speed, cost and convenience between domestic and cross-border payments in euro. The last Special Feature looking at the state of integration of the euro retail payments market was published in 2013.[173] Since then, a Single Euro Payments Area (SEPA) has been achieved for credit transfers and direct debits in euro under the impetus of the "SEPA end-date Regulation"[174], which set the deadline for migration to pan-European credit transfers and direct debits in euro. The new European schemes replaced the domestic ones in the euro area as of 1 August 2014.[175] Work still remains to further develop an integrated, innovative and competitive market for euro retail payments. Efforts are needed, in particular, in the field of cards, with a call for further work by relevant stakeholders towards overcoming existing barriers. Moreover, the rise of innovative payment services and the arrival of new players on the supply side bear the risk of reintroducing fragmentation in this market.

172 Prepared by F. Di Salvo, G. Koczan and K. Themejian.

173 See "The integration of the euro retail payments market – SEPA and beyond", *Financial Integration in Europe*, April 2013.

174 Regulation (EU) No 260/2012.

175 Non-euro area EU countries are to migrate by 31 October 2016.

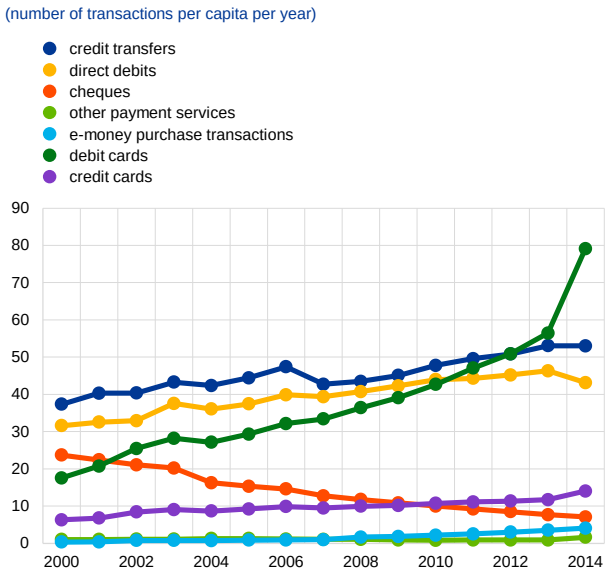
In its catalyst role, the Eurosystem seeks to facilitate integration, efficiency and competition in the overall market for retail payments. The establishment of proper governance, involving all relevant stakeholders, is key to ensure agreement on strategic objectives given the network characteristic of the retail payments industry, i.e. it is an industry where cooperation is needed to be able to compete.

In this regard, this Special Feature first presents the main areas of innovation for euro retail payments. It then considers the evolution of the governance framework within which the strategy for innovative euro retail payment services in Europe is being developed, with the creation of the ERPB, before turning to the main achievements under the lead of the ERPB. Finally, it discusses possible developments linked to regulatory and technological changes.

2 Main areas of innovation in European retail payments

Innovative payment solutions, based on "traditional" payment instruments, are being developed in Europe, starting at the national level and therefore bearing the risk of introducing fragmentation in the euro retail payments market.

Chart 1
Number of transactions executed by payment instruments in the EU



Source: ECB.
Notes: The jump in the number of debit card transactions in 2014 can be explained by a change in the statistical methodology for collecting data, as certain card payments previously not reported under the category of debit cards have now been reclassified as such.

Payment choices prove to be slow to change over short time horizons. Despite the significant heterogeneity in the retail payments landscape in Europe, cash is still the most important payment method at the point of sale overall at the European level. There is nonetheless a trend of convergence for cashless instruments with the exception of cheques. Considering the changes in the use of payment instruments since 2000, debit card transactions show the highest growth in Europe, and more generally around the globe, primarily reflecting the replacement of cash and cheque payments at the point of sale.

Among these changes in payment instrument use, several innovative retail payment services have been launched or are now under development. Most innovations in retail payments revolve around the initiation channel, with the most dynamic and innovative developments occurring in mobile payments and payment initiation services by providers that do not maintain payment accounts themselves (see Section 3 for further details). The speed of the processing of retail payments is another main trigger for innovation in retail payments.

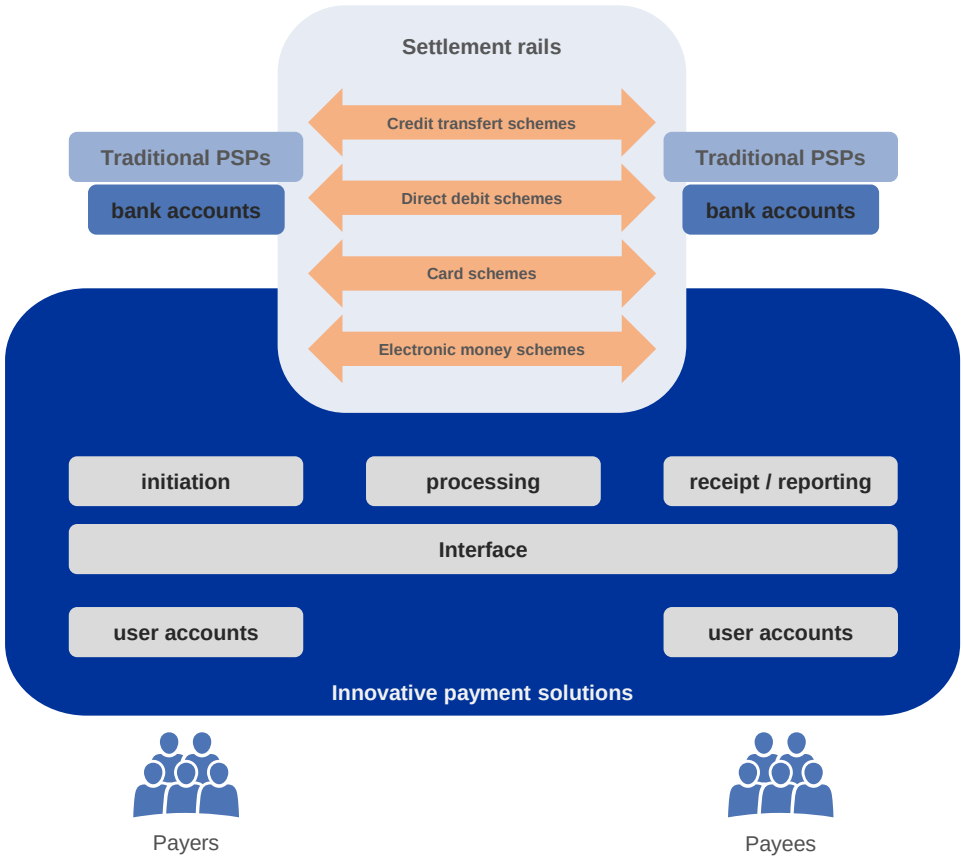
The payment market supply side provides services that are often interlinked with each other and are used as building blocks in innovative payment solutions as illustrated by the chart below. This makes the landscape very complex and difficult to

analyse. SEPA payment instruments are a fundamental first set of building blocks for these solutions, forming the “settlement rails” between the payer and the payee. A second set of building blocks are convenient newly designed consumer interfaces and payment processes aiming at smoothening the user experience and facilitating the sale process. Technological developments promote new ways for users to access payment services in general, e.g. initiation or reporting services. Concrete examples of this recent innovation are digital wallet products, i.e. places to store digitally secure information necessary to authenticate a user and to initiate an authorisation process to make a transaction to purchase online goods and services.

Innovative solutions tend to start as closed-loop solutions and the diversity of approaches (technical and/or business rule-related) can lead to non-interoperable islands and competition for the market instead of competition in the market. It is however important that the market remains integrated with at least a minimum level of interoperability in order to ensure a payments landscape which benefits all payment service users.

Chart 2

Innovative payment solutions built on top of traditional payment instruments



The most relevant areas of retail payment innovation in Europe are described below, considering in turn instant payments, person-to-person mobile payments and mobile and card-based contactless proximity payments.

2.1 Instant payments

Speed has become a prominent issue in the debate on retail payments not only at the European but also at the global level, with a need for immediacy also connected to the development of e-commerce and the corresponding changes in users' expectations and needs. Thus, similarly to information and communication that can be obtained in real time, users (businesses and individuals) increasingly expect payments to be executed in real time, i.e. instantly, with the funds being available for use immediately by the recipient.

Instant payments are defined as "electronic retail payment solutions available 24/7/365 and resulting in the immediate or close to immediate interbank clearing of the transaction and crediting of the payee's account with confirmation to the payer (within seconds of payment initiation). This is irrespective of the underlying payment instrument used (credit transfer, direct debit or payment card) and of the underlying arrangements for clearing (whether bilateral interbank clearing or clearing via infrastructures) and settlement (e.g. with guarantees or in real time) that make this possible."[176]

Instant payments consist of three layers, namely the scheme (i.e. rules and standards that allow an immediate transfer of funds based on existing payment instruments, namely credit transfer, direct debit and cards), the clearing component and the settlement component. Instant payments require immediate interbank clearing (i.e. the exchange of payment information among payment service providers (PSPs) and the confirmation that funds and/or credit lines are available and that limits if applicable are respected), but not necessarily immediate interbank settlement. The creation of "layered" payment solutions based on centralised open clearing and settlement prevents closed-loop solutions that follow a silo approach in which service providers are vertically integrated and their offer spans from the customer interface to the clearing and final settlement of transactions. With the three-layer approach, competition among service providers is facilitated. These developments are expected to shape the retail payment infrastructure landscape (in particular the clearing layer which is a prerequisite for instant payments) that could be achieved in a variety of forms, ranging from a network of a few or many interoperable infrastructures to one single pan-European infrastructure.

As a reply to users' demand, instant payment solutions have emerged or are being developed in a number of markets in Europe without however achieving a pan-European dimension.

2.2 Person-to-person mobile payments

Person-to-person (P2P) mobile payment solutions are considered as a potential alternative to cash payments between individuals or cheques as well as credit transfers via traditional online or phone banking solutions or over the counter. Such

[176] ERPB definition adopted at the ERPB meeting on 1 December 2014.

solutions display advantages in terms of mobility and ease of use. Moreover, another aspect stimulating the take-up of P2P mobile payments could be their evolution into "instant payments" (see Section 2.1 above). While the overlap is only partial (as instant payments can be initiated with other devices and P2P mobile payments might not be "instant"), it can be expected that a significant part of instant payments will be initiated via smartphone apps and that, as soon as instant payment solutions are available, P2P mobile payments will become instant.

In Europe, P2P solutions have been emerging mostly at the national level, if not only the local or intra-bank level, without mutually interoperable solutions and a pan-European scope.

2.3 Mobile and card-based contactless proximity payments

Among the retail payment innovations, devices that use a contactless interaction technology to initiate a payment are gaining traction in the market, with contactless payment solutions being developed across Europe. Contactless technologies are used as initiation channels for "traditional" payment instruments, such as cards mainly, but other SEPA instruments could also eventually come within the scope of such technologies. A contactless payment transaction relies on the consumer holding the contactless card or device in the proximity of the merchant's point of sale terminal, which allows the payment information to be communicated between them, without physical contact between the consumer payment card or device and the merchant's point of sale terminal. The proximity of the contactless card or device to the merchant's terminal varies depending on the technology used, but in general the distance is short and no more than a few centimetres.

These payments are attracting the attention of consumers, merchants and issuers given their advantages. These include speed and convenience for consumers, the higher throughput for merchants, and the potential for financial institutions to increase transaction volumes by capturing lower-value transactions that are typically made using cash.

The existence or setting of standards for such payment solutions differs across schemes, devices and countries, which may prevent interoperability at the pan-European level.

The above-mentioned innovative solutions are starting to be developed at the national level. To avoid introducing fragmentation in the euro retail payments market, work at the strategic level is required to achieve pan-European reach to ensure a true single market in such innovative payments. This work is being conducted within a three-pillar governance framework, including the ERPB – a new type of board bringing together all relevant stakeholders.

3 Governance framework for innovative euro retail payments: specific features and achievements

Designing a proper governance framework, involving all relevant stakeholders while remaining lean, is key to ensure agreement on strategic objectives in a network industry such as the retail payments industry. This section presents the new governance framework for euro retail payments in Europe, before outlining the main achievements under such a governance framework as far as the innovative retail payment solutions described in Section 2 are concerned.

3.1 A new governance framework for euro retail payments

The governance framework for innovative euro retail payments currently relies on three main pillars: the "traditional" ones, namely the Eurosystem and the European Commission, as well as the Euro Retail Payments Board (ERPB)[177], which involves all relevant stakeholders taking into account the network characteristics of this industry.

Both the Eurosystem and the European Commission aim to facilitate market efficiency and integration, although they have different perspectives. The Eurosystem's responsibility for payments relates to the "smooth operation of payment systems" for the euro (Article 127(2) of the Treaty on the Functioning of the European Union). The Eurosystem's focus in the field of retail payment innovation is therefore on the euro, supporting innovation to the extent that it can increase the efficiency of the market and, consequently, promote economic growth and overall social welfare. Among the main roles attributed to central banks in relation to market infrastructures and payments[178], the Eurosystem acts as a catalyst for the development of an integrated innovative retail payments market and as overseer of retail payment systems and instruments. As a catalyst, the Eurosystem seeks to facilitate the efficiency of the overall market arrangements for retail payments. In this regard, the Eurosystem encourages changes in these market segments and seeks to overcome the problem of fragmentation which leads to inefficiencies, lower levels of growth and innovation, and unnecessary risks associated with the complexity of the market. The importance of the role played by the Eurosystem as a catalyst in the run-up to SEPA is widely recognised. Furthermore, the Eurosystem should continue to play an important role in the further integration of the euro retail payments market in the EU. The catalyst function complements the oversight function, which seeks to ensure safety and efficiency.

The European Commission aims to create a single market with a level playing field and equal opportunities covering all of the countries and currencies of the European Union. In this regard, the European Commission is in charge of harmonising the

[177] Besides these, the European Payments Council, representing payment service providers, is involved on the basis of self-regulation.

[178] Traditionally, central banks' roles with regard to market infrastructures and payments fall into three main categories: operational, oversight and catalyst.

European legal framework for retail payments and also has responsibilities in the area of competition policy and consumer protection.

Besides these “traditional” actors, the governance framework for euro retail payments has recently evolved taking into account the network characteristic of this industry, i.e. it is an industry where the benefits accruing to an individual market participant increase when other participants choose to do business in that network. The concept of network industries applies to a variety of industries, such as telecommunications and computer software. Network effects may also create obstacles to competition and innovation as it may be difficult for a new system to enter the market and compete with better technology given the need for a critical mass of users to recover costs. Such network effects may therefore lead to inefficient technology adoption. Cooperation is therefore needed to be able to compete.

This cooperation should include all relevant stakeholders and take place not only at the national but also at the European level. In this regard, the ECB announced on 19 December 2013 the creation of a Euro Retail Payments Board replacing the SEPA Council, which was a joint initiative of the ECB and the European Commission in 2010, for an initial period of three years. The ERPB is a platform for European dialogue between banks, other payment service providers and end-users of payment services in order to promote further integration of the market for retail payments in euro. Benefiting from the experience of the SEPA Council, the ERPB aims to achieve a strengthened mandate, a more output-driven approach and wider membership. Along with the European Commission, focusing on the legal framework, and the Eurosystem in its catalyst function, this new group contributes to retail payment governance in Europe by focusing on strategy and facilitation.

The objective of the ERPB is to contribute to and facilitate the creation of an integrated, innovative and competitive market for euro retail payments in the EU. This enlarged mandate, compared with its predecessor that focused on the SEPA migration process, reflects the start of a new phase in the euro retail payment integration process beyond the SEPA migration end-date for credit transfers and direct debits, in particular in the domains of cards and innovation.

Because of its output-driven focus, the ERPB aims at concrete outcomes at the strategic level on the basis of a work plan setting the priorities. The ERPB takes stances, makes recommendations or invites certain stakeholders to act at the strategic level on relevant matters on the basis of consensual decisions. The ERPB has no formal legal powers to impose binding measures and hence its legitimacy relies on the voluntary commitment of its members to contribute to its work and abide by the issued stances, recommendations and statements. To achieve its objectives, the ERPB can establish working groups, reflecting the ERPB constituency at expert level and co-chaired by representatives from the demand and supply sides, as well as invite/acknowledge standing industry groups to achieve its objectives. In order to foster transparency and accountability, final ERPB documents as well as the work plan and meeting statements are published on the ECB’s website.

The ERPB is composed of high-level representatives of the demand and supply sides of the European market for retail payments in euro and has a wider representation than its predecessor, with two additional participants from both the supply and demand side.[179] Both sides of the market are represented equally, with seven members from each side (see Table 1 for the detailed ERPB composition). The ECB chairs the ERPB. Besides these members, the central bank community takes part as active participant on a rotating basis, with five national central banks (NCBs) representing the Eurosystem and one representing the non-euro area EU central banks. Finally, the European Commission takes part in the meetings as an observer.

Table 1
ERPB composition

Chair: ECB (Yves Mersch, Member of the Executive Board)	
Demand side	**Supply side**
Consumers: European Consumers' Organisation (BEUC) The association of 50+ consumers (AGE Platform)	European Payments Council (EPC)
Retailers: Eurocommerce/European Retail Round Table (ERRT)	Commercial banks: European Banking Federation (EBF)
Internet retailers: Ecommerce Europe	Savings banks: European Savings & Retail Banking Group (ESBG)
Corporates: European Association of Corporate Treasurers (EACT) & BusinessEurope	Co-operative banks: European Association of Co-operative Banks (EACB)
SMEs: European Association of Small and Mid-sized Enterprises (UEAPME)	Payment institutions[180]: European Payment Institutions Federation (EPIF)
National public administrations	E-money institutions: E-money Association
Active participants: five euro area NCBs and one non-euro area EU NCB	
Observer: European Commission	

Since it was set up in December 2013, the ERPB has held four meetings[181], adopting its work plan in its first meeting. The ERPB is regularly monitoring the status of implementation of the recommendations it issues, to ensure proper follow-up from the relevant stakeholders.

Designing proper governance involving all relevant stakeholders but remaining lean at the same time to ensure a body can reach decisions is gaining importance at the national level in Europe as well as in other parts of the globe. In Europe, several national retail payments committees have been created mirroring the composition and mandate of the ERPB, communicating on and coordinating ERPB-related issues at the national level but also dealing with specific topics of national relevance. At the global level, in the framework of the strategies for improving the US payment system the Federal Reserve is engaging with relevant stakeholders, via a task force with a wide representation of various relevant stakeholders, as well as a steering group

[179] With an additional representative for consumers and one representative for internet retailers on the demand side, and one representative from e-money associations and an additional representative from payment institutions on the supply side.

[180] One of the two seats for payment institutions is currently not filled.

[181] Meetings were held on 16 May 2014, 1 December 2014, 29 June 2015 and 26 November 2015. See www.erpb.eu for the meeting documentation and ERPB statements.

gathering together selected representatives of the task force in a leaner structure ensuring representation of the various interests.

3.2 The ERPB's recent achievements in the field of retail payment innovation

Since its creation, the ERPB has achieved progress towards integrated, innovative and competitive retail payments in euro in the European Union. The main achievements in relation to the key areas of innovation mentioned in Section 1 are detailed below. In addition, the ERPB has also covered post-migration issues related to the SEPA credit transfers and direct debits, as well as technical standards for card payments. The first stream of work aimed at identifying and addressing remaining issues related to SEPA credit transfers and direct debits since the mandatory migration deadline on 1 August 2014. The second workstream dealt with the presence of multiple country or card scheme-specific requirements and implementation specifications ("technical standards") which are not interoperable and constitute a barrier to European integration and generate inefficiencies in the payments market.

3.2.1 Instant payments

Under the impetus of the ERPB, the European community of payment service providers, within the European Payments Council, is developing a common scheme for instant credit transfers. The development should be completed by November 2016, with implementation expected by November 2017.

From the perspective of the EU Single Market, the expectation is that (at least) one pan-European instant payment solution for payments denominated in euro should become available to end-users in the short term. This is to avoid fragmentation, which it had taken strong efforts to overcome for SEPA credit transfers and direct debits. To that end, as retail payments are a network industry, providers should reinforce cooperative efforts and adopt a "layered" approach, i.e. develop (at least) a scheme for end-users to execute payments with increased speed, leveraging existing harmonised payment instruments and using underlying clearing and settlement infrastructures.

Within this framework, the ERPB has proposed that at least one instant payment solution in euro should be available to all payment service providers in Europe. At the same time, irrespective of the payment instrument on which they are based, multiple instant payment solutions may help achieve the objectives of competition, innovation and integration in this market segment, provided that they allow for pan-European reachability. For these purposes, it is expected that solutions will be developed at the pan-European level or, if developed at the national level, that they become mutually interoperable at least for solutions based on the same payment instrument.

In December 2014 the ERPB invited the supply side of the industry, in close cooperation with the demand side and with the active involvement of the EPC as a potential scheme developer, to make an assessment of the issues related to pan-European instant payment solutions in euro and present it at its meeting in June 2015. In consideration of this assessment, the ERPB invited the EPC to present to the ERPB by November 2015 a proposal for the design of an instant SEPA credit transfer scheme (SCTinst) in euro, which could be adhered to by EU payment service providers on a voluntary basis. In November 2015 the ERPB endorsed the general scheme design proposal presented by the EPC and expects, on this basis, the EPC to publish an STCinst Rulebook by November 2016 with a view to implementing the scheme by November 2017. In addition, the ERPB invited the EPC to address the outstanding issues related to crucial aspects of the scheme (in particular processing time and amount limits) and submit an interim report for the June 2016 ERPB meeting.

As regards the other layers, the Eurosystem could also consider a possible service expansion in this context as part of its "Vision 2020"[182] for the future of Europe's financial market infrastructure, at least for the settlement layer, in order to meet the needs of potential future instant payment providers. As regards clearing, the Eurosystem held in March and December 2015 as well as April 2016 meetings on clearing arrangements for instant payments to identify the market needs and promote the development of pan-European clearing services for instant payments.

The Eurosystem is committed to supporting the development of pan-European instant payments in euro in the EU.

3.2.2 P2P mobile payments

The ERPB adopted a set of recommendations to ensure that existing and future local mobile P2P solutions cooperate to ensure pan-European interoperability.

In Europe, P2P solutions have been emerging mostly at the national level, if not only at the local or intra-bank level, without mutually interoperable solutions or a pan-European scope. The ERPB consequently agreed to analyse whether there is a case for the development of a pan-European P2P mobile payment solution and, if so, to identify the relevant high-level requirements and the barriers to be overcome.

In this regard, the ERPB endorsed the vision "to achieve a convenient way to allow any person to initiate a pan-European P2P mobile payment safely and securely, using a simple method with information the counterparty is prepared to share in order to make a payment".

[182] The Eurosystem's "Vision 2020" focuses on the future Eurosystem financial market infrastructure, including TARGET2, TARGET2-Securities and collateral management as well as the support of the development of pan-European instant payment services, so that customers can send and receive payments at the same speed with which they can send and receive e-mails. The Vision 2020 was announced in a speech by Executive Board member Yves Mersch on 14 October 2015.

To progress in this field, the ERPB supported creating a forum of existing EU P2P mobile payment solutions to work on pan-European interoperability, and to develop a set of rules and standards related to joining and using pan-European mobile payment services and, in particular, to design and put in place a pan-European service ("standardised proxy lookup") to allow P2P mobile payment data to be exchanged among P2P mobile payment solutions at a pan-European level. The ERPB mandated the EPC, representing EU payment service providers in the EU, to coordinate these efforts.

3.2.3 Mobile and card-based contactless proximity payments

Considering the trend towards setting standards that differ across schemes, devices and countries, the ERPB endorsed a set of recommendations for the take-up of mobile and card-based contactless proximity payments to ensure interoperability at the pan-European level.

The ERPB identified the need to analyse existing solutions and standards for contactless proximity payments and assess to what extent these differences prevent interoperability at the pan-European level. A landscaping exercise conducted in the context of this work revealed that the market is fragmented in terms of the maturity of proximity payment solutions and the related technical standards and mobile services are underdeveloped compared with card-based services.

The ERPB endorsed the following vision for contactless proximity payments: "To ensure over time, across Europe, a secure, convenient, consistent, efficient and trusted payment experience for the customer (consumer and merchant) for retail transactions at the point of interaction, based on commonly accepted and standardised contactless and other proximity payment technologies."

The ERPB also issued ten recommendations for the vision for mobile and card-based proximity payments to be achieved. These recommendations focus on three main aspects: (i) achieving standardisation across the industry both through the development of new standards and the implementation of existing ones; (ii) promoting the take-up of contactless products via coordinated communication among market stakeholders; and (iii) addressing specific issues related to technical and regulatory aspects of contactless proximity payments.

3.2.4 Future work

While the ERPB is still to discuss the update of its work plan in its June 2016 meeting, some areas for further work in the field of retail payment innovation are already apparent, such as the follow-up to the above-mentioned work on a scheme for instant payments in euro and the impact of current initiatives by the European Commission.

The ERPB will for instance analyse electronic invoice/bill presentment and payment (EIPP/EBPP) solutions in Europe. The relevance of this dossier for the ERPB stems

from the close links between invoicing and payments. Since an e-invoice encompasses relevant data for payment processes, it offers the possibility for seamless straight-through processing which also offers the potential for efficiency gains in the payments chain. In this respect, some providers have started developing EIPP/EBPP solutions. The ERPB suggested considering a harmonised EIPP/EBPP service with pan-European reach for all consumers and businesses in SEPA and set up a working group to prepare by November 2016 a report reviewing the landscape and analysing the reasons why previous attempts have failed as well as the barriers to the take-up and integration of such solutions in Europe. After the delivery of the November 2016 report, the ERPB could review the need for further ERPB work.

Besides this, EU legislative measures being finalised or implemented as well as the initiative from the European Commission for a Digital Single Market Strategy and the Green Paper on retail financial services and insurance may also have an impact on the ERPB workplan.

4 Possible developments linked to regulatory and technological changes

Besides the main areas for innovation in the euro retail payments market described above, two main factors are expected to have an impact on the euro retail payments market in Europe, namely regulatory and technological changes.

4.1 New entrants on the supply side of the retail payments market

Regulatory developments in Europe through which new players have been recognised on the supply side should have an impact on the retail payment services market and in particular should stimulate innovative solutions.

The e-Money Directive and the Payment Services Directive opened up the payment services market to new players: e-money institutions and payment institutions. New players on the supply side have now been recognised with the changes in the regulatory framework for retail payment services in Europe brought by the second Payment Services Directive (PSD2). The PSD2, which entered into force on 13 January 2016, inter alia opens up the EU payments market to new actors and services not covered by the legislation so far. The PSD2 expands the scope of payment service providers to companies offering consumer or business-oriented payment services based on the access to the payment account, i.e. payment initiation service providers and account information service providers (together known as third-party providers). The recognition of these new players is likely to affect the retail payments landscape, challenging the role which banks have been playing thus far: while transactions would still go through accounts held at banks, their direct interaction might decrease.

The PSD2 will also provide for a higher level of payment security. Thus, acknowledging the importance of the security of electronic payments for the

protection of users and the development of a sound environment for e-commerce, the PSD2 requires that "all payment services offered electronically should be carried out in a secure manner, adopting technologies able to guarantee the safe authentication of the user and to reduce, to the maximum extent possible, the risk of fraud"[183]. In this regard, the PSD2 mandates the European Banking Authority to develop, in close cooperation with the ECB, regulatory technical standards on strong customer authentication and secure communication.

It is expected that this new regulatory framework will have a major impact on the payment services market, and could promote innovative payment solutions. The recognition of an additional category of non-banks in payments markets is likely to increase competition. Such competition may have an impact in terms of the potential lowering of fees for the services offered, but also by increasing efficiency and the choice of products for users, both consumers and merchants. Vis-à-vis banks, non-banks may position themselves as competitors in the business of payment services, but also as "partners" or "intermediaries" in the relationship with the end-user.

The PSD2 will oblige each account-servicing PSP to become active, i.e. be able to communicate securely with third-party providers (TPPs) and to provide the TPP, immediately after receipt of the payment order from a TPP, with information on the initiation and execution of the payment transaction. Based on and in extension of the legally enforced access, it is anticipated that TPPs will offer new types of services to customers and possibly also to account-servicing PSPs themselves. TPPs will have to communicate in a secure way and will be able to offer new payment initiation services as well as account information services. The emergence of these services may also push banks to innovate in order not to be dis-intermediated by non-bank providers, including from outside Europe. New business models and forms of cooperation between banks and non-banks may also be stimulated. As there will likely be a multitude of providers and service options, there is a risk that this development could lead to a renewed fragmentation in the Single Euro Payments Area. This risk will have to be mitigated and fragmentation avoided.

4.2 Use of distributed ledger technologies

The use of distributed ledger technology (DLT) is a development that may have an impact on the retail payment services market and may in particular stimulate innovative solutions.

DLT allows peer-to-peer transfer of electronic value without the involvement of a trusted third party via the use of a ledger distributed across the decentralised network, replicating the peer-to-peer transactions. These technologies, which ensure authentication and recording of transactions by means of advanced cryptographic algorithms without the need for a central database, have become a topic of utmost interest for various actors in the financial industry. These technologies have been

[183] See Recital 69 of the PSD2.

underlying most of the virtual/digital currency schemes[184], i.e. digital representations of value not issued by financial institutions. The report by the Committee on Payments and Market Infrastructures (CPMI) on digital currencies identified DLT as the most innovative element in which these digital currencies are transferred. While the interest in DLT originated from digital currencies, its potential application is now widening.

Many financial institutions and Fintech companies are showing an interest in the use of DLT within the existing financial ecosystem. Some central banks[185] have also launched exploratory research into the potential application of this technology in issuing central bank fiat currency ("digital banknotes"). DLT might also potentially be used for building financial infrastructures in general and processing retail payments in particular, (e.g. in a bank's own account management system), on completely new technological foundations and hence could provide a wider array of technological solutions for financial institutions (among them PSPs) to choose from.

The emergence of DLT is still at an early stage and its penetration is currently unclear. It could however have the potential to make financial infrastructures more efficient without the need to change the economic model for the provision of financial services.

[184] For an analysis of virtual currency schemes, see "Virtual currency schemes", ECB, October 2012 and "Virtual currency schemes: a further analysis", ECB, February 2015, and "Digital currencies", Committee on Payments and Market Infrastructures, November 2015.

[185] The Bank of England has set up under its "One Bank Research Agenda" a team of experts looking into the application of DLT in issuing central bank currency. The Bank of Canada also made researching and understanding innovation in financial services one of its key priorities. In its research agenda, it gives a prominent role to research on the application of DLT (see the Bank's medium-term plan).

Special Feature D
New financial integration indicators built from securities holdings statistics[186]

This Special Feature presents a wide set of new quantity-based indicators of financial integration in the euro area based on securities holdings statistics (SHS). The indicators shed light on cross-border securities investment in the different market segments, while the high level of data granularity helps to identify the main drivers of changes in such investment over time. The results show, for instance, that cross-border investment in government debt securities by banks and investment funds has been the key driver of cross-border capital flows within the euro area over the last seven years.

1 Introduction

Financial integration stemming from cross-border investment can help foster financial stability and growth, for instance by providing a broader and deeper source of funding to the economy and by increasing the resilience of the financial system owing to increased risk sharing. It can also support smooth and balanced transmission of the single monetary policy (Draghi, 2014).[187] But how much capital already moves across borders within the euro area? Are there significant differences between the different types of markets, countries or regions? Have there been any recent changes in cross-border investment patterns? If so, which market segments, countries or investors drove the overall developments the most?

Using new granular data from the securities holdings statistics, this Special Feature sheds light on cross-border investment patterns in the euro area securities market. For instance, it shows that the level of cross-border investment within the euro area (as a percentage of total euro area investment) is significantly higher in the debt securities market (around 30%) than in the equity market (around 15%). Over the last seven years, the cross-border investment share in the debt market is, however, found to be less stable than that in the equity market. Therefore, this Special Feature inter alia focuses on the identification of the main drivers underlying the developments in the debt market.

The presented findings have the advantage of being based on a large set of indicators built from one single source, the SHS Sector (SHSS) data.[188] First of

[186] Prepared by L. Fache Rousová and A. Rodríguez Caloca.

[187] Draghi, M., "Financial integration and financial union", speech at the conference marking the 20th anniversary of the establishment of the European Monetary Institute, Brussels, 12 February 2014.

[188] For comprehensive information about SHS data, including the distinction between the SHS Sector and SHS Group modules, see "Who holds what? New information on securities holdings", *Economic Bulletin*, Issue 2, ECB, 2015.

all, since no methodological or measurement differences arise within this one data collection, the level of financial integration captured by these indicators is comparable across the different holder and issuer sectors as well as across the different types of securities. Second, the SHSS coverage of the euro area is complete both in terms of countries and economic sectors, while this was not the case for the (limited set of) previously available quantity-based indicators.[189] Third, the high granularity of the SHSS data allows us to drill down to an unprecedented level of detail (holdings of an individual security by a given sector), so that the underlying drivers of the overall developments can be identified.

Moreover, the SHS data are integrated with reference data on individual securities from the Centralised Securities Database (CSDB),[190] which provides detailed information on individual issuers, types of securities and the characteristics thereof (e.g. maturity, price, yield). Such information is particularly important from a theoretical point of view because a prerequisite for any measurement of financial integration is the identification of the same assets in terms of risk-adjusted returns (see, e.g., Adam et al., 2002).[191]

To extend the SHS time span beyond seven years, this Special Feature also uses securities holdings experimental statistics (SHES). These data were collected on a voluntary and best-efforts basis from 2009 to 2013, i.e. in the period before the SHS collection on the basis of an ECB regulation started,[192] and are thus subject to some quality limitations (e.g. lower coverage). To overcome this, the SHES data are supplemented by national contributions to Euro Area Financial Accounts (EAA) data. Moreover, extensive comparisons are carried out in order to confirm that the indicators derived from the resulting dataset are consistent with those available from other data sources.

The rest of the Special Feature is organised as follows. Section 2 introduces the general framework. Section 3 focuses on SHSS indicators, which are constructed at a highly aggregated level, while Section 4 presents sector-specific indicators. Section 5 is devoted to the developments in the government debt market and Section 6 concludes. The Special Feature also includes two boxes. The first box confirms that SHSS data are valid for the measurement of financial integration, while the second box highlights some stylised facts about securities traded cross-border as compared with those held domestically.

189 For instance, the quantity-based indicators regularly used in this report typically focused only on holdings by two financial investor sectors (banks and investment funds) or were aggregated for all holder sectors as well as being limited to a few types of securities. In addition, some indicators did not cover all euro area countries (e.g. indicators constructed from the IMF's Co-ordinated Portfolio Investment Survey data).

190 For more information, see the publication entitled "The Centralised Securities Database in brief" on the ECB's website.

191 Adam, K., Jappelli, T., Menichini, A. M., Padula, M. and Pagano, M., "Analyse, Compare, and Apply Alternative Indicators and Monitoring Methodologies to Measure the Evolution of Capital Market Integration in the European Union", report to the European Union, 2002.

192 The legal basis for the SHS data collection consists of Regulation ECB/2012/24 and Guideline ECB/2013/7, which were amended in 2015 by Regulation ECB/2015/18 and Guideline ECB/2015/19.

2 General framework

The SHSS data include quarterly information on holdings of individual securities by institutional sectors in the euro area. As the information on both the holder and issuer country is available, domestic securities holdings can be distinguished from those held cross-border and the latter can be further split into intra- and extra-euro area cross-border holdings.

To measure financial integration, a very simple but intuitive quantity-based indicator is used throughout this Special Feature. It is the share of intra-euro area cross-border securities holdings (i.e. non-domestic but within euro area holdings) in total euro area securities holdings. The higher such share, the more integrated the euro area securities market.

The richness of SHSS data allows us to construct such indicators for various combinations of holder and issuer sectors and different types of securities. This Special Feature follows a top-down drilling approach, i.e. starting from more and going to less aggregated levels. Less aggregated indicators (sub-indicators) are constructed based on the value of securities holdings in a given market segment. This in turn means that a more aggregated (composite) indicator can be interpreted as a weighted average of the individual sub-indicators. An alternative way of drilling down used in this Special Feature is to calculate the contributions of the individual elements (e.g. sectors, countries), which are underlying the aggregate indicator.

The securities market for the purposes of this Special Feature includes both debt securities and equity but excludes investment fund shares. As highlighted by Felettigh and Monti (2008)[193], the inclusion of cross-border holdings of investment fund shares would bias the instrument and geographical composition of portfolio assets in the absence of information on the ultimate issuer(s).

3 Aggregate SHS indicators − composite, debt securities and equity markets

The composite indicator in Chart 1 refers to the most aggregated level of the euro area securities market. It shows that the share of intra-euro area cross-border holdings of securities declined from around 30% at the beginning of 2009 to below 24% in the third quarter of 2012, while it has picked up to around 26% since then. Such a U-shaped pattern is characteristic for most other euro area financial integration indicators including for the FINTEC indicator in Section 1 of this report. Moreover, in line with those indicators, the bottoming out is observed around mid-2012, when the ECB announced the Outright Monetary Transactions (OMT) programme. The consistency of the SHSS composite indicator with other quantity-based financial integration indicators confirms the usefulness and validity of SHSS

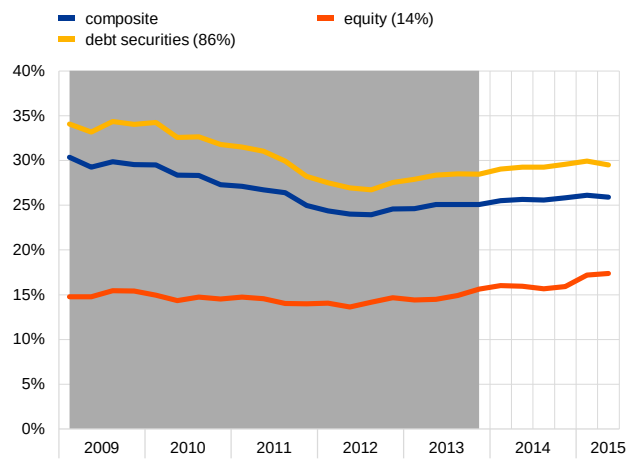
[193] Felettigh, A. and Monti, P., "How to interpret the CPIS data on the distribution of foreign portfolio assets in the presence of sizeable cross-border positions in mutual funds. Evidence for Italy and the main euro-area countries", *Occasional Paper Series*, No 16, Banca d'Italia, 2008.

data (including those collected prior to 2014) as a new source for financial integration purposes. This result is further reinforced by the comparison between SHS and MFI balance sheet items (BSI) data presented in Box 1.

Chart 1

Share of cross-border holdings

(percentages of total euro area holdings)



Sources: ECB (SHSS, SHES), EAA and ECB calculations.
Notes: The average weight of the sub-indicators in the composite indicator is shown in brackets. The shaded area indicates the period based on SHES data prior to Q4 2013 (Spanish and Greek domestic holdings are back-casted using national contributions to EAA data; SHES data exclude Malta).

The two other indicators in Chart 1 measure the level of financial integration in the debt securities and equity markets respectively. The separation between the two markets points out the striking differences between them. First of all, the level of financial integration for debt securities (mostly over 30%) is found to be more than 12 percentage points higher than that for equity over the whole period. Considering also the relatively low level of the cross-border share of the equity market (14-17%), the debt market is on average nearly twice as integrated as the equity market. Second, the U-shaped pattern is much less pronounced for the equity market. The equity indicator remains flat until around mid-2012 when it starts on a slightly increasing trend. Such large differences between the two markets reinforce the importance of indicators which distinguish between types of securities on the one hand, but whose levels are comparable on the other hand – such as those constructed from SHSS data.

Box 1

SHSS validation through comparison with previously available quantity-based indicators

The comprehensiveness of SHSS data enables us to replicate the previously available quantity-based indicators by using only one single data source rather than a mix of different data sources (see Fache Rousová and Rodríguez Caloca, 2015).[194] The analysis presented in that paper is, however, based only on one data snapshot, i.e. data referring to the end of 2013. This box illustrates that the results also hold for a time-series comparison.

Chart A presents the comparison of the SHSS financial integration indicators with their counterparts obtained from MFI balance sheet items (BSI) data, thereby focusing on securities holdings by euro area banks.[195] Panel A presents MFI holdings of debt securities issued by the MFI sector itself, while Panel B shows MFI holdings of debt securities issued by two non-financial sectors: the non-financial corporation (NFC) and general government sectors.

194 See Fache Rousová, L. and Rodríguez Caloca, A., "The use of securities holdings statistics (SHS) for designing new euro area financial integration indicators", *Indicators to support monetary and financial stability analysis: data sources and statistical methodologies*, Vol. 39, Bank for International Settlements, 2015.

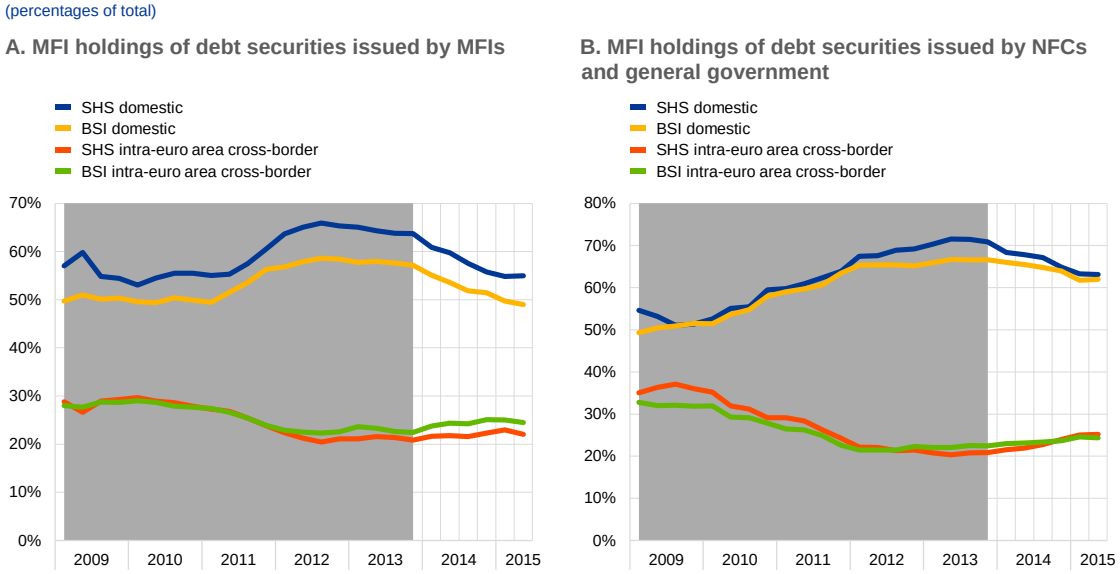
195 Banks are referred to as monetary financial institutions (or MFIs). The MFI sector comprises deposit-taking corporations and money market funds, excluding national central banks, unless indicated otherwise.

The chart highlights that SHS and BSI indicators of financial integration, as measured by the share of intra-euro area cross-border holdings, are very similar (green and red lines). This is despite the various conceptual and measurement differences between the two sets of statistics (e.g. differences in valuation and coverage). In particular, the indicators follow a similar pattern over time, bottoming out around the third quarter of 2012, while the levels are also comparable. Similar results hold for the shares of domestic holdings (blue and yellow lines), though in the case of MFI debt securities one specific conceptual difference (the treatment of "own" holdings) contributes to the somewhat higher share of SHSS domestic holdings as compared with its BSI counterpart.

Chart A

A comparison of SHS and BSI quantity-based financial integration indicators

(percentages of total)



Sources: ECB (SHSS, SHES and BSI), EAA and ECB calculations.
Note: The shaded area indicates the period based on SHES data prior to Q4 2013 (Spanish and Greek domestic holdings are back-casted using national contributions to EAA data; SHES data exclude Malta).

SHS were also compared with investment fund statistics and with insurance corporation and pension fund statistics. The results of both comparisons confirm that the SHS financial integration indicators display a very similar evolution over time to that obtained from the other two sets of statistics.

As shown in Chart 2, the level of financial integration also significantly varies with the country of origin of a security (i.e. issuer country). Smaller euro area countries tend to be more integrated with the rest of the euro area than larger countries. This finding is relatively robust as it holds for both debt and equity markets as well as over time.[196] It is also in line with the counterpart result from the trade literature that smaller countries tend to register a higher trade openness ratio,[197]

[196] For instance, the correlation between (the log of) country GDPs and the SHS debt indicator per issuer country is found to be negative, ranging from around -0.5 to around -0.25 over the period from Q1 2009 to Q2 2015.

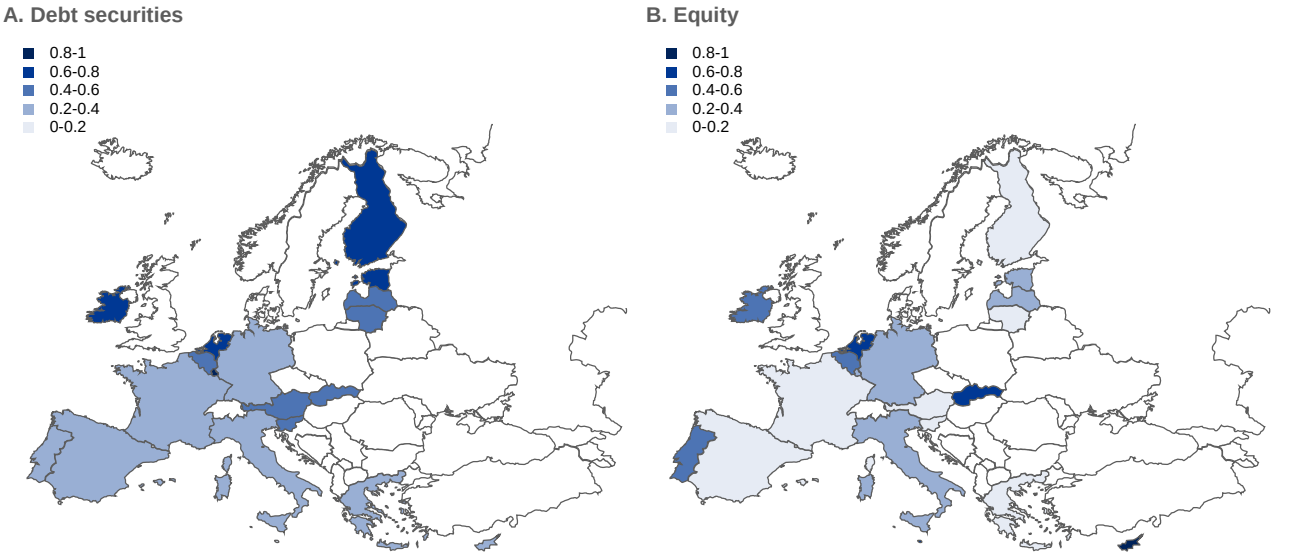
[197] Recent updates of trade openness ratios can be found at this World Bank website.

though no strong evidence of this link has been found in the empirical literature on financial integration so far (see e.g. Lane and Milesi-Ferretti, 2003).[198]

Chart 2

Share of cross-border holdings by issuer country

(averages over the period from the fourth quarter of 2013 to the second quarter of 2015)



Sources: ECB (SHSS) and ECB calculations.

4 SHSS indicators for the main holder and issuer sectors

The unique SHSS combination of information on both the holder and issuer side enables us to create SHSS indicators specific to each side. The six sectors considered for the purposes of this Special Feature are: (i) MFIs; (ii) other financial intermediaries and auxiliaries (OFIs) such as investment funds; (iii) insurance corporations and pension funds (ICPFs); (iv) general government; (v) non-financial corporations (NFCs); and (vi) households.[199] The former three belong to the financial sectors, while the latter three are the non-financial sectors.

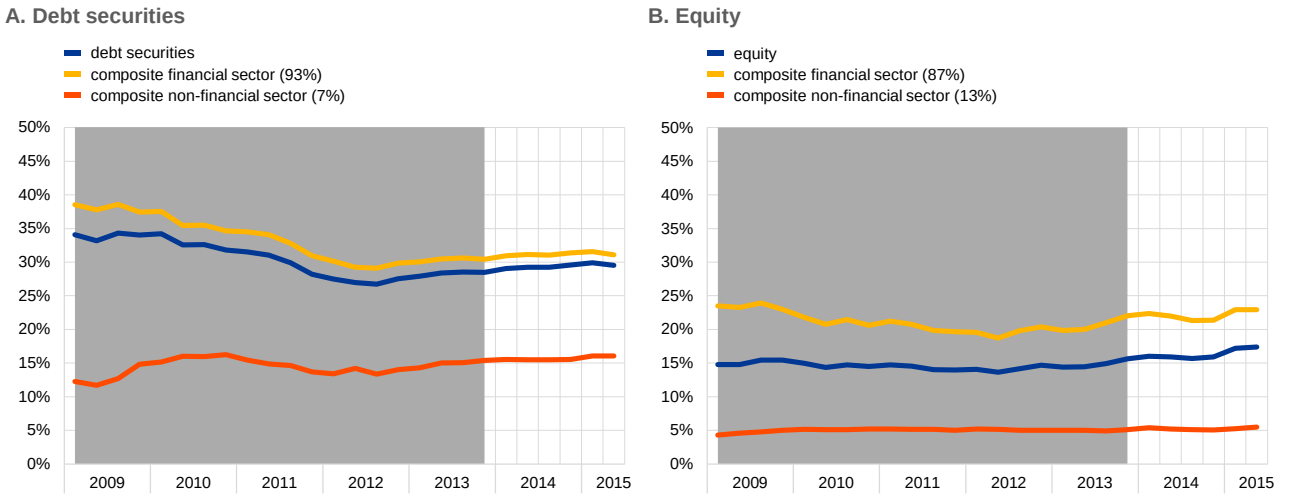
Chart 3 presents the SHSS indicators for the financial and non-financial holder sectors, while also distinguishing between the debt securities and equity markets. In both markets, euro area financials hold much more cross-border securities (over 30% and 20% for debt and equity markets respectively) than non-financials. The difference is particularly pronounced in the equity market, in which only around 5% of securities traded by non-financial sectors come from other euro area countries. Put differently, around 95% of investment in equity markets by euro area non-financials either stays at home (around 86%) or flows out of the euro area (around 9%).

198 Lane, P. R. and Milesi-Ferretti, G. M., "International Financial Integration", CEPR Discussion Paper No 3769, 2003.

199 The sector breakdowns available in SHSS data are even more granular. More detailed information can be found in Regulation ECB/2012/24 as amended by Regulation ECB/2015/18.

Chart 3

Share of cross-border holdings by holder sector

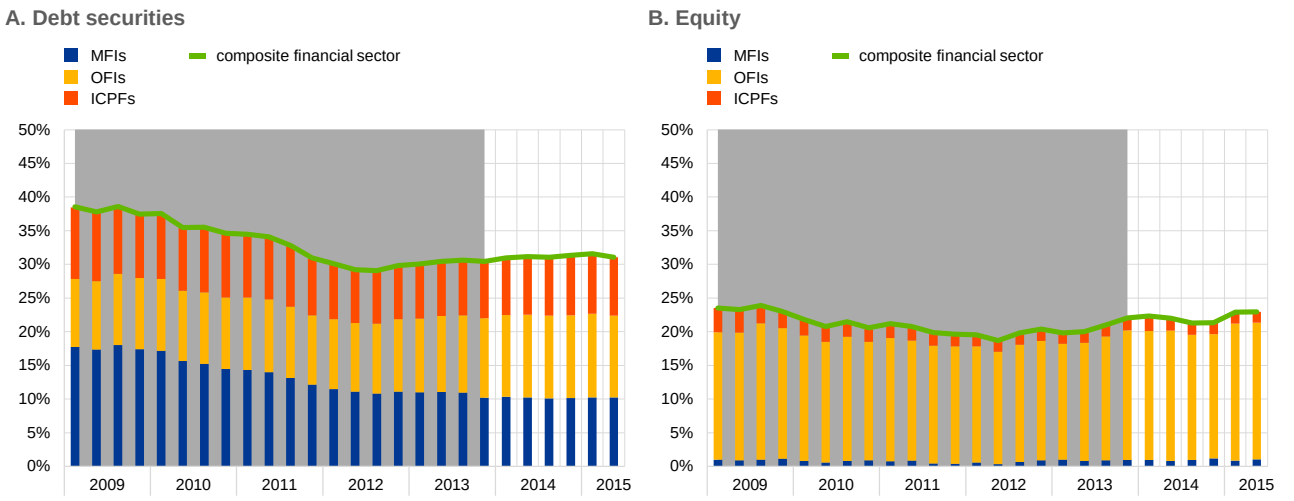


Sources: ECB (SHSS, SHES), EAA and ECB calculations.
Notes: The average weight of the sub-indicators in the composite indicator is shown in brackets. The shaded area indicates the period based on SHES data prior to Q4 2013 (Spanish and Greek domestic holdings are back-casted using national contributions to EAA data; SHES data exclude Malta).

The role of the three financial sectors as cross-border investors greatly varies across the two main asset classes (Chart 4). In the debt market, all three sectors are equally important, especially towards the end of the sample, while the cross-border equity holdings are clearly dominated by the OFI sector. Regarding the market for debt securities, it is interesting to observe that the deterioration in the level of financial integration prior to mid-2012 is not common to all financial sectors. Rather, it is driven by one single sector: the MFI sector. However, the recent upward trend can be mainly attributed to the OFI sector.

Chart 4

Share of cross-border holdings by financial holder sector

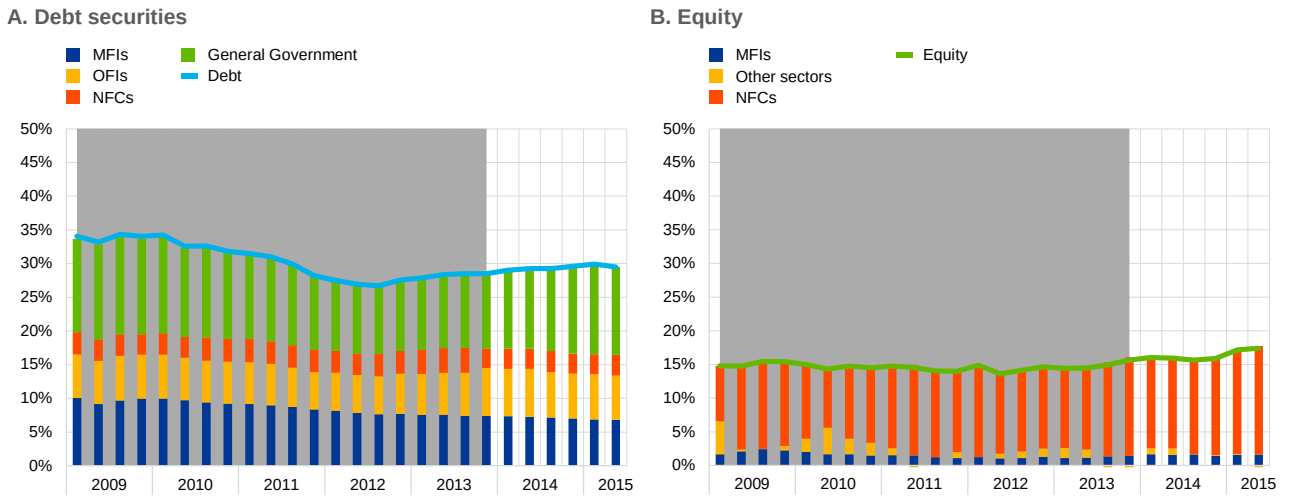


Sources: ECB (SHS, SHES), EAA and ECB calculations.
Notes: The contributions of the financial holder sectors are weighted using the share in the holding amounts of the composite indicator. The shaded area indicates the period based on SHES data prior to Q4 2013 (Spanish and Greek domestic holdings are back-casted using national contributions to EAA data; SHES data exclude Malta).

From the issuer perspective, NFCs are the dominant issuer of equities held cross-border, while general government plays an important role in the debt market (Chart 5). In particular, general government contributes around 40% on average to the cross-border debt securities holdings in the euro area. However, its contribution varies over time. In particular, the contribution significantly decreased from around 41% at the beginning of 2009 to around 38% in mid-2012, when the sovereign debt crises peaked. From this point of view, the developments in the government debt market can explain more than 50% of the overall deterioration in cross-border holdings observed in the debt securities market over this period.

Chart 5

Share of cross-border holdings by issuer sector



Sources: ECB (SHSS, SHES), EAA and ECB calculations.
Notes: The contributions of the financial holder sectors are weighted using the share in the holding amounts of the composite indicator. The shaded area indicates the period based on SHES data prior to Q4 2013 (Spanish and Greek domestic holdings are back-casted using national contributions to EAA data; SHES data exclude Malta).

5 SHSS indicators for government debt securities

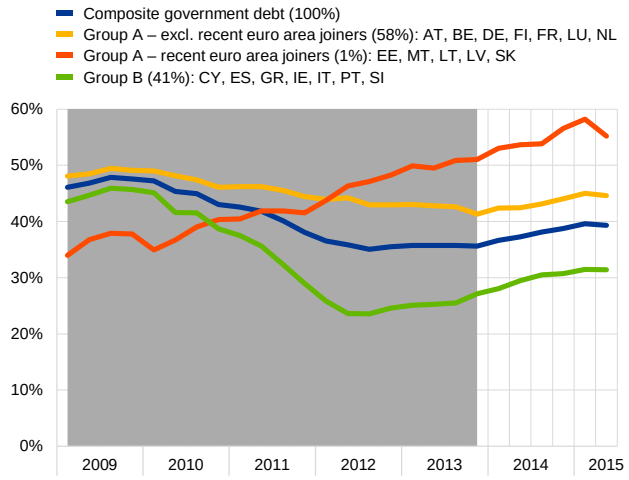
To better understand the developments in the government debt market, this section focuses on the drivers of investors' appetite to invest cross-border such as the creditworthiness of a country and whether a country recently joined the euro area or not. As a starting point, the euro area countries are split into three different groups. The first group includes countries that experienced significant rating downgrades of their sovereign debt since the end of 2008, i.e. countries whose creditworthiness significantly deteriorated over the last seven years and which are thus expected to have experienced capital flight (Group B countries).[200] Countries that did not experience any significant rating downgrades (Group A countries) are allocated to the second and third group, which distinguish between those countries that joined the euro area in its early stage and those that joined it only recently, i.e. after 2008.

[200] The methodology for such country groupings is described in the Statistical Annex.

Chart 6

Share of cross-border holdings of government debt by issuer countries

(percentages of total)



Sources: ECB (SHSS, SHES), EAA and ECB calculations.
Notes: The weight of the sub-indicators in the composite indicator is shown in brackets. The shaded area indicates the period based on SHES data prior to Q4 2013 (Spanish and Greek domestic holdings are back-casted using national contributions to EAA data; SHES data exclude Malta).

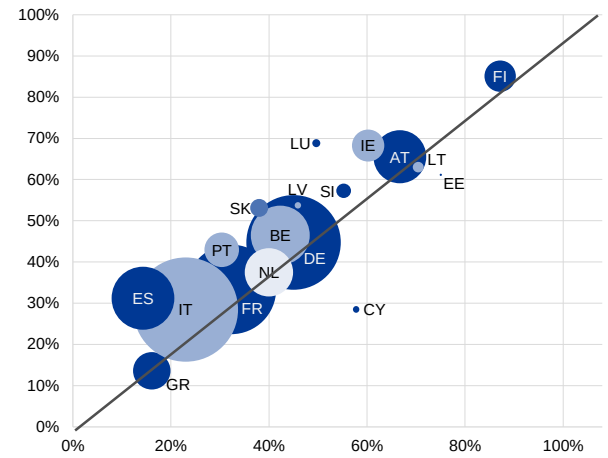
The SHSS indicators for the three country groups point towards very different developments (Chart 6). The level of financial integration for "downgraded" countries significantly deteriorated prior to mid-2012 (decreasing from around 42% in 2009 to around half this level in mid-2012), while it has picked up somewhat since then (to above 30%). On the other hand, the SHSS indicator is found to be much more stable for the "old" euro area countries, which did not experience any significant downgrades, staying at levels between 40% and 50%. In addition, the level of euro area financial integration of recent euro area joiners has been steadily increasing since 2009 on the back of their accession to the monetary union. As a result, the overall U-shaped pattern in the composite government debt indicator is found to be mainly driven by the developments in government debt issued by those countries that experienced a significant deterioration in their creditworthiness.

Chart 7

Evolution of cross-border holdings of government debt by issuer country

A. Share of cross-border holdings: Q1 2009 versus Q2 2012

(x-axis: first quarter of 2009, y-axis: second quarter of 2012)



B. Share of cross-border holdings: Q2 2012 versus Q2 2015

(x-axis: second quarter of 2012, y-axis: second quarter of 2015)

Sources: ECB (SHSS, SHES), EAA and ECB calculations.
Notes: For instance, the cross-border share of government debt issued by Portugal shifted from around 80% in Q1 2009 to 30% in Q2 2012. As government debt issued by Malta is not available prior to Q4 2013 it is excluded from the country panel. Due to the low coverage of domestic holdings in Q1 2009, data for IE and EE are replaced in this quarter by data referring to Q4 2009 and Q1 2010 respectively.

In addition, Chart 7 presents the changes in the SHSS indicators for debt issued by the individual euro area countries. The size of the bubble is proportional to the weight of each country in the composite indicator for government debt securities. The direction and extent of the changes between the first quarter of 2009 and the first quarter of 2012 (Panel A) differ from country to country, thereby

pointing to diverging developments within the monetary union. Some countries such as Greece and Portugal experienced significant drops in financial integration over this period, whereas the levels of some other countries such as Finland and Slovakia increased. On the other hand, the developments between 2012 and 2015 (Panel B) are much more homogeneous across countries, as the financial integration levels increased for nearly all countries over this period.

Despite the large number of presented indicators, the overview is far from complete. In particular, it is possible to drill down deeper and deeper to the individual security level. Box 2 presents some stylised facts which can be obtained from such a granular micro-data perspective.

Box 2

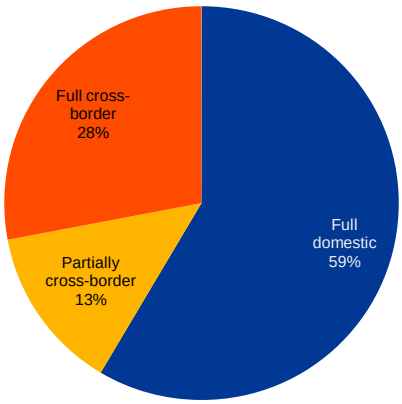
Stylised facts of cross-border holdings − an analysis at the level of individual securities

The security-by-security nature of SHS data allows us to investigate cross-border holdings at the level of individual securities. Given the wide range of securities covered, this exercise focuses on the main market segment in the euro area, i.e. long-term debt securities, which account for around 65% of the euro area securities market.[201] In addition, only data collected under the SHS Regulation (i.e. from the fourth quarter of 2013 to the second quarter of 2015) are covered.

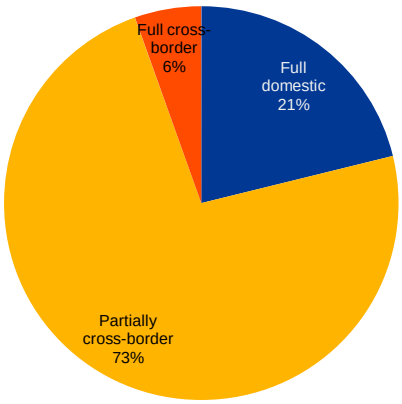
Chart A

Distribution of domestic versus cross-border holdings

A1. Number of securities



A2. Holding amounts (in nominal terms)



Sources: ECB (SHSS) and ECB calculations.
Note: Based on average holdings of long-term debt securities from Q4 2013 to Q2 2015 (average number of long-term debt securities per quarter equals to 158,000 and the corresponding holding amount to EUR 9,520bn).

A first key finding is that most securities are held either fully domestically (59%) or fully cross-border (28%), while only around 13% are held by both domestic and international investors

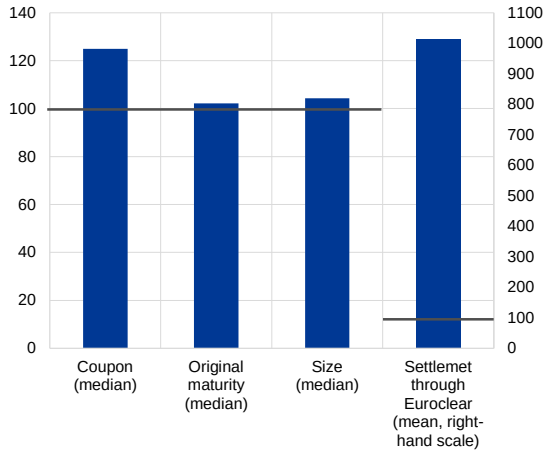
[201] Long-term debt securities refer to securities with a maturity of over one year. Securities classified in the CSDB as certificates are excluded because the classification of certificates is a borderline case between debt securities and equities.

(Chart A).[202] The picture is however reversed when considering the amounts held rather than the number of securities. This is because securities held fully domestically or fully cross-border tend to be associated with relatively small amounts. They respectively represent 21% and 5% of the total euro area holdings, whereas securities partially held by non-domestic investors record the highest share in terms of holding amounts (73%).

But are securities held cross-border different from those that are held purely domestically? To answer this question, several security-specific characteristics are considered including the original maturity, size, yield, rating and whether the security is placed in Euroclear (i.e. in an international central securities depository – ICSD) or not.[203] These variables are proxies for the different types of financial risks such as liquidity risk (size), credit risk (ratings) and market risk (yield, maturity) as well as the effect of international financial infrastructure (Euroclear indicator).

Chart B
Characteristics of cross-border securities compared with those of securities held domestically

(100 base = mean/median of a given characteristic for securities held domestically)



Sources: ECB (SHSS) and ECB calculations.
Notes: For instance, the coupon of cross-border securities is around 25% higher than that of those securities that are held only domestically. The differences between the means/medians for the two groups of securities (domestic and cross-border) of all characteristics are statistically significant at the 1% level. Based on average holdings of long-term debt securities from the fourth quarter of 2013 to the second quarter of 2015.

The summary statistics in Chart B suggest that the security-specific characteristics indeed play a role. For instance, settlement through Euroclear substantially increases the chances that a security is held cross-border: for around ten securities held cross-border and settled through Euroclear, only one security settled through Euroclear remains in fully domestic hands. Similarly, higher yield (as measured by the last coupon paid) and longer original maturity tend to attract international investors. The same holds if a security is more liquid (as measured by the size of the security).[204] Finally, Chart C shows that international investors invest proportionally more in securities which have been rated in general and which have been highly rated in particular.

These results are not without policy implications. From the policy perspective, they underline the importance of international market infrastructure such as ICSDs for fostering cross-border securities investment. They also point to the key role of liquidity and creditworthiness. Regarding the latter result, it is in line with the macro-based analysis presented in the rest of this Special Feature, which shows that the deterioration in creditworthiness can be a significant obstacle to maintaining a high level of cross-border investment and thus a high level of financial integration.

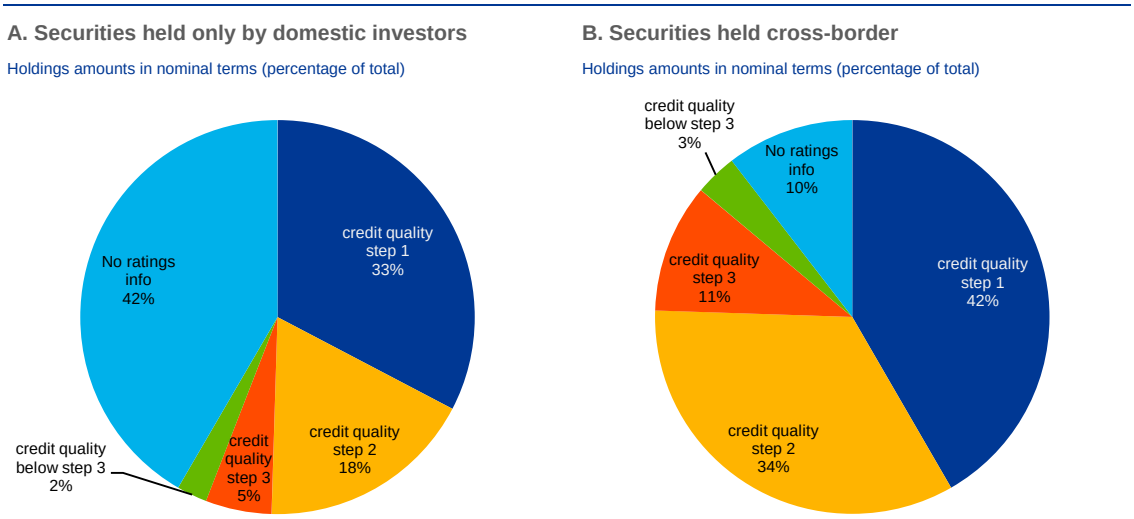
[202] Some caution is warranted here as (i) Eurosystem holdings are not included in the SHS database and (ii) non-euro area holdings are not considered. The exclusion of these holdings may lead to an underestimation of cross-border holdings but such underestimation is likely to be rather limited as most euro area securities which are held by non-euro area investors or the Eurosystem are also held by non-domestic euro area investors.

[203] Size is proxied by euro area holding amounts in nominal terms, yield refers to the last coupon paid and ratings are taken from the ECB ratings database.

[204] Proxied by the total holding amounts recorded in SHSS data.

Chart C

Ratings distribution: domestic versus cross-border securities



Sources: ECB (SHSS and ratings database) and ECB calculations.
Notes: Based on holdings of long-term debt securities from Q4 2013 to Q2 2015. Credit quality steps are defined in accordance with the Eurosystem credit assessment framework (ECAF), which provides a harmonised rating scale classifying ratings into three credit quality steps. The first step includes securities rated from AAA to AA-, the second from A+ to A-, and the third from BBB+ to BBB-. In addition, the fourth and fifth categories include respectively all rated securities with a rating below credit quality step three and those securities, for which rating information is not available.

6 Concluding remarks

This Special Feature introduces new quantity-based indicators built from SHSS data and illustrates their usefulness for the monitoring of euro area financial integration. Beyond some static results, for example that the debt securities market is much more integrated than the equity market and that financial investors tend to invest more cross-border than non-financial investors, the new set of indicators allows us to identify the underlying drivers of the overall developments over time.

In particular, the new indicators help to shed light on the deterioration in financial integration of the euro area debt securities market observed prior to mid-2012. This development is to a large extent attributable to the significant deterioration in cross-border investment in government debt issued by those euro area countries that were the most affected by the euro area sovereign debt crises. Despite some improvements since mid-2012, the current level of financial integration in the euro area debt securities market remains below that observed at the beginning of 2009. The most important investors contributing to the overall developments in cross-border securities investment are identified in the financial sector: it is mainly banks and other financial institutions such as investment funds that play a decisive role in the movement of capital across borders within the euro area.

But the developments in financial integration vary greatly across euro area countries. For instance, the financial integration of the recent euro area joiners (i.e. Slovakia, Malta and the Baltic countries) with the rest of the euro area has been steadily increasing over the last seven years.

Despite the large number of the presented indicators, the overview is far from complete. At the extreme, the security-by-security nature of the data provides us with the possibility to build quantitative indicators of financial integration for any security held in the euro area (i.e. for more than half a million securities in each quarter). From this micro perspective, this Special Feature also shows that the characteristics of each individual security play an important role in cross-border investment.

The findings suggest that international settlement, a (high) rating and high yield as well as longer maturity and large size tend to attract international investors in the case of long-term debt securities. The deeper investigation of the interplay of these characteristics and their effect on cross-border investment is left for future research. Still, the descriptive statistics are not without policy implications. They point in particular to the importance of a well-functioning international market infrastructure and the key role played by creditworthiness in financial integration.

Statistical Annex
Financial integration indicators 2016

1 The composite indicator of financial integration in Europe – "FINTEC"

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

1.1 The price-based FINTEC

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

In a first step, the indicators are homogenised 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 $x = (x_1, x_2, \ldots, x_T)$, the data are ranked in ascending order, that is $x_{[1]} \leq x_{[2]} \leq \cdots \leq x_{[T]}$, 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)*, equal to the number *r* of observations not exceeding a particular value *x*, divided by the total number *T* of observations in the sample:

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

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 covered ranks.

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

We still have to deal with the problem of how to relate the transformed input series to a theoretical state of perfect integration. Each indicator can only provide information on the relative degree of financial integration achieved over its specific period of observation. For instance, a (transformed) indicator might display a trend increase over its data sample, signalling that financial integration has improved. But despite

this trend increase, the actual state of integration might still be rather 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 the one applied to the quantity-based FINTEC.

The factor scales down each transformed series by the percentage share of the realised range of dispersion (the historical maximum minus the minimum dispersion) to the ideal dispersion range (the historical maximum less the theoretical benchmark of zero). Because there is no theoretical upper bound on price dispersion, its highest observed value is set as the benchmark for the lowest degree of financial integration. $\theta^P(x)$ multiplies the series 1 - F(x) and yields the final indicator z^P, which is used as an input series in the computation of the price-based FINTEC: $z_t^P = [1 - F(x_t)]\theta^P(x)$.

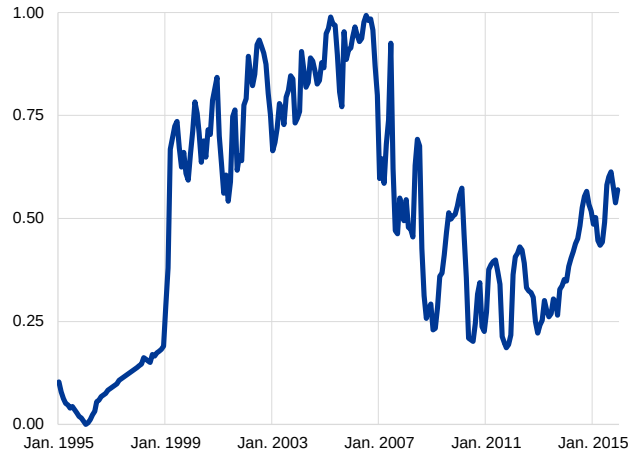
All available indicators z^P are aggregated into sub-indices s_i^P for the four markets. The sub-index for each market segment is computed as the arithmetic average of its N_i constituent integration indicators after transformation:

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

Chart S1

Sub-index for the money market

(monthly data, January 1995 – December 2015)



Source: ECB and ECB calculations.
Note: Indicator entering the sub-index: the cross-country standard deviation of unsecured interbank overnight lending rates. Greek data is not included since it would distort the information content of the indicator.

Chart S2

Sub-index for the bond market

(monthly data, January 1995 – December 2015)

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

Chart S3

Sub-index for the equity market

(monthly data, January 1995 – December 2015)

Source: ECB and ECB calculations.
Note: Indicators entering 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, January 1995 – December 2015)

Source: ECB and ECB calculations.
Note: Indicators entering the sub-index: the cross-country dispersions of interest rates on new loans to households (for consumer credit and total loans) and non-financial corporations, and the cross-country dispersions of deposit rates for households and non-financial corporations on deposits with agreed maturity.

The sub-indices are further aggregated into the price-based FINTEC by computing weighted averages using size weights that reflect the relative size of the underlying financial market segment: $FINTEC_t^P = \sum_{i=1}^{4} w_i^P s_{i,t}^P$.

These are based on the aggregated euro area financial accounts, for which the average amounts outstanding over the entire period 1997-2014 are taken and yield the following weights w_i^P: money markets 17%, bond markets 36%, equity markets 15% and banking markets 32%.

Chart S5

The price-based FINTEC

(monthly data, January 1995 – December 2015)

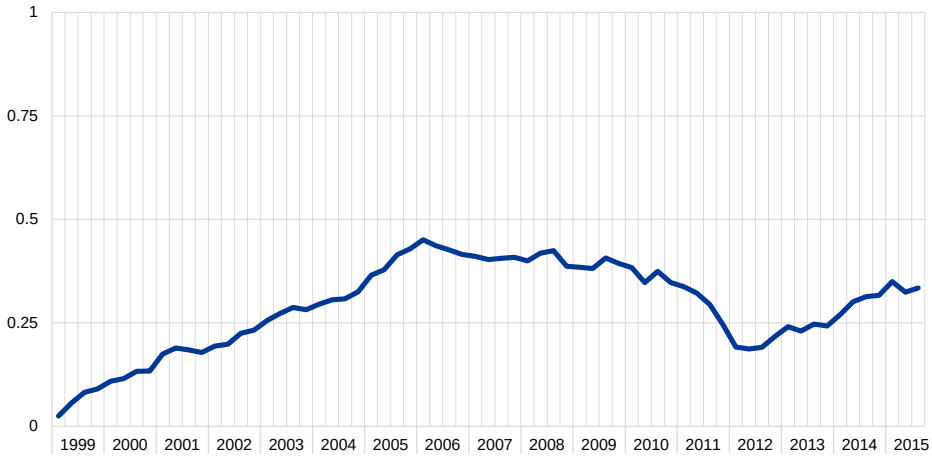
Source: ECB and ECB calculations.

1.2 The quantity-based FINTEC

Chart S6

The quantity-based FINTEC

(quarterly data, first quarter of1999 –third quarter of 2015)



Source: ECB and ECB calculations.
Notes: Raw indicators: share of cross-border lending among monetary financial institutions of the euro area, monetary financial institutions' and investment funds' shares of cross-border holdings of debt securities of all maturities issued by euro area governments and non-financial corporations, and monetary financial institutions' 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.

The quantity-based FINTEC is constructed in a way similar to the one described above for the price-based composite indicator. The main difference resides in the definition of the input indicators and of the scaling factor. The indicators used are intra-euro area cross-border holdings expressed as a percentage of euro area total holdings.[205] In order to derive the scaling factor, which is based on the theoretical benchmark for the share of cross-border securities holdings, a simple portfolio perspective is adopted. 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 in the total amount outstanding for the market segment under consideration is computed. 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 $\mathrm{x} = (x_1, x_2, \dots, x_T)$.

The transformed and scaled indicators z^Q are defined as:[206] $z_t^Q = F(x_t)\theta^Q(x_t)$.

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

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

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

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

Finally, the quantity-based FINTEC is calculated as the weighted average[207] of the sub-indices: $FINTEC_t^Q = \sum_{i=1}^{3} w_i^Q s_{i,t}^Q$.

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 Explanation of the country groupings

In this year's financial integration report, some financial integration indicators show not only statistical measures across all euro area countries, but also a distinction between groups of countries. The reason is that some financial integration phenomena can only be presented effectively when financial market developments of country groups are compared with each other. Indicators calculated across all countries could in fact hide or blur important financial integration developments.

The euro area countries are accordingly split into two different groups. One group includes all euro area countries that experienced a significant deterioration in long-term credit rating since the onset of the financial crisis, while the other group includes 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[208] 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 simple and should thus be interpreted with due caution, leads to the following country groups:

[207] As was done 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 sum up to 100%. This yields the following weights w_i^Q: interbank markets 23%, bond markets 54% and equity markets 23%.

[208] See the ECB 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 harmonized rating scale is allocated to a generic "fourth" credit quality step.

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

Some financial integration indicators broken down by such country grouping do not incorporate all the countries mentioned above, due to data availability. Where this is the case, the description of the relevant indicator explains which countries are included.

3 Standard indicators

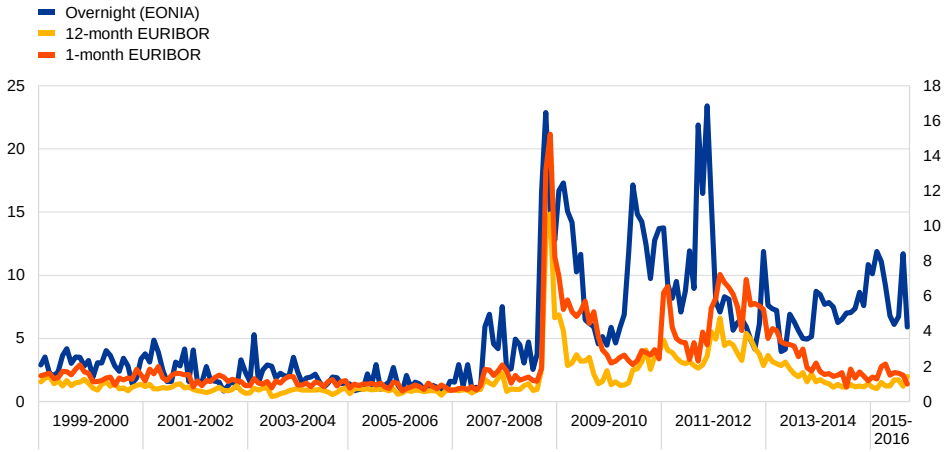
3.1 Money market indicators

3.1.1 Price-based indicators

Chart S7

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

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



Sources: European Money Market Institute (EMMI) and ECB calculations.

Non-technical description

The analysis of the dispersion of interbank rates across countries contributes to the 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

EMMI from panels of individual banks aimed at reflecting pricing in the unsecured short-term interbank market.

Let $r_{t,c}$ be the weighted average rate in case of EONIA contributions and the simple average in 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). Let IQR_j be the average interquartile range over the maintenance period *j=1,…,J*, where *J* is the number of MPs:

$$\mathrm{IQR_j} = \frac{1}{\mathrm{T}}\sum_{\mathrm{t=1}}^{\mathrm{T}} \mathrm{Q_{3,t}} - \mathrm{Q_{1,t}},$$

where $\mathrm{Q_{x,t}}$ is the $\mathrm{x}/4 * (\mathrm{C}+1)$ –th term among the ascending ranked $r_{t,c}$ across countries at date *t*.

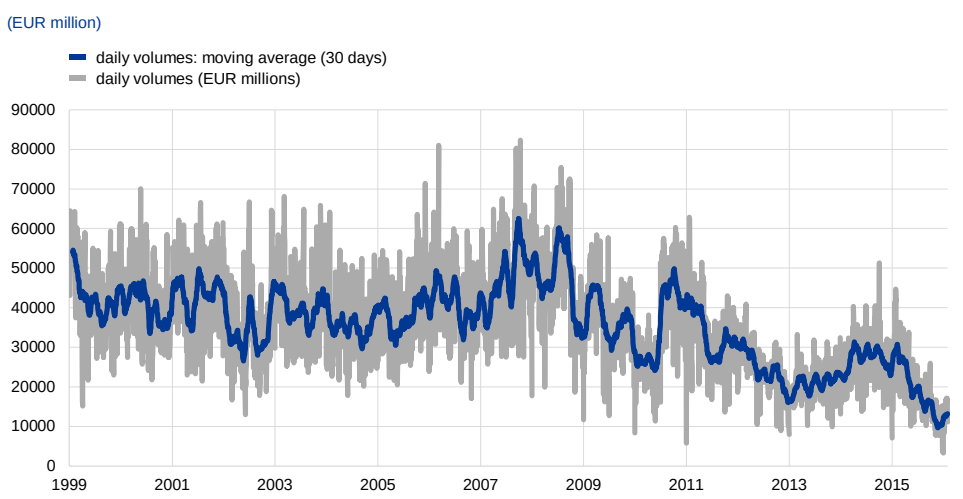
Reported rates $r_{t,c}$ are considered to belong to a certain country if the reporting bank is located there. However, the counterparty of the transactions is not known, and the reported rate could thus potentially refer (in part) to transactions with a bank in another country.

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 are not necessarily the same as the EURIBOR panel banks.

Chart S8

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



Sources: EBF and ECB calculations.

Non-technical description

A lower daily number of banks trading in the EONIA interbank market, besides being a possible signal of increasing market fragmentation, has an impact on the values of the indicators calculated above.

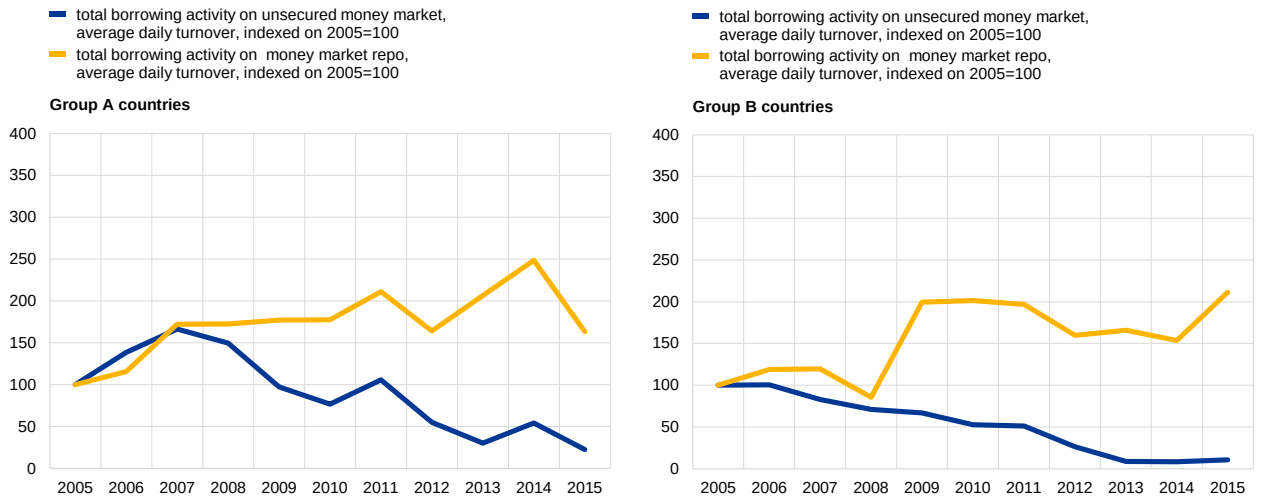
Description

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

3.1.2 Quantity-based indicators

Chart S9

Borrowing activity in the euro area secured and unsecured markets



Source: ECB's Euro Money Market Survey.

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, in particular the unsecured market. This result is not surprising given the fact that the collateralised nature of repo transactions makes them more resilient to heightened credit risk concerns than unsecured transactions. The two charts show that, as counterparty and liquidity risks significantly increased, recourse was indeed made to the secured money market as an alternative to the unsecured market. As expected, the negative development for Group B countries in the unsecured segment is more pronounced than that for Group A countries. It is also worth pointing out that the transfer to secured markets started well before the outbreak of the financial crisis in 2007. This may reflect the fact that collateralised transactions are more complex in terms of legal and settlements issues, and that today's Group A countries were sophisticated enough in early 2000 to conduct these types of transaction.

Description

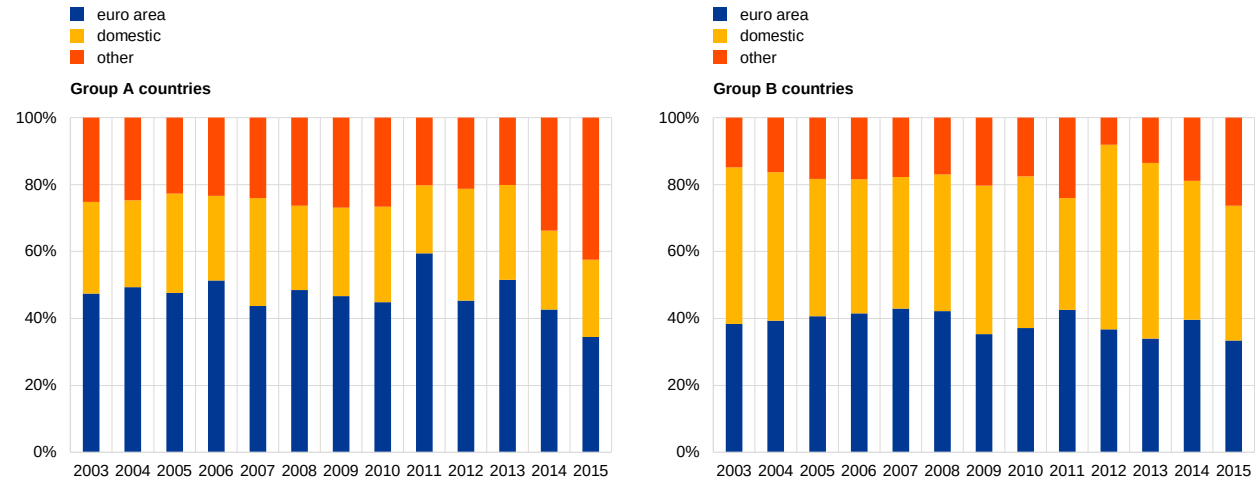
The data for these charts are related to the Euro Money Market Survey, conducted annually by the ECB with panel banks which report their activity in the different segments of the money market.

To compute the data, banks are first divided into two sub-panels: Group A and B countries. Then for each sub-panel the total borrowing activity on unsecured markets and the total borrowing activity on repo markets are added. The initial numbers correspond to the average daily turnover in the second quarter of each year, with 2002 as the base year. Group B countries: CY, GR, IE, IT, PT, SI and ES. Other euro area countries are within the Group A countries category.

Chart S10

Geographical counterparty breakdown for secured and unsecured transactions

(percentages of total transactions)



Source: ECB's Euro Money Market Survey.

Non-technical description

The charts display the shares in percentage points of different geographical locations of counterparties in transactions in the money markets. Secured and unsecured transactions are combined, but the 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. Thus, Group A countries are more able to conduct cross-border transactions. This highlights financial fragmentation between the groups of countries. So, for example, the increased exposure in 2012 to domestic counterparties for both groups reflects the continuing concerns about the sovereign debt crisis and its spillover to the respective banking systems.

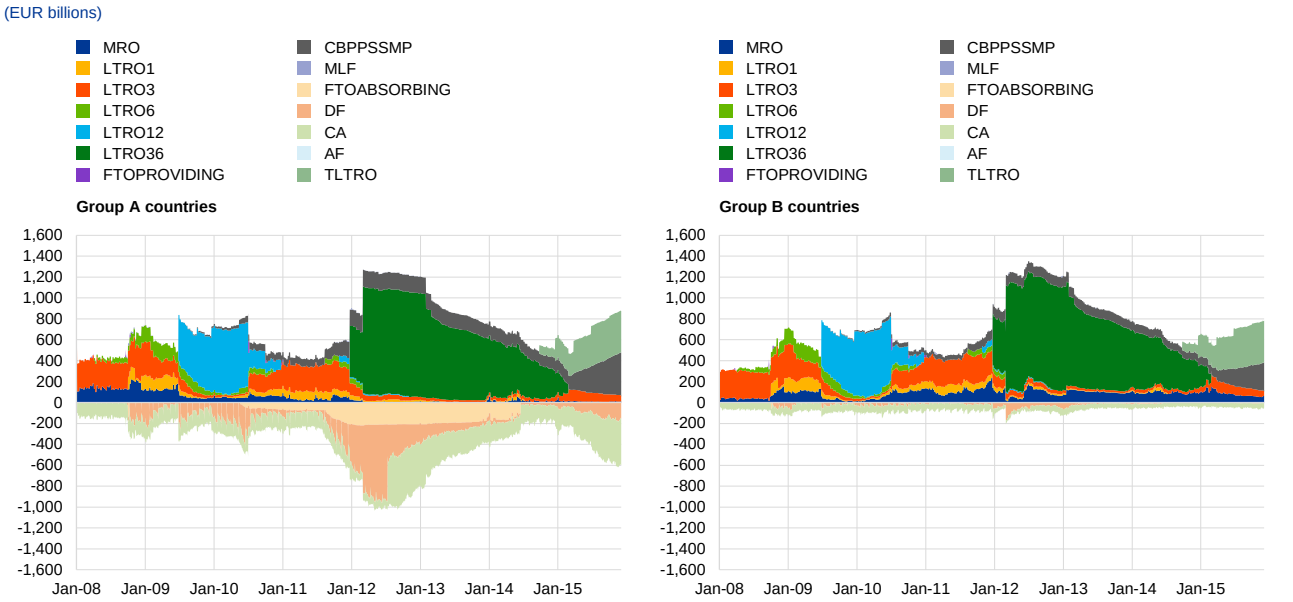
Description

The data for these charts are taken from 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. In the survey, the banks report their activity in the secured and unsecured segments, and 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 central counterparties (CCPs).

Group B countries: CY, GR, IE, IT, PT, SI and ES. Other euro area countries are within the Group A countries category.

Chart S11

Recourse to the ECB's market operations and standing facilities



Source: ECB.

Non-technical description

The charts quite clearly show a fragmentation between Group A and B countries, i.e. Group A countries are depositing liquidity with the Eurosystem, while Group B countries are borrowing liquidity from the Eurosystem, mainly through the three-year longer-term refinancing operations (LTROs).

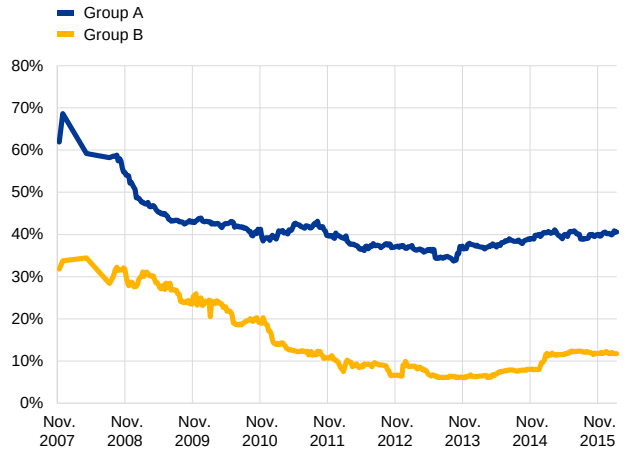
Description

The charts distinguish between Group A and B countries. They use ECB daily data from the liquidity operations. For these two charts, data on one to six-month operations are combined, and data from the marginal lending facility are excluded. As these data are ECB restricted, it would not be possible for readers to reconstruct them.

Chart S12

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 turmoil, there has been a trend away from posting cross-border collateral and towards greater use of domestic collateral in Eurosystem liquidity-providing operations, in particular for Group B countries. This trend has intensified since the onset of the euro area sovereign debt crisis. The greater use of domestic collateral can 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 B countries. It uses weekly data from the Use of Collateral Database (UCDB) and combines the residency information for the counterparty and the issuer of the asset.

Additional information

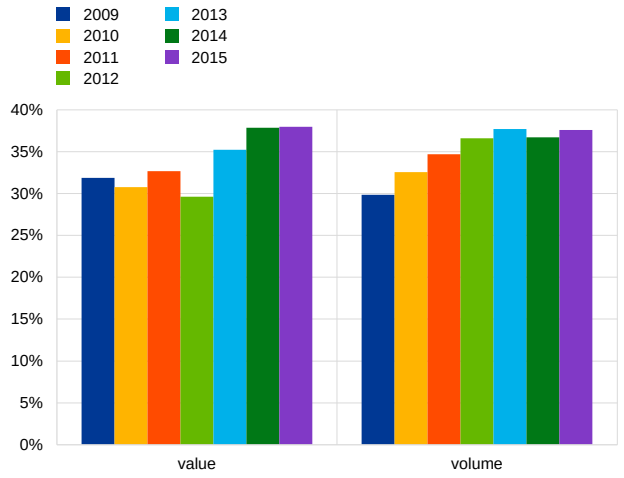
An asset is regarded as being used on a cross-border basis when the issuer of the asset and the counterparty using it as collateral with the Eurosystem reside in different jurisdictions. Group A covers AT, BE, FI, FR, DE, LU, NL, EE, MT, LT, LV and SK. Group B covers CY, GR, IE, IT, PT, SI and ES.

3.1.3 Other indicators

Chart S13

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

(percentages of total payments)



Source: ECB.

Non-technical description

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

The share of cross-border volume grew in 2008 following the launch of the TARGET2 single shared platform, as the new system offered banks further opportunities to centralise their payment processing.

As regards the share of cross-border payments in value terms, the drop observed in 2008 mainly resulted from a change in the calculation methodology. In subsequent years, it has not grown at the same pace as the cross-border share in volume terms owing to strained market activity following the financial crisis.

Description

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

shows a general increase in this indicator, in particular from 2008 onwards. Before 2008, in the decentralised TARGET1 system, multi-country banks (or banking groups) had accounts in most countries in which they operated. Consequently, a large share of the traffic they generated in TARGET1 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 payments traffic is now “cross-border”.

The second indicator shows the share by value of payments between EU Member States (inter-Member State payments) in the total value of payments processed in TARGET2. With the exception of some irregular increases/decreases recorded in 2000, 2001 and 2008 (following closure of other euro payment systems or changes in the statistical method), a general increase can be observed up to 2007, reflecting the positive contribution of TARGET1 to the integration of large-value payment activities. However, from 2008 onwards, the share has remained roughly stable, owing to a deterioration in market conditions with, in particular, fewer cross-border money market transactions being settled in TARGET2. While these money market transactions are relatively small in number, their average value is much higher than that of other payments, which is why market conditions affect the cross-border share in terms of value more than in terms of volume.

In spite of the fact that both indicators include transactions in connection with monetary policy operations, their impact on the trends is considered negligible. In principle, as 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 of €1.8 trillion (see for reference: TARGET2 Annual Report). Even the amounts settled by the PSPP do not significantly change the overall picture, as the value they generate in TARGET on one specific day is marginal when spread over an entire year.

Additional information

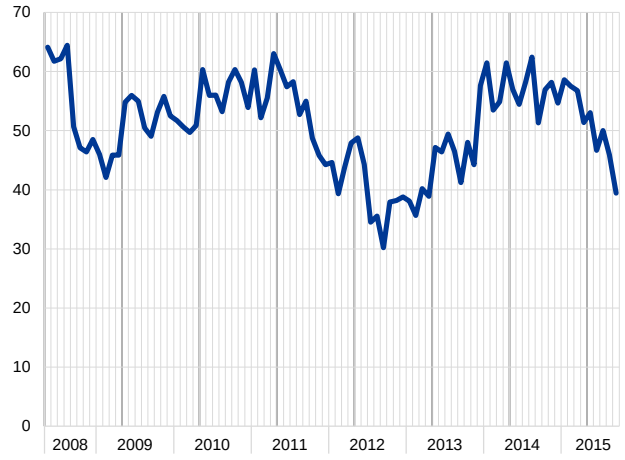
TARGET2 is the real-time gross settlement system for the euro. A second-generation system (TARGET2) operating on a single shared platform was launched in November 2007 and fully replaced the former decentralised system in May 2008.

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

Chart S14

Share of cross-border overnight money market transactions identified in TARGET2

(percentages)



Source: TARGET2 money market transactions, based on ECB methodology refined in 2013.

Non-technical description

The chart displays the percentage of the volume (in euro) of euro area unsecured overnight money market activity that is cross-border in nature and identified as such in TARGET2 transactions data. Since the overnight money market is an immediate source of central bank money for banks, a decrease in cross-border lending can be a signal of market fragmentation. The autumn of 2008 and second half of 2011 are characterised by drops in cross-border lending. The chart shows a steady increase in overnight lending since the second half of 2012, reflecting a more financially integrated cross-border overnight market.

Description

This chart uses interbank payment transactions in TARGET2 and applies a Furfine algorithm to identify unsecured overnight money market loans. Cross-border activity is defined as loans involving two banks holding TARGET2 accounts with different central banks participating in TARGET2. Intra-group activity and loans with a zero interest rate are excluded from the calculation. The calculation does not further distinguish between spot-next and tomorrow-next transactions. Total volume is aggregated on a weekly basis.

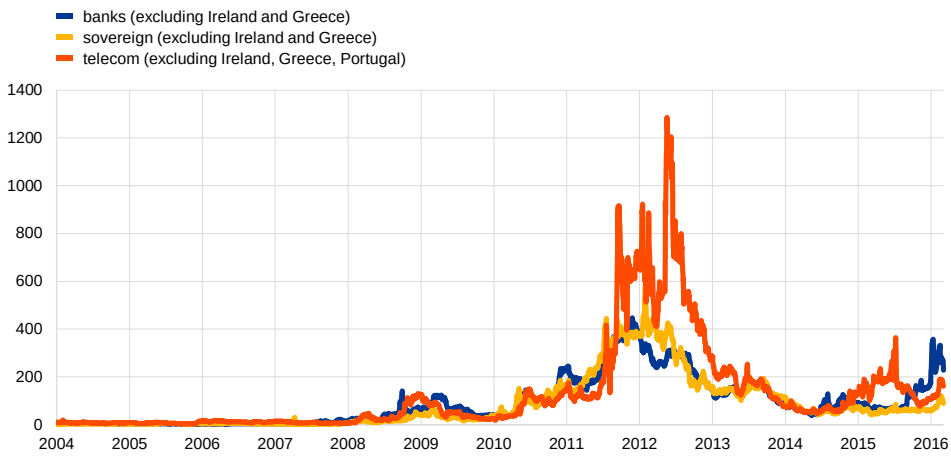
3.2 Securities market indicators

3.2.1 Price-based indicators

Chart S15

Dispersion in five-year CDS premia across the euro area

(daily data; basis points)



Sources: Thomson Reuters and ECB calculations.

Non-technical description

We consider here the dispersion of credit default swap (CDS) premia of different sectors to highlight 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, the premium can also be regarded as a proxy for the cost of funding). The higher the dispersion is at industry level for the euro area (so removing possible country specialisations that could bias the dispersion), the lower the integration is for the financing of these entities (sovereigns, banks and telecommunications companies) at the euro area level.

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, so as to constitute groups of homogeneous entities with comparable credit risk at the euro area level.

Additional information/notes

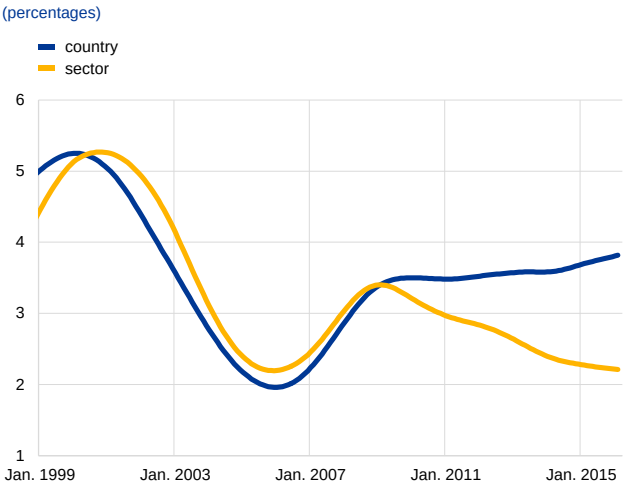
The data do not include Greece and Ireland. Greece is excluded owing to very high sovereign CDS premia, and Ireland is excluded owing to the very high CDS premia of its telecommunications company.

“Sovereign” includes Austria, France, Germany, Italy, the Netherlands, Portugal and Spain. Commercial banks include ABN AMRO (NL), Alpha Bank (GR), Allied Irish Banks (IE), Banca Monte dei Paschi di Siena (IT), Banca Popolare di Milano (IT), Banco Comercial Português (PT), Banco Sabadell (ES), Banco Espirito Santo (PT), Banco Santander Central Hispano (ES), Erste Bank der österreichischen Sparkassen (AT), Bank of Ireland (IE), Bayerische HypoVereinbank (DE), BNP Paribas (FR), Commerzbank (DE), Crédit Agricole (FR), Deutsche Bank (DE), Dexia Group (BE), EFG Eurobank Ergasias (GR), Fortis NL (NL), Intesa Sanpaolo SPA (IT), Mediobanca (IT), Natixis (FR), National Bank of Greece (GR), Nordea Bank (FI), Piraeus Group Finance PLC (GR), Société Générale (FR) and UniCredito Italiano (IT).

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

Chart S16

Country and sector dispersions in euro area equity returns



Sources: Thomson Reuters and ECB calculations.

Non-technical description

This chart presents 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, limited diversification opportunities for investors mean that they 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 relative to cross-sectoral dispersion (which also reflects the different performance of the underlying sectors). By 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 sectoral compositions and performances remain constant over the sample period, three periods can be distinguished: (1) the pre-EMU period, in which cross-country dispersion was significantly higher than cross-sectoral dispersion; (2) the pre-crisis EMU period after 1999, in which cross-country fragmentation was eliminated and the two dispersions got closer; and (3) the crisis period, in which fragmentation has increased, as shown by the increase in both dispersion indicators as of 2007.

Description

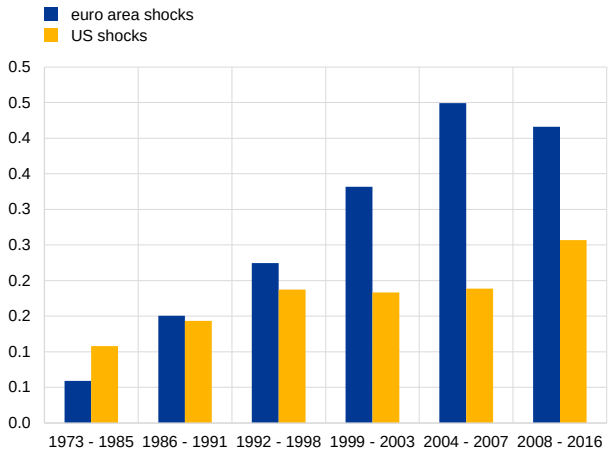
This indicator is derived by calculating the cross-sectional dispersions in both sector and country index returns for the euro area countries. They include (reinvested) dividends and are denominated in euro. The indicator has a monthly frequency. The cross-sectional dispersions are filtered using the 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

This 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 S17

Proportion of variance in euro area country equity returns explained by euro area and US stock market shocks



Sources: Thomson Reuters and ECB calculations.
Note: Calculations are based on equity market indices at weekly frequency (1973-2014).

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 volatility has been the main determinant of local stock market volatility, but the share of US volatility incorporated in 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 25% in the period from 2008 to 2015 after the collapse of Lehman Brothers.

Description

This chart presents the proportion of total domestic equity volatility of country stock returns explained by euro area and US shocks. To quote the original source,[209] the rationale of the analysis is as follows: "An important implication of integration is that asset prices should only react to common 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/notes

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

The influence of euro area shocks may have been greater in very 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 proportion 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:

$$\sigma_{c,t}^2 = h_{c,t} + \left(\beta_t^{eu}\right)^2 \sigma_{eu,t}^2 + \left(\beta_t^{us}\right)^2 \sigma_{us,t}^2$$

[209] 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.

where $h_{c,t}$ is the variance of the local shock component. The euro area variance ratio is then given by:

$$VR_{c,t}^{eu} = \frac{\left(\beta_t^{eu}\right)^2 \sigma_{eu,t}^2}{\sigma_{c,t}^2}$$

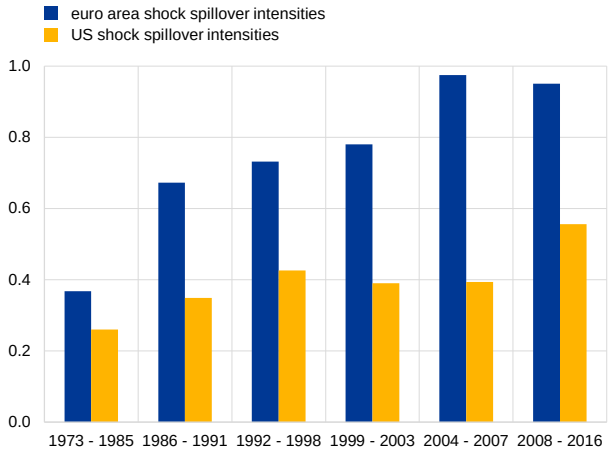
and the US variance ratio by a corresponding equation. The conditional variances are obtained using a standard asymmetric GARCH (1,1) model.

For each period, the indicators report the unweighted average of the relative importance of euro area-wide factors, other than 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.

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

Chart S18

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



Sources: Thomson Reuters and ECB calculations.
Note: Calculations are based on equity market indices at weekly frequency (1973-2014).

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 60% since the Lehman Brothers bankruptcy.

Description

Empirical evidence suggests that equity returns are driven to a significant extent by global factors. For this reason, both euro area-wide shocks and US shocks (as a proxy for global factors) are included in the assessment of common 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 component and an unexpected one, $\varepsilon_{c,t}$. The unexpected component is then decomposed 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.

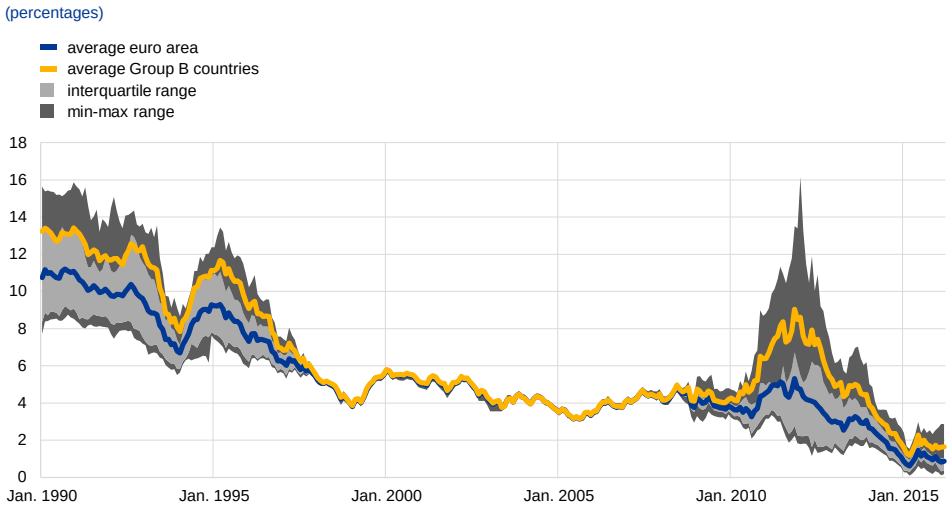
β represents the country-dependent sensitivity to euro area or US market changes (of the unexpected component). The analysis is performed over the periods 1973-1985, 1986-1991, 1992-1998, 1999-2003, 2004-2007 and 2008-2015. The reported indicator is the cross-country unweighted average of country-specific sensitivities (betas). A reported beta close to one in the chart indicates that on average all euro area countries respond to the corresponding shock (from either the euro area or the United States). In a well-integrated euro area, the beta associated with the euro area shock should be close to one.

Additional information

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

Chart S19

Dispersion of euro area ten-year sovereign bond yields



Sources: Bloomberg and ECB calculations.

Non-technical description

The chart presents 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 is higher.

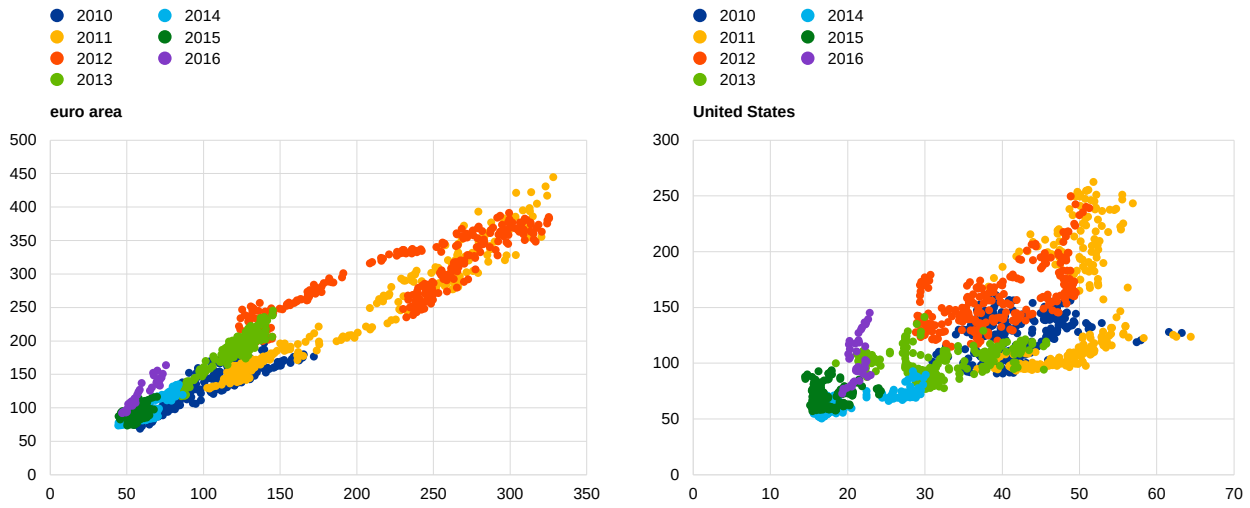
Description

The shaded areas represent the min-max range and the interquartile range of individual bond yields for the country composition of the euro area as in 2011. The yields for Greece, Cyprus, Estonia, Luxembourg, Malta and Slovenia are excluded owing to infrequent observations or a lack of observations. The following countries have been grouped into the Group B country category: IE, ES, PT and IT.

Chart S20

Sovereign and bank CDS premia – euro area and United States

(basis points; 2010-16; x-axis: sovereign CDS, y-axis: bank CDS)



Source: Thomson Reuters and ECB calculations.

Non-technical description

A tight link between sovereign and bank creditworthiness is clearly visible in 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 about the solvency of the sovereigns feeding doubts about the solvency of the banks, and vice versa. Such 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 risk, 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 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).

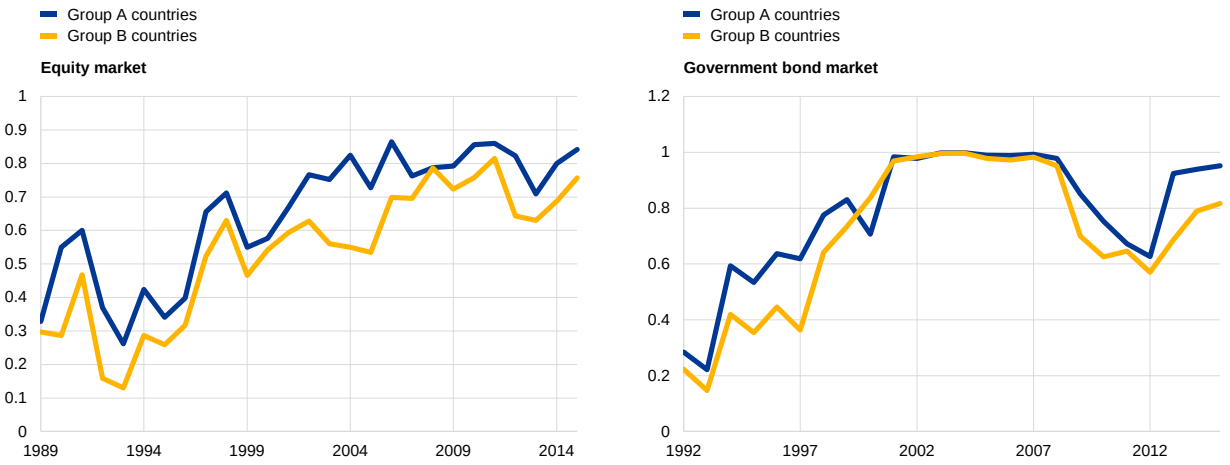
Description

The euro area bank CDS premium is calculated as a 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 a weighted average of national sovereign CDS premia. For the United States, the bank CDS premium is calculated as the median of 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 2015). Any point on the diagonal line would indicate a one-for-one relationship between bank and sovereign CDS premia.

Chart S21

Equity and government bond market integration based on common factor portfolios



Sources: Thomson Reuters and ECB calculations.
Note: Group A countries are AT, BE, DE, FR and NL. Group B countries are ES, IE, IT and PT.

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 from 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 within 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.

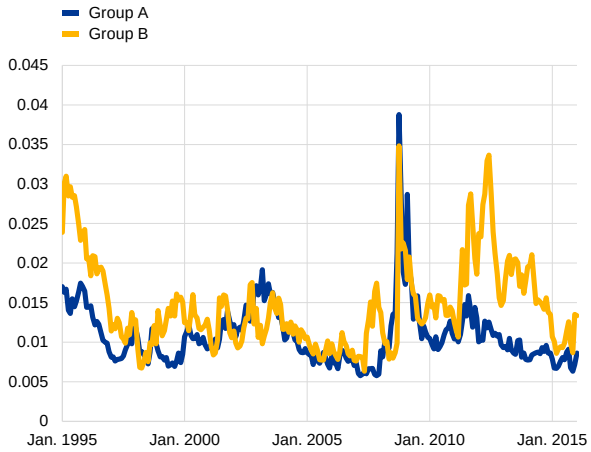
In order to obtain a measure that is comparable across years, we require daily return data (on broad equity market indices and ten-year benchmark bonds) to be available from the beginning of the sample.

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 S22

Equity market segmentation in Group A and B countries



Sources: Thomson Reuters and ECB calculations.
Note: Data cover the following countries: Group A countries: AT, BE, DE, FI, FR and NL; Group B countries: ES, GR, IE, IT and PT

Non-technical description

This indicator measures segmentation (the opposite of integration) of euro area equity markets via valuation differentials. For each calendar month, the absolute difference between the stock market valuation level (based on analyst forecasts) of a given country and the euro area average is computed, based on industry portfolios that allow for different valuation levels in different industries. These absolute differences are then aggregated by calculating the median across two groups of countries (Group A and B, respectively). A larger value indicates a higher level of market segmentation (i.e. a lower level of market integration). 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

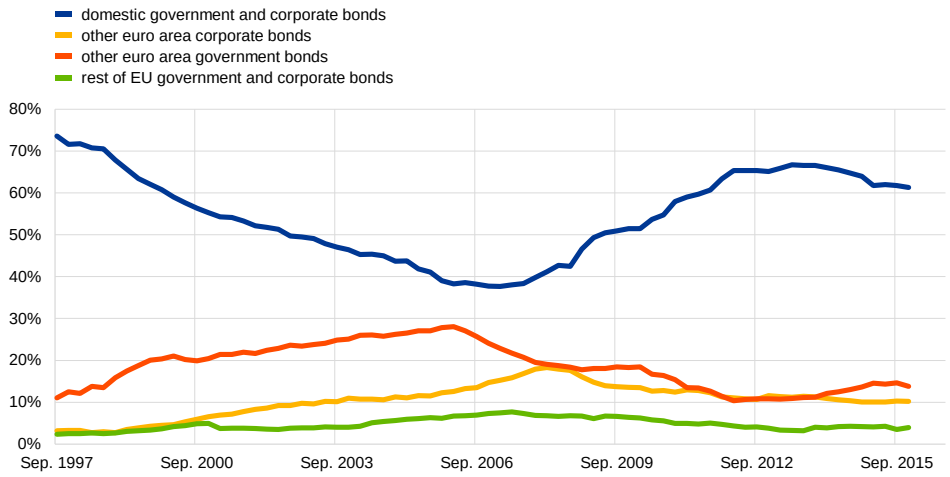
The analysis is based on Bekaert, G., Harvey, C.R., Lundblad, C.T. and Siegel, S., “What segments equity markets?”, *Review of Financial Studies*, Vol. 24, No 12, October 2011.

3.2.2 Quantity-based indicators

Chart S23

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 indicator of financial integration. The indicator points to decreasing integration in these markets in recent years.

Description

See Charts S28 to S31 in the banking section.

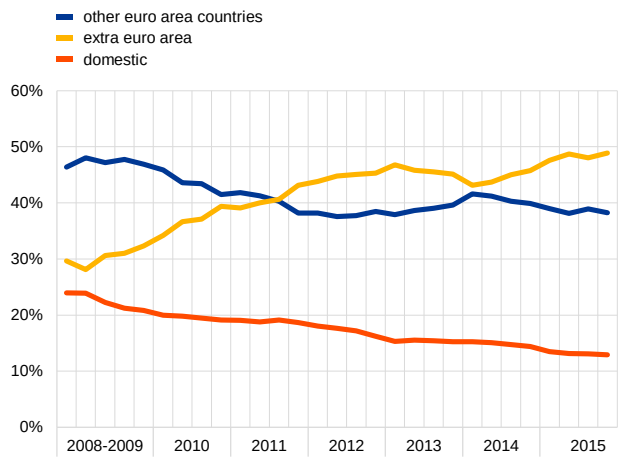
Additional information

See Charts S28 to S31 in the banking section.

Chart S24

Investment funds' holdings of debt securities

(percentages of total holdings of debt securities)

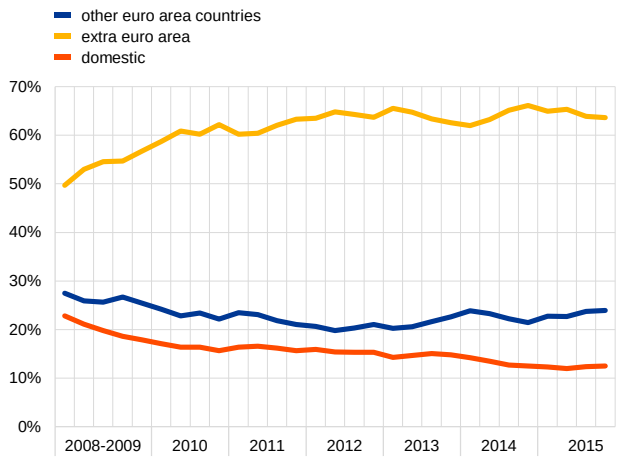


Source: ECB.

Chart S25

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 other than shares (including money market paper) issued by domestic residents, by residents of euro area countries other than the country in which the investment fund is located, and by 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).

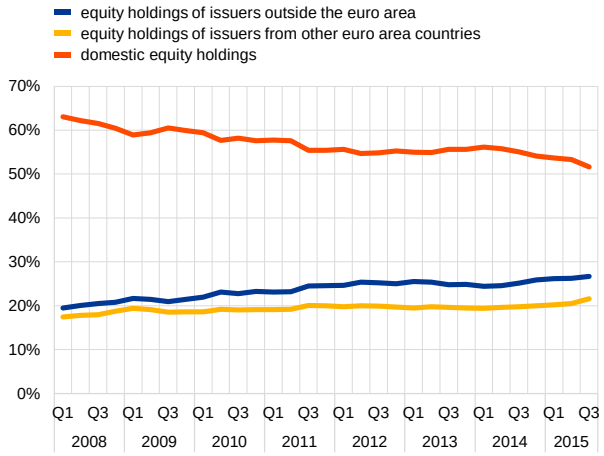
Additional information

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. Further information on these investment fund statistics can be found in the "Manual on investment fund statistics". Harmonised statistical information is available as of December 2018 and the data is collected and compiled under the updated Regulation ECB/2013/38 concerning statistics on the assets and liabilities of invest funds.

Chart S26

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

(percentages of the total euro area holdings of equities)



Source: ECB.

Description

The financial integration indicator on cross-border equity holdings is calculated by using balance of payments and international investment position (b.o.p./i.i.p.) and euro area accounts data for the whole euro area economy. Equity holdings in b.o.p./i.i.p data are broken down by so-called functional category (type of investment): direct investment (FDI), portfolio investment (PI), other investment (OI) and reserve assets (RA). The equities included under reserve assets are all issued by countries outside the euro area and the amounts are not very relevant compared with those included in the other three types of investment. B.o.p. statistics provide a geographical breakdown between extra- and intra-euro area issuers. The total equities held by the euro area (including domestic issuers) are taken from the euro area accounts. B.o.p./i.i.p and euro area accounts definitions and coverage are consistent, allowing the euro area holdings on domestic issuers to be derived as the residual.

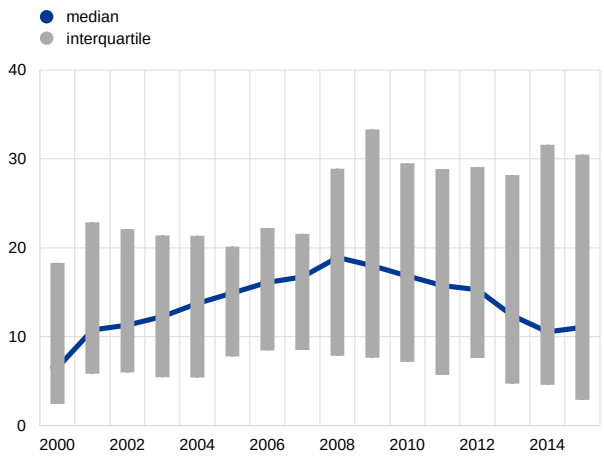
Equity holdings include listed and unlisted shares, investment fund shares (of any type of investment fund) and other equity including, amongst others, participations in international organisations (e.g. the ECB or the European Stability Mechanism) and holdings of real estate properties outside the domestic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

3.2.3 Structural indicator

Chart S27

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 development over time of the assets of foreign branches and subsidiaries of euro area banks within euro area countries other than the home country as a share of the total assets of the euro area banking sector, with higher shares implying higher cross-border activity. Overall, this share continues to be rather limited across the majority of countries. It is noteworthy that, owing to the crisis, the median degree of cross-border penetration of banking institutions has fallen in recent years.

Description

The share of total assets of foreign branches and subsidiaries in 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 by the following measures: the first quartile (25th percentile), the median (50th percentile)

and the third quartile (75th percentile).

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

3.2.4 Activity-based indicators

Charts S28 to S31
Activity-based indicators: MFI loans, holdings and deposits

Chart S28

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

(percentages of total lending excluding the Eurosystem)

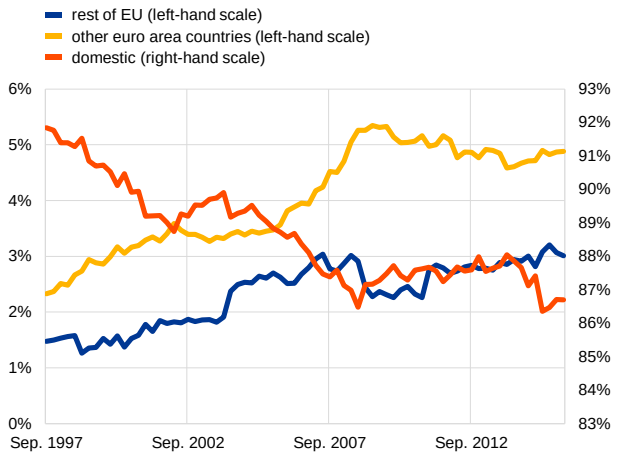


Chart S29

MFI loans to MFIs − outstanding amounts by residency of counterparty

(percentages of total lending excluding the Eurosystem)

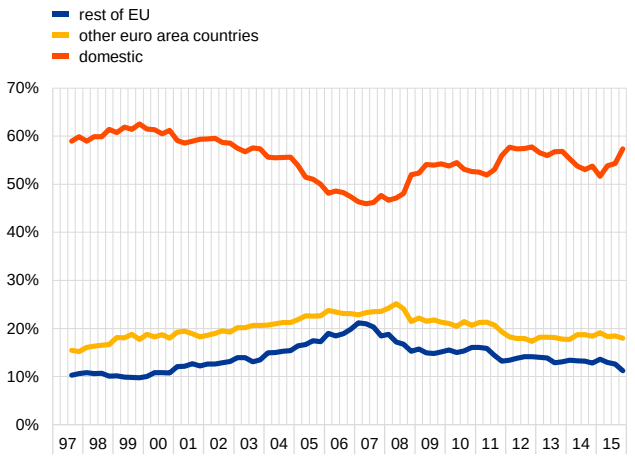


Chart S30

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

(percentages of total holdings)

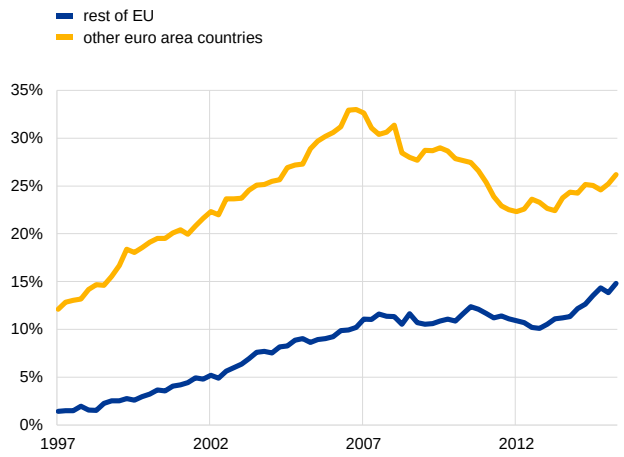
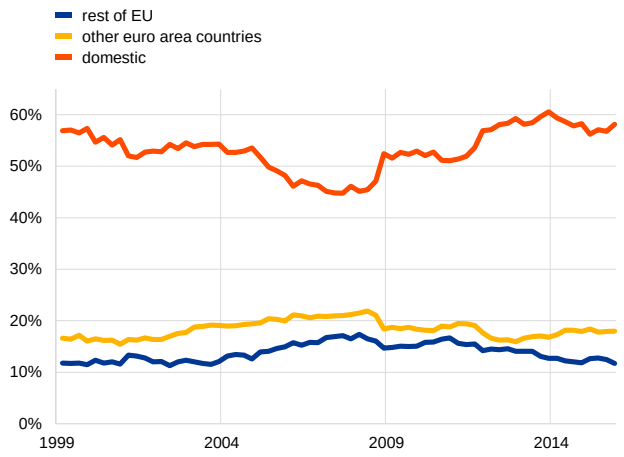


Chart S31

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 monetary financial institutions (MFIs). The indicators show that euro area wholesale banking markets are far more integrated than retail markets.

Description

The indicators in 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. In Chart S30, a similar indicator is shown for securities issued by euro area MFIs and held by euro area and other EU MFIs. In Chart S31, a similar indicator is shown for deposits placed in the euro area by non-MFIs. Inter-MFI borrowing and lending is also conducted through central counterparties (CCPs). In cases where these CCPs are not themselves MFIs, 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.

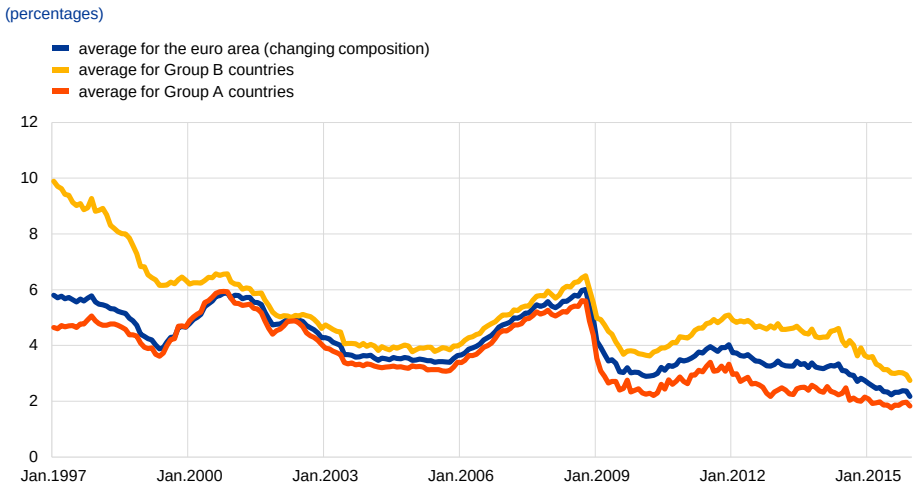
Additional information

These indicators are constructed on the basis of the national aggregated MFI balance sheet statistics reported to the ECB at monthly and quarterly frequencies. These data cover the MFI sector excluding the Eurosystem and also include data on money market funds (MMFs). Consequently, as MMFs typically invest in inter-MFI deposits and short-term securities, the indicators displaying data for these assets are somewhat affected by the MMFs' balance sheet items.

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

Chart S32

Interest rates on new loans to euro area non-financial corporations



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

Non-technical description

An important aspect of the gains from increasing financial integration is that lower financing costs reached a significant level of convergence across countries. The strong convergence across countries in bank rates charged to non-financial corporations for new loans is clearly visible.

Description

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

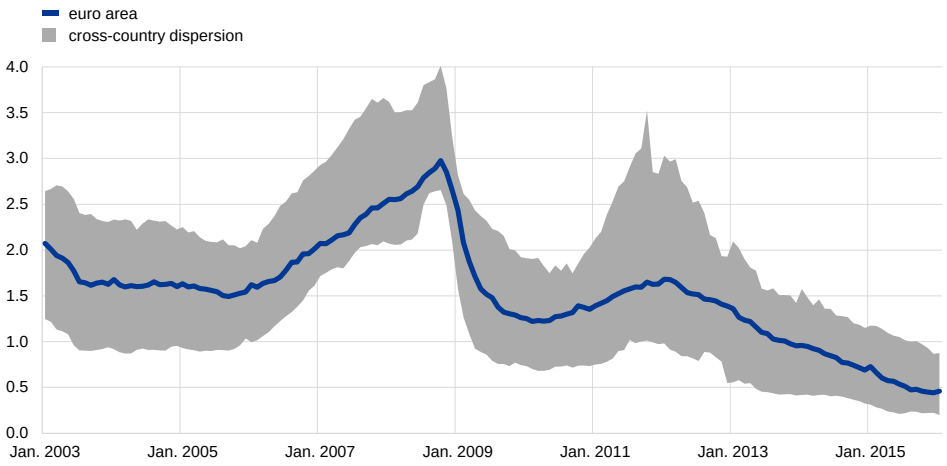
Additional information/notes

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

Chart S33

Interest rates on MFI deposits for households in the euro area

(percentages)



Source: ECB and ECB calculations
Note: The deposit rates are aggregated using outstanding amounts.

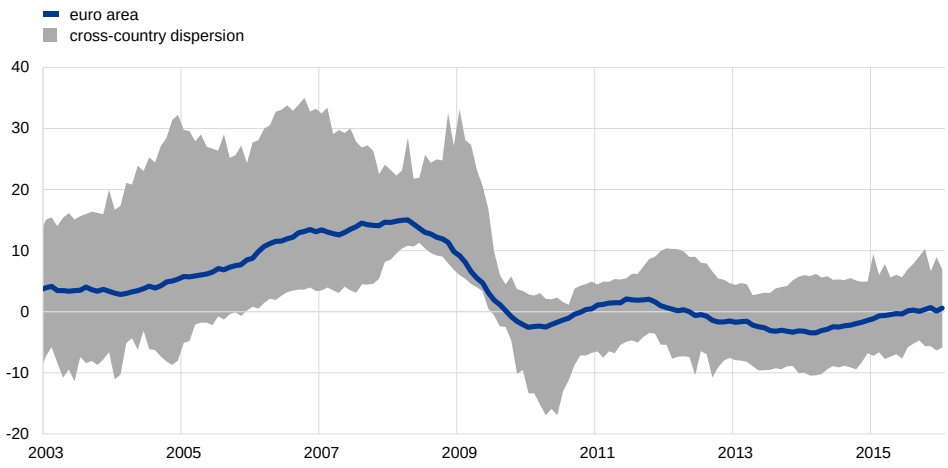
Non-technical description

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

Chart S34

MFI loans to non-financial corporations

(annual loan growth; percentages)



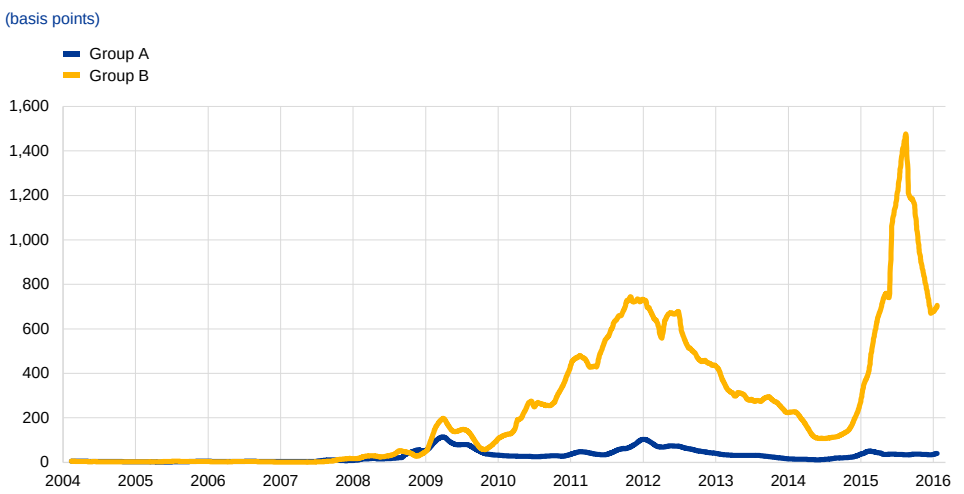
Source: ECB.

Description

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

Chart S35

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 : AT, BE, DE, FR and NL, Group B: ES, GR, IE, IT and PT.

Non-technical description

The cross-country variance of CDS premia charged by investors for bank debt should provide a signal on financial integration. It must, however, be kept in mind that CDS prices also depend on a range of other factors, such as risk, liquidity, and the correlation between CDS premia for banks and sovereign CDS premia.

Description

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

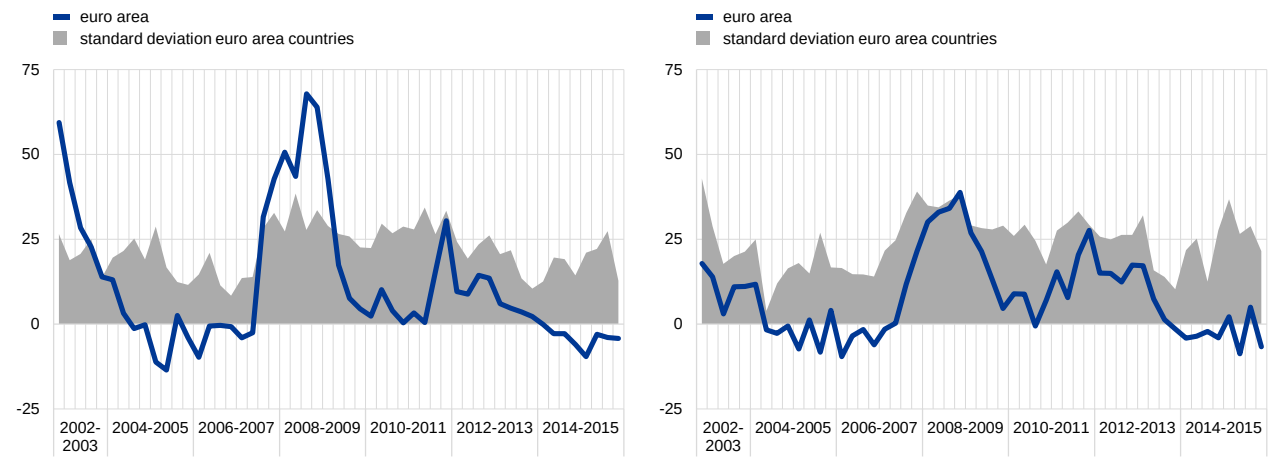
Additional information

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

3.2.5 Survey-based indicators

Chart S36

Changes in credit standards



Sources: Eurosystem's bank lending survey (BLS) and ECB calculations.

Non-technical description

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

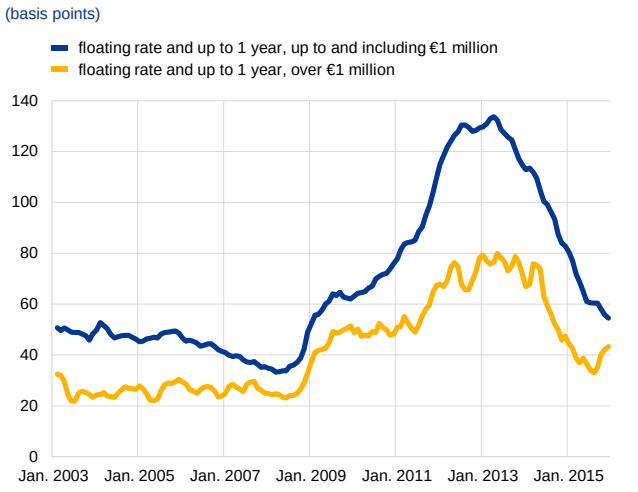
Description

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.

3.2.6 Price-based indicators

Chart S37

Cross-country standard deviation of MFI interest rates on new loans to non-financial corporations



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 non-financial corporations 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 in the case of instruments that are more homogeneous across countries.

In this respect, it should be noted that differences in bank interest rates can be due to other factors, such as different 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 $w_{c,t}$:

$$r_t = \sum_c w_{c,t} r_{c,t} \quad (11)$$

The euro area weighted standard deviation takes the following form:

$$M_t = \sqrt{\sum_c (r_{c,t} - r_t)^2 w_{c,t}} \quad (12)$$

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

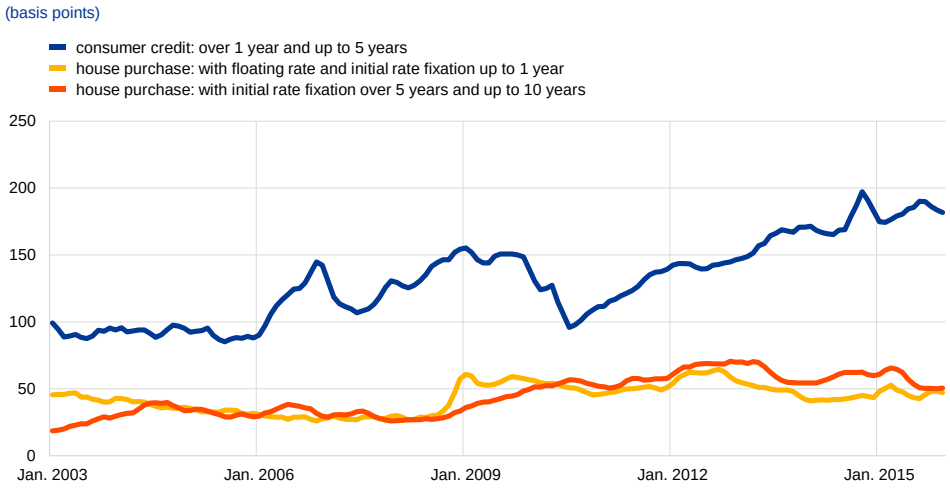
Additional information

The price measures for credit market integration are based on MIRs on new business reported to the ECB at monthly frequency 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 S38

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



Source: ECB.

Non-technical description

See Chart S37 above.

Description

See Chart S37 above.

Additional information

See Chart S37 above.

Abbreviations

Countries

AT	Austria
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
ES	Spain
FI	Finland
FR	France
GR	Greece
HR	Croatia
HU	Hungary
IT	Italy
JP	Japan
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom
US	United States

Others

ABS	asset-backed security
BCBS	Basel Committee on Banking Supervision
BIC	bank identifier code
BIS	Bank for International Settlements
CBPP	covered bond purchase programme
CCBM	correspondent central banking model
CCBM2	Collateral Central Bank Management
CCP	central counterparty
CDO	collateralised debt obligation
CDS	credit default swap
CEPR	Centre for Economic Policy Research
CESAME	Clearing and Settlement Advisory and Monitoring Expert Group
CFS	Center for Financial Studies
CGFS	Committee on the Global Financial System
CLS	Continuous Linked Settlement
CMU	capital markets union
CSD	Central securities depository
CSM	clearing and settlement mechanism
DTCC	The Depository Trust & Clearing Corporation
EAA	euro area accounts
EBA	European Banking Authority
ECB	European Central Bank
ECOFIN Council	Council of Economic and Finance Ministers
EEA	European Economic Area
EFSF	European Financial Stability Facility
EIOPA	European Insurance and Occupational Pensions Authority
EMIR	European Market Infrastructure Regulation
EMU	Economic and Monetary Union
EONIA	euro overnight index average
EPC	European Payments Council
ERF	European Resolution Fund
ESAs	European Supervisory Authorities
ESCB	European System of Central Banks
ESM	European Stability Mechanism
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
EUREPO	repo market reference rate for the euro
EURIBOR	euro interbank offered rate
FSB	Financial Stability Board
GDP	gross domestic product
IBAN	international bank account number
ICPFs	insurance corporations and pension funds
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
ISDA	International Swaps and Derivatives Association, Inc.
LTRO	longer-term refinancing operation
MFI	monetary financial institution
MiFID	Markets in Financial Instruments Directive
MMF	money market fund
MRO	main refinancing operations
NCB	national central bank
NFCs	non-financial corporations
OECD	Organisation for Economic Co-operation and Development
OIS	overnight index swap
OJ	Official Journal of the European Union
OMT	Outright Monetary Transactions
OTC	over the counter
Repo	repurchase agreement
SEPA	Single Euro Payments Area
SMP	Securities Markets Programme
SRM	Single Resolution Mechanism
SSM	Single Supervisory Mechanism
SSP	single shared platform
STEP	short-term European paper
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer system
TR	trade repository
T2S	TARGET2-Securities

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