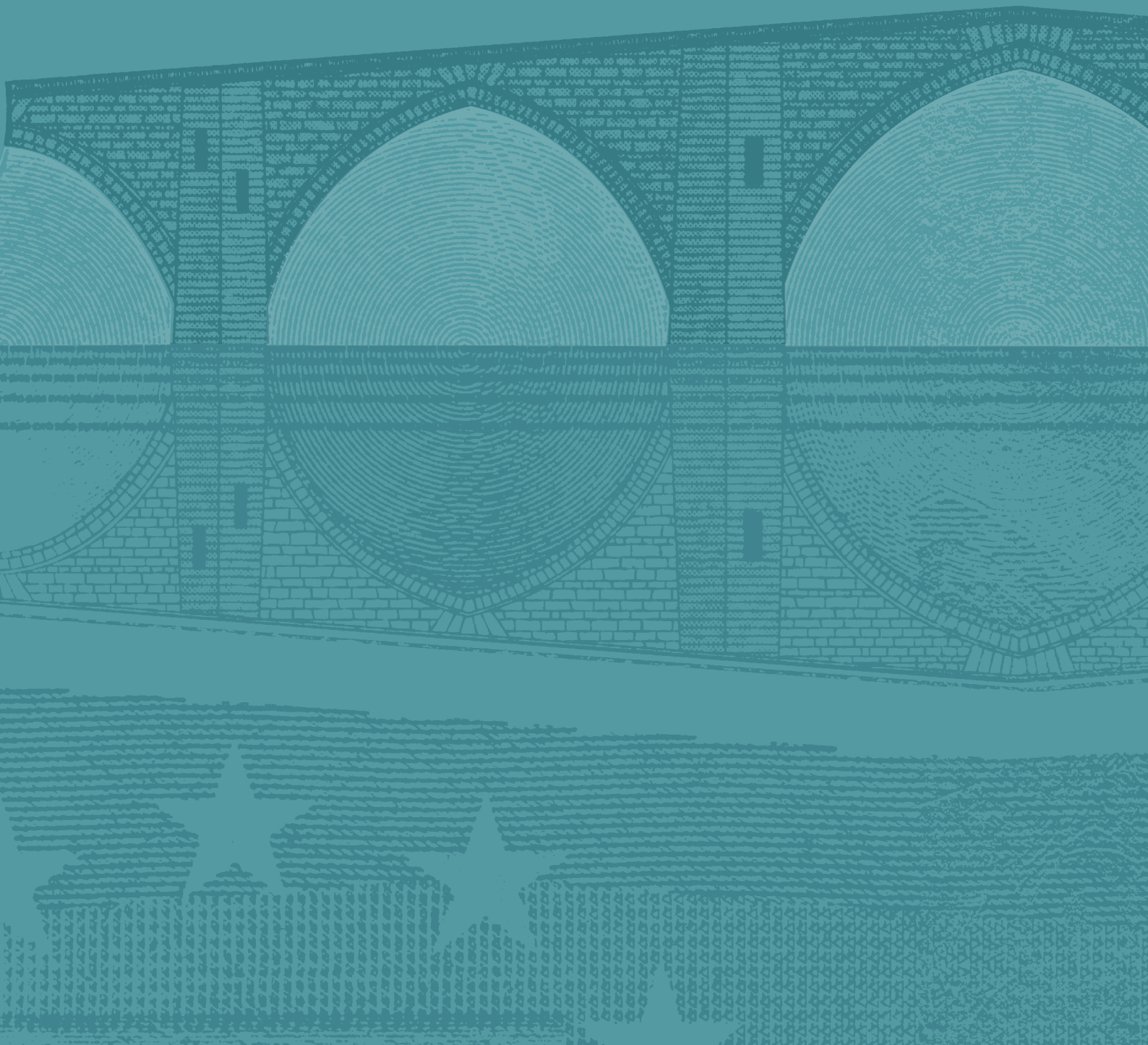EUROPEAN CENTRAL BANK

EUROSYSTEM

THE INTERNATIONAL ROLE OF THE EURO
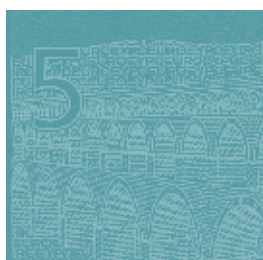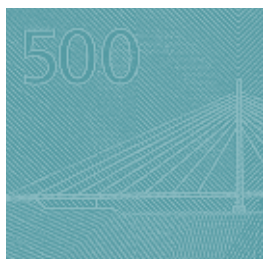
JULY 2014

EUROPEAN CENTRAL BANK

EUROSYSTEM

In 2014 all ECB
publications feature
a motif taken from
the €20 banknote.

**THE INTERNATIONAL
ROLE OF THE EURO**

JULY 2014

CONTENTS

ABBREVIATIONS

BIS	Bank for International Settlements
CESEE	central, eastern and south-eastern Europe
CHF	Swiss franc
CLS	continuous linked settlement
CNY	Chinese renminbi
COFER	currency composition of foreign exchange reserves
EA	euro area
ECB	European Central Bank
ERM II	exchange rate mechanism II
ESCB	European System of Central Banks
EU	European Union
EUR	euro
GBP	pound sterling
i.i.p.	international investment position
IMF	International Monetary Fund
JPY	Japanese yen
MFI	monetary financial institution
NEER	nominal effective exchange rate
OeNB	Oesterreichische Nationalbank
OMTs	Outright Monetary Transactions
OMS	other Member States
SEK	Swedish krona
ULCT	unit labour costs of the total economy
USD	US dollar

FOREWORD

This is the 13th annual review of the international role of the euro published by the ECB. It presents the main findings of the continued monitoring and analysis conducted by the ECB and the Eurosystem as regards the development, determinants and implications of the use of the euro by non-euro area residents.

This review finds that, in an environment of improving market sentiment towards the euro area, various indicators used to assess the international use of the euro turned to or remained in positive territory in 2013. Notwithstanding these developments, the international use of the euro declined in other market segments. This may be the result of several factors, including pertinent shifts in the global monetary and financial system, as well as the lingering effects of the euro area crisis. The on-going adjustment and rebalancing process in the euro area and the moves towards a genuine Economic and Monetary Union, including the completion of the banking union, remain, therefore, of the essence.

This review also examines in greater depth issues that have a bearing on the euro's international role and the global currency order, including the demand for euro area debt securities during the euro area sovereign debt crisis, the global financial impact of official reserve diversification, and recent developments in foreign currency bond issuance. This analysis is presented in the form of three special features.

The international role of the euro is primarily determined by market forces, and the Eurosystem neither hinders nor promotes the international use of the euro. At the same time, the ECB will continue to monitor developments and disseminate information with respect to the international role of the euro on a regular basis.

Mario Draghi
President of the European Central Bank

I INTRODUCTION

This report reviews developments in the international role of the euro in 2013, tracking a comprehensive set of indicators covering a number of different market segments. As in previous issues, the main focus is on measures of the euro's relevance in financial markets, such as the use of the euro in foreign exchange reserves or in debt securities markets. In addition, the report includes a chapter on price-based measures, which may provide a better understanding of the international use of the euro.

The first part (Chapter 3 and 4) of the review continues to provide high-quality and timely data as well as an analysis of the changes during the period under review. The Statistical Annex contains historical time series for many key data for use by academic researchers, professionals and the general public. Where relevant, the review removes exchange rate-related valuation effects by showing statistical time series at constant exchange rates, so as to facilitate comparisons over time. Data are compiled by the ECB and the national central banks of the Eurosystem, also drawing on data available from international financial institutions such as the Bank for International Settlements and the International Monetary Fund. The report also presents survey-based evidence prepared by the Oesterreichische Nationalbank looking at the use of the euro as a parallel currency in central, eastern and south-eastern Europe.

The second part of the review offers an in-depth analysis of issues that have a bearing on the international role of the euro and the international monetary system. This year, this second part contains three special features: an analysis of the impact of foreign investors on the international use of the euro during the peak phase of the euro area sovereign debt crisis; an overview of the academic literature on the global financial impact of official reserve diversification; and a stock-taking and analysis of a number of stylised facts on foreign currency bond issuance.

2 MAIN FINDINGS

DEVELOPMENTS IN THE INTERNATIONAL ROLE OF THE EURO IN 2013

The year 2013 was characterised by a gradual return of investor confidence in euro area financial markets, as financial fragmentation continued to decline. These positive developments – which started in mid-2012 after a number of policy measures were taken at the European and national levels – continued throughout 2013.

Against the background of this improving market sentiment towards the euro area, various indicators used to assess the international use of the euro which are examined in this report increased in 2013. In particular, international investors' interest in euro area securities, which are mostly denominated in euro, grew markedly over the course of the year. These capital inflows reflected both domestic and external factors, including improving euro area macroeconomic fundamentals, a further reduction in perceived tail risks, and a rebalancing of international investors away from emerging market securities. Sustained capital inflows to the euro area were mirrored in a broad-based and steady strengthening of the euro exchange rate, which appreciated by 7% in nominal effective terms in 2013, the second largest appreciation since 1999 (see Table 1).

In addition to these indicators, some of the volume measures of the international use of the euro turned to or remained in positive territory in 2013. For instance, statistics on net shipments of euro banknotes to destinations outside the euro area show that foreign demand for euro banknotes increased for a third consecutive year, suggesting that the euro area sovereign debt crisis did not have an impact on the use of euro banknotes outside the euro area (see Table 1). With respect to the use of the euro as a parallel currency in central, eastern and south-eastern Europe (CESEE), the euro's share in foreign deposits increased somewhat, on average. Evidence from the OeNB Euro Survey further suggests that CESEE households' trust in the euro in most countries has recovered markedly since the spring of 2012, and that it currently stands close to the levels observed prior to the onset of the euro area sovereign debt crisis. In addition, the survey results suggest that the euro is relatively "more trusted" than both the local currency and the US dollar in the majority of the CESEE countries. Finally, data on the use of the euro as an invoicing or settlement currency for extra-euro area exports and imports suggest that the share of the euro has increased slightly in 2013, in particular in the services sector.

Notwithstanding these developments, the international use of the euro declined in other market segments. The euro's share in global foreign exchange reserves decreased by around one percentage point in 2013 (see Table 1). The share of the US dollar remained broadly unchanged, in contrast, and foreign exchange reserve managers further invested in non-traditional reserve currencies, such as the Australian dollar and Canadian dollar. At the disaggregated level, the share of the euro in the holdings of central banks of both advanced and emerging market economies declined modestly. Despite this decline in the use of the euro by foreign exchange reserve managers, the euro continued to perform its function as a credible store of value for foreign central banks as the second most important international reserve currency.

As regards international debt markets, the share of the euro as an international financing currency declined by around 1.5 percentage points in 2013 (see Table 1). The euro's share decreased in tandem with that of the Japanese yen and those of the "other" currencies. Conversely, the US dollar further extended its leading role as a financing unit in international debt markets, at the expense of all other funding currencies.

Table 1 Key data on the international role of the euro

Indicator	Share of the euro (percentages, unless otherwise indicated)			Total outstanding amounts			
	Latest	Comparison period	Difference (percentage points)	Latest	Comparison period	Unit	Difference (percentages)
Stock of global foreign exchange reserves with known currency composition, at constant exchange rates	24.4 *(Q4 2013)*	25.3 *(Q4 2012)*	-0.9	11,674 *(Q4 2013)*	10,952 *(Q4 2012)*	USD billions	6.6
International debt securities: narrow measure, i.e. excluding home currency issuance, at constant exchange rates	25.3 *(Q4 2013)*	26.7 *(Q4 2012)*	-1.4	12,421 *(Q4 2013)*	11,758 *(Q4 2012)*	USD billions	5.6
Euro nominal effective exchange rate (annual growth rate)	7.0 *(2013)*	-0.3 *(2012)*	7.3	… ...	… ...		
Foreign demand for euro area portfolio investments (in percentage of euro area GDP)	3.7 *(2013)*	3.0 *(2012)*	0.7	… ...	… ...		
Daily foreign exchange trading (settled by CLS), annual averages, at current exchange rates, as a percentage of foreign exchange settlement	37.4 *(2013)*	39.2 *(2012)*	-1.8	3,764 *(2013)*	3,689 *(2012)*	EUR billions	2.0
Foreign currency-denominated loans in CESEE countries, as a percentage of total foreign currency loans, at current exchange rates	82.7 *(2013)*	81.2 *(2012)*	1.5	212.3 *(2013)*	212.3 *(2012)*	EUR billions	0.0
Foreign currency-denominated deposits in CESEE countries, as a percentage of total foreign currency deposits, at current exchange rates	78.0 *(2013)*	77.7 *(2012)*	0.3	203.5 *(2013)*	217.6 *(2012)*	EUR billions	-6.5
Invoicing of goods exported from the euro area to non-euro area countries, at current exchange rates	67.2 *(2013)*	66.7 *(2012)*	0.5	… …	… …		… …
Invoicing of goods imported to the euro area from non-euro area countries, at current exchange rates	51.7 *(2013)*	51.3 *(2012)*	0.4	… …	… …		… …
Foreign holdings of euro area debt denominated in euro (as percentage of total euro-denominated debt)	19.6 *(H1 2013)*	18.1 *(H1 2012)*	1.5	16,921 *(H1 2013)*	17,091 *(H1 2012)*	EUR billions	-1.0
Cumulative net shipments of euro banknotes to destinations outside the euro area (not seasonally adjusted)	… …	… …	… …	144.5 *(Dec. 2013)*	131.4 *(Dec. 2012)*	EUR billions	9.9

Sources: BIS, ECB and national sources.

Overall, these developments may be regarded as the result of several factors. On the one hand, the international use of the euro might still be affected by the lingering effects of the euro area crisis. The on-going adjustment and rebalancing process in the euro area and the moves towards a genuine Economic and Monetary Union, including the completion of the banking union, remain, therefore, of the essence.

On the other hand, the trends observed over recent years in the currency composition of both global foreign exchange reserves and international bond issuance could also be indicative of more structural shifts in the global monetary and financial system. For instance, the increasing shares of non-traditional reserve currencies in global foreign exchange reserves may reflect efforts by central banks to further diversify – albeit still modestly – their reserve holdings in the wake of the global financial crisis. Moreover, the dominant role of the US dollar in international debt markets may be partly the result of stronger reliance on the part of private and public debt issuers, in particular in emerging market economies, on the favourable liquidity conditions prevailing in US dollar-denominated debt markets.

MAIN FINDINGS OF THE SPECIAL FEATURES

Against the background of the increased interest in euro area securities among international investors observed in 2013 and described in Chapter 3 of this report, the first special feature aims to analyse the role of foreign investors for the international use of the euro at the peak of the euro area sovereign debt crisis. To this end, this special feature uses a standard gravity model of international portfolio flows to assess the extent to which foreign investments in the euro area were disproportionate and whether patterns of foreign portfolio flows to the euro area changed after policy measures were taken at the European and national level in mid-2012. It finds that foreign investments in the bond markets of stressed euro area countries were disproportionately small relative to the predictions of a standard gravity model of international portfolio allocation. In addition, it finds that this underinvestment in stressed euro area countries cannot be fully explained by rating changes and that it disappeared after the announcement of the ECB's OMT programme. The temporary underinvestment confined to stressed euro area bond markets is consistent with the muted overall euro area capital outflows observed and the limited decline in the international use of the euro during the sovereign debt crisis.

The second special feature article deals with the observation that central banks are tending to invest a small but increasing share of their reserve holdings in non-traditional reserve currencies, as described in Section 4.1 of this report. In response to discussions as to whether central banks might diversify their foreign exchange reserves away from traditional reserve assets, which have been reignited by the global financial crisis, this special feature provides an overview of the academic literature on the global financial impact of official reserve diversification. It discusses the multifaceted concept of official reserve diversification, examines the main theoretical channels through which its impact may unfold and reviews the empirical evidence available. It shows in particular that the impact of reserve diversification on global foreign exchange markets is not mechanical, but that it depends on an array of factors, including the degree of substitutability between reserve assets and related changes in interest rates; the endogenous adjustment of the current account in the medium term; and, importantly, whether private investors – whose portfolio holdings are even larger than those of central banks – regard diversification by central banks as a credible signal that prompts them to alter the composition of their own holdings.

Finally, against the background of marked shifts in international debt issuance observed since the global financial crisis, as documented in Section 4.2, the third special feature article highlights a number of stylised facts on foreign currency bond issuance. It finds that gross bond issuance across the globe has reached unprecedented levels since the global financial crisis and that an increasingly large fraction of bonds have been issued in foreign currency, especially in emerging markets. An analysis of the features of foreign currency issuance reveals that emerging markets borrowers enjoy a substantial "discount" when borrowing in foreign currency, suggesting that interest rate differentials might be an important determinant for the choice of issuance currency. The declining share of the euro in global bond issuance since 2008 is found to stem mainly from lower issuance in euro by non-euro area financial corporations. By contrast, the issuance in euro by other non-euro area borrowers was not strongly affected by the crisis in absolute terms and has recently picked up. The strong rise in US dollar issuance, especially by non-financial corporations, and the relatively low yields of securities issued in US dollars further suggest that quantitative easing may have affected the currency composition of bond issuance in recent years.

3 PRICE-BASED INDICATORS AND EURO AREA CAPITAL FLOWS

3.1 PRICE-BASED INDICATORS

3.1.1 DEVELOPMENTS IN THE EXCHANGE RATE OF THE EURO

The nominal effective exchange rate of the euro appreciated markedly in 2013. Following a period of relatively pronounced fluctuations at the start of year, developments between May and December 2013 were characterised by a broad-based and steady strengthening of the nominal effective exchange rate of the euro. This reflected both external and internal factors, including the sell-off of emerging market currencies and better than expected data on economic adjustment and the end of the recession in the euro area. Since the start of 2014, the nominal effective exchange rate of the euro has been broadly stable.

The nominal effective exchange rate of the euro, as measured vis-à-vis 20 of the euro area's major trading partners (NEER-20), has increased markedly (by 4.0%) between the beginning of 2013 and end-May 2014. When additionally accounting for the group of other emerging market economies that are included in the broader effective exchange rate aggregate of 39 trading partners (NEER-39), the euro appreciated by 5.8% in nominal effective terms.

The first four months of 2013 saw relatively pronounced fluctuations in the nominal effective exchange rate of the euro. Specifically, the euro appreciated by almost 4% in January 2013, stabilised in February and depreciated in March and April to the level observed at the start of the year. Between May and December 2013 euro exchange rate developments were characterised by a broad-based and steady strengthening against the currencies of all its major trading partners. Since the start of 2014, the nominal effective exchange rate of the euro has been broadly stable amid historically low levels of exchange rate volatility.

Over the entire review period between 1 January 2013 and 31 May 2014, among the major currencies the euro appreciated most notably against the Japanese yen (+19.7%) and to a lesser extent against the US dollar (+3.1%) and, in tandem with the dollar, the Chinese renminbi (+3.4%) (Chart 1). The euro remained broadly stable against the pound (-0.4%) and continued to trade close to the minimum exchange rate of CHF 1.20 against the Swiss franc (+1.1%).[1] In addition, the euro strengthened exceptionally against the currencies of other emerging market economies

Chart 1 Changes in selected bilateral exchange rates and euro nominal effective exchange rates

(percentage change since 1 Jan. 2013)
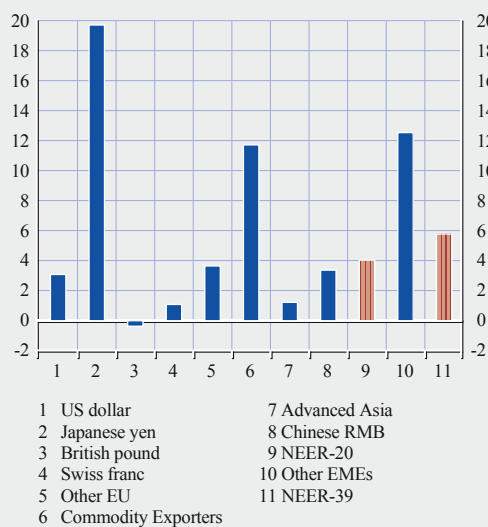
1	US dollar	7	Advanced Asia
2	Japanese yen	8	Chinese RMB
3	British pound	9	NEER-20
4	Swiss franc	10	Other EMEs
5	Other EU	11	NEER-39
6	Commodity Exporters		

Source: ECB.
Notes: The latest observation is for 31 May 2014. The NEER-20 aggregate is the subset of the NEER-39 aggregate excluding the group of other emerging market economies.

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1   The minimum exchange rate of 1.20 CHF/EUR was unilaterally announced by the Swiss National Bank in September 2011.

(+12.5%) and advanced commodity-exporting economies (+11.7%). Finally, the euro also appreciated against the currencies of other EU Member States (+3.6%) and the currencies of other advanced Asian economies (+1.2%).[2]

If the increase in the broader effective exchange rate of the euro (NEER-39) is broken down by the trading partners' currency, the euro's development against the group of other emerging market economies contributed to the overall increase of the NEER-39 by approximately 2.5 percentage points (Table 2). The euro's gain against the Japanese yen accounted for another 1.1 percentage points, while the euro's increase against the US dollar and the Chinese renminbi contributed 0.4 and 0.5 percentage point respectively.

By placing the euro's broad-based appreciation in a historical perspective, it is possible to observe that the single currency hit several multi-year highs in recent months. On 31 December 2013 the euro stood at JPY 145, the highest level since September 2008. On 8 May 2014 the euro traded at USD 1.395, the highest level since October 2011. On 13 March 2014, the nominal effective euro exchange rate (NEER-39) stood at its highest level since January 2010. However, since then, the appreciation trend has reversed to some extent. By 31 May 2014, the euro depreciated by 2.5% against the US dollar and by 2.4% in nominal effective terms since their respective peaks (Chart 2).

Looking at annual developments of the euro exchange rate, by the end of 2013 the broad measure of the euro nominal effective exchange rate (NEER-39) was 7.0% above its level at the end of 2012. This appreciation was large by historical standards. The yearly changes in the (synthetic) euro nominal effective exchange rate since 1964 show that the euro only strengthened

Table 2 Contributions to the change in the euro nominal effective exchange rate

	31 May 2014 with respect to 1 Jan. 2013	
	Trade weight (in percentages)	Contribution to NEER-39 (in percentage point)
US dollar	14	0.4
Japanese yen	6	1.1
British pound	12	0.0
Swiss franc	5	0.1
Other EU members	20	0.7
Oil Exporters	3	0.4
Advanced Asia	6	0.1
Chinese renminbi	15	0.5
NEER-20	**80**	**3.2**
Other EMEs	20	2.5
NEER-39	**100**	**5.8**

Source: ECB. Notes: The latest observation is for 31 May 2014. The NEER-20 aggregate is the subset of the NEER-39 aggregate excluding the group of other emerging market economies.

Chart 2 Euro nominal effective exchange rate and bilateral rate against the US dollar

(US dollar per euro; index, daily)

— USD/EUR (left-hand scale)
..... NEER-39 (right-hand scale)
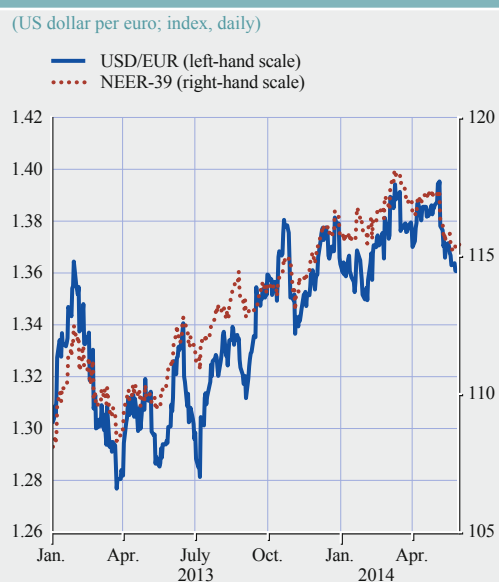
Source: ECB.
Notes: The NEER-39 is the nominal effective exchange rate of the euro against 39 main trading partners of the euro area. An upward movement of the index indicates an appreciation of the euro. The latest observation is for 31 May 2014.

2 The percentage change in these currency groups are presented in trade-weighted terms. The currency groups are set up as follows: "commodity exporters" includes the Norwegian krone, the Australian dollar and the Canadian dollar; "other EU Member States" includes the Bulgarian lev, the Czech koruna, the Danish krone, the Hungarian forint, the Lithuanian litas, the Polish zloty, the Romanian leu, the Swedish krona and the Croatian kuna; "other emerging market economies" includes the Russian rouble, the Turkish lira, the Brazilian real, the Indonesian rupiah, the Israeli shekel, the Indian rupee, the Mexican peso, the Malaysian ringgit, the Philippine peso, the Thai baht and the South African rand; "advanced Asia" includes the Singapore dollar, the Hong Kong dollar and the South Korean won.

more on four occasions (Chart 3). For the period since the inception of the euro in 1999, it only performed better in 2003 (+11%).

The strength of the euro in the reference period relates to both external and internal factors. On the external side, the euro largely appreciated on the back of the sell-off of several emerging market currencies following the start of the US Federal Reserve System's tapering discussion in May 2013. This sell-off partly reflected global investors' alleged concerns that the steady stream of portfolio inflows that had entered emerging market economies in recent years could reverse once the Federal Reserve started tightening its monetary policy. Moreover, the weakening of emerging market currencies reflected deteriorating macroeconomic fundamentals in several emerging market economies, such as widening current account deficits and downward revisions to their medium-term growth outlook. Adding to the pronounced weakening of emerging market currencies, a downward

Chart 3 Historical distribution of annual changes in the euro nominal effective exchange rate

(observations since 1964; percentages)

1) -15% to -13%	6) -5% to -3%
2) -13% to -11%	7) -3% to -1%
3) -11% to -9%	8) -1% to 1%
4) -9% to -7%	9) 1% to 3%
5) -7% to -5%	10) 3% to 5%

11) 5% to 7%
12) 7% to 9%
13) 9% to 11%
14) 11% to 13%
15) 13% to 15%

Source: ECB.
Notes: Synthetic euro nominal effective exchange rate between 1964 and 1998.

correction in the currencies of advanced country commodity exporters (the Canadian dollar, the Australian dollar and the Norwegian krone) contributed to the strengthening of the euro, reflecting an overall drop in commodity prices in 2013. In addition, the weakness of these three currencies reflects a declining demand for alternative safe-haven currencies that had persistently increased against the backdrop of financial crises in traditional reserve currency issuing economies. Finally, on the back of quantitative and qualitative easing, announced by the Bank of Japan in April 2013, which led to higher inflation expectations and lower real interest rates in Japan, a general depreciation of the yen occurred, which also contributed to the euro's appreciating trend.

In addition, the euro was supported by internal factors. In particular, the strength of the euro partly reflected better than expected data on economic adjustment and the end of the recession in the euro area. Supported by these positive real economic developments, the euro area not only displayed a widening current account surplus in 2013, but also received large portfolio inflows throughout the whole reference period (see Chapter 3.2).[3] Finally, 2013 saw a further reduction in investors' perception of tail risks related to the euro exchange rate. This perception is reflected in a reduction of the right skewness in the distribution of expected returns of the USD/EUR exchange rate implied in foreign exchange option prices (Chart 4). Comparing the expected return distributions of USD/EUR options with a three-month maturity at different points in time, it is possible to see that investors were less inclined to believe that the euro would depreciate by more than 10% against the US dollar over the next three months in May 2014, than they were in April 2013. By way of comparison, in July 2012, when the euro hit a multi-year low against the US dollar, such a
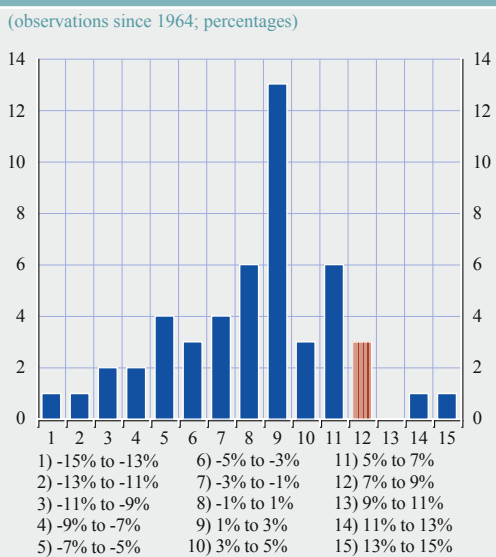
3   According to the monetary approach to the balance of payments, financial transactions with the rest of the world have an impact on the value of currencies. There is evidence that portfolio flows can track the movements in exchange rates, in contrast with net foreign direct investment (FDI) flows which are less important (see, for example, Brooks et al, "Exchange rates and capital flows", IMF Working Paper no. 01/190, 2001). Part of these portfolio inflows was channelled through monetary and financial institutions (MFIs) resident in the euro area, and therefore was accompanied by an increase in their net external position, which appears in the balance of payments of the euro area as a net outflow of "other investment" (see Chart 9).

Chart 4 Option-implied densities for the USD/EUR exchange rate – expected returns over a three-month horizon

- July 2012
- April 2013
- May 2014
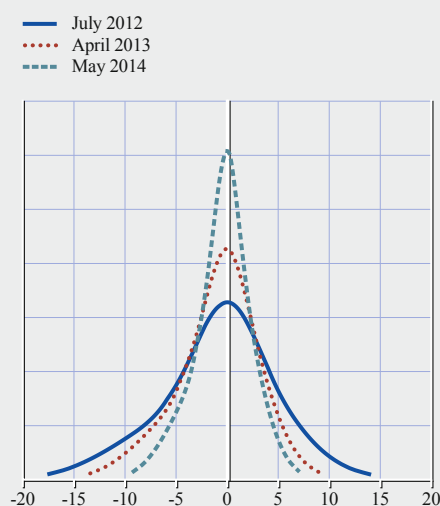
Source: ECB.

Chart 5 Euro real effective exchange rate (REER-39)

(monthly data)

Source: ECB.
Notes: An upward movement of the REER-39 index represents an appreciation of the euro. The latest observation is for April 2014.

scenario was perceived as relatively likely.[4] The reduction in perceived risks related to the euro exchange rate has been coupled with a marked decline in overall systemic stress across major euro area financial asset classes, which has fallen to levels not seen since 2007 (see ECB, 2014b).

Taking a longer perspective, in the first quarter of 2014 the real effective exchange rate of the euro, deflated by the CPI, stood close to its long-run average since 1993 (see Chart 5).

3.1.2 BOND YIELDS OF EURO AREA ISSUERS

Financial market fragmentation continued to decline markedly across market segments in 2013.

Since January 2013 yields in non-stressed euro area countries (Germany, France, Belgium, the Netherlands, Austria and Finland) have remained overall stable (on a debt-weighted basis). At the same time, bond yields of stressed euro area sovereigns (Spain, Italy, Portugal and Ireland) have continued to decline (by -1.8 percentage points, debt-weighted) (Chart 6a). As a result, the spread in euro area bond yields continued to decline markedly, while the positive developments of financial market integration that started in mid-2012 continued in most of the financial market segments in 2013 (see ECB, 2014a). Specifically, the spread between the two aggregates shrank to 142 basis points by the end of May 2014. In early May 2014, the spread had temporarily reached its lowest level since August 2010 (126 bps). The spread peaked in July 2012, at the height of the sovereign debt crisis, when yields for non-stressed euro area sovereigns were 521 basis points lower than those of stressed countries. In absolute terms, as of end May 2014, bond yields of stressed sovereigns (excluding Greece and Cyprus) are at their lowest level since the inception of the euro in 1999 (3.0% p.a.), inter alia reflecting improving sovereign funding conditions in these countries.

4 For more details on the concept of euro option implied density functions, see Box 1 in the 2013 International role of the euro report entitled "The evolution of market uncertainty surrounding the euro exchange rate".

Chart 6 Sovereign bond yields in the euro area

(yields and spreads of bonds with ten-year maturity)

- spread (in bps, right-hand scale)
- weighted average yield, non-stressed (left-hand scale)
- weighted average yield, stressed (left-hand scale)

a) Since 1999

b) Since 1 January 2013
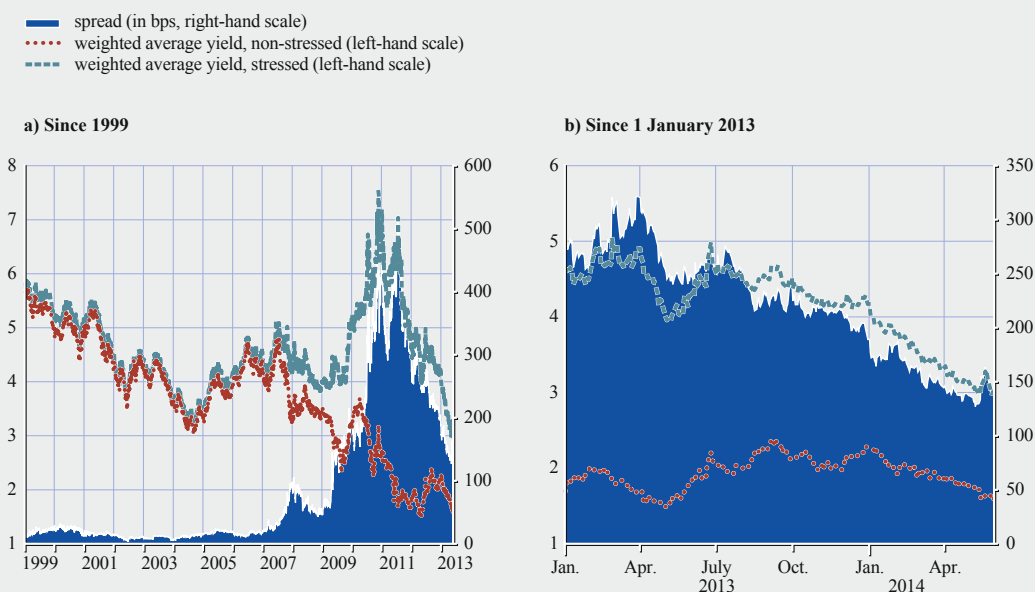
Sources: Datastream, ECB and own calculations.
Notes: Yields are computed as a weighted average of the two euro area country groups ("non-stressed" and "stressed"). Weights are computed according to the nominal amount of outstanding debt issued. The non-stressed countries are Germany, Austria, Belgium, Finland, France and the Netherlands. The stressed countries are Spain, Italy, Portugal and Ireland. The yields for Cyprus, Estonia, Greece, Luxembourg, Malta, Slovakia and Slovenia have been excluded owing to market specifics. The latest observation is for 31 May 2014.

The short-term dynamics reveal that euro area sovereign bond yields (both in stressed and non-stressed economies) peaked temporarily in early summer 2013 (Chart 6b). In this period bond yields rose globally reflecting concerns that the end of accommodative monetary policy in the United States would trigger a correction in global bond prices that had been rallying for several years and that investors would start to increase the share of equities in their portfolios. These concerns receded however during the second half of 2013. In response, bond yields of non-stressed euro area sovereigns stabilised at a slightly elevated level, whereas bond yields of stressed euro area sovereigns continued their downward trend, reflecting improving economic developments in these countries, which also contributed to increased foreign demand for euro area debt securities (see Chapter 3.2).

The decrease in stressed euro-area government bond yields has extended to yields of lower-rated bonds issued by the financial sector (Chart 7).

Chart 7 Five-year euro corporate bond yields

(percentages)

- AA – composite euro
- AA – Europe financials
- BBB – composite euro
- BBB – Europe financials
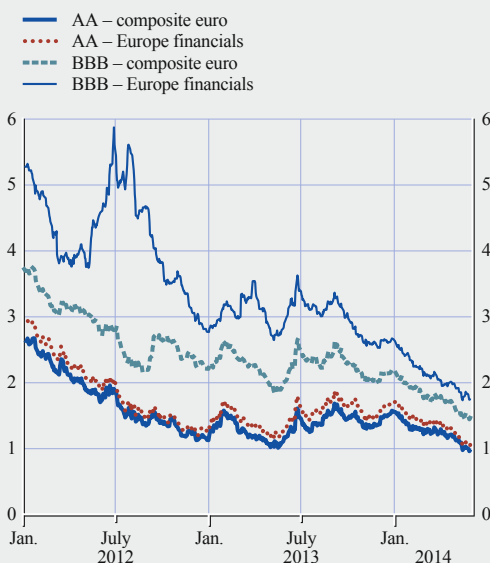
Source: Bloomberg.
Note: The latest observation is for 31 May 2014.

As was the case for the government bond segment, lower-rated financial institutions' debt has continued to converge towards bond yields of higher-rated entities since January 2013. Apart from favorable external factors, this development reflects the improving capital positions of these financial institutions and is also consistent with a decline in risks related to adverse feedback loops between the euro area sovereign and banking sector after the announcement of OMTs and the commitment of euro area leaders to the completion of the banking union.

Finally, also bond yields in the European corporate sector (mainly encompassing non-financial corporates) with an investment grade rating (AA and BBB) have declined since January 2013.

3.2 EURO AREA CAPITAL FLOWS AND FOREIGN DEMAND FOR EURO AREA ASSETS

Foreign investors' interest in euro area debt and equity instruments increased markedly in 2013, reflecting the return of investor confidence in euro area securities on account of improving macroeconomic fundamentals and a further reduction in perceived euro area tail risks.

The financial account of the euro area balance of payments was subject to substantial outflows in 2013, mirroring the euro area's increasing current account surplus (see Chart 8). However, these developments mask significant heterogeneity both across the main items of the euro area financial account and across stressed and non-stressed euro area countries.

Net capital outflows in 2013 amounted to around €230 billion. These outflows mainly reflected net sales of other investment and foreign direct investment of around €280 billion and €106 billion, respectively. These capital outflows were only partly offset by substantial inflows of around €150 billion in euro area debt and equity markets.

With regard to foreign (non-euro area) portfolio investments, which best reflect investor sentiment towards the euro area, net purchases of euro area securities amounted to €370 billion, which was around 4% of euro area GDP, in 2013 (Chart 9). This is the strongest annual inflow since 2007. The increased interest of international investors in euro area securities partially reflects a number of domestic factors, including improving macroeconomic fundamentals, a further reduction in perceived euro area tail risks and a correction of the previous underweight positions of euro area securities in global investment portfolios.

In terms of asset allocation across portfolio investment classes, net purchases of euro area securities by foreign investors were mainly concentrated on equity markets, which were subject to relatively stable inflows in 2013.

Chart 8 Euro area financial account

(three-month cumulated flows; as a percentage of euro area GDP)

- direct investment
- other investment
- portfolio investment
- net financial account
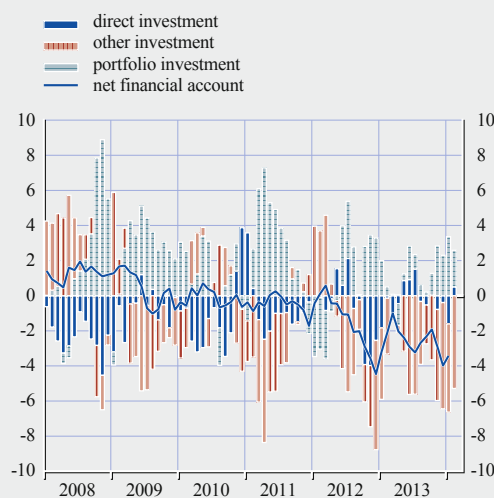
Source: ECB.
Note: The latest observation is for March 2014.

By contrast, inflows to bond markets were temporarily halted and turned negative in summer 2013 amid investors' concerns over a "global rotation" of investments from bond to equity markets in the context of discussions about a gradual tightening of US monetary policy.

Looking at the heterogeneity of portfolio flows across euro area countries, foreign investors returned to stressed countries' bond markets in the second half of 2012 after several policy measures were taken at the European level. These positive developments continued in 2013, with a brief exception in mid-2013, when foreign investors temporarily retrenched from stressed countries' bond markets during the period of heightened global financial market volatility. With respect to euro area equity markets, flows have been rather resilient throughout the sovereign debt crisis – both to stressed and non-stressed countries.

Chart 9 Euro area portfolio investment liabilities by instrument

(three-month cumulated flows; as a percentage of euro area GDP)

- equity securities
- bonds and notes
- money market instruments
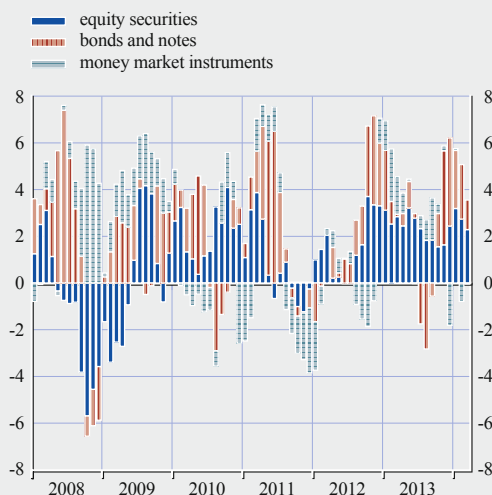
Source: ECB.
Note: The latest observation is for March 2014.

Further evidence of a pronounced increase in market sentiment with regard to euro area securities since early 2013 is provided by an analysis of the asset allocation of US money market funds, which account for a significant share of the dollar funding of euro area banks. According to a survey by Fitch Ratings, the share of short-term financial instruments issued by euro area banks in total assets under management of prime US money market funds declined markedly amid the intensification of

Chart 10 Asset allocation of prime US money market funds – share of short-term instruments issued by euro area banks

(as a percentage of total assets under management)
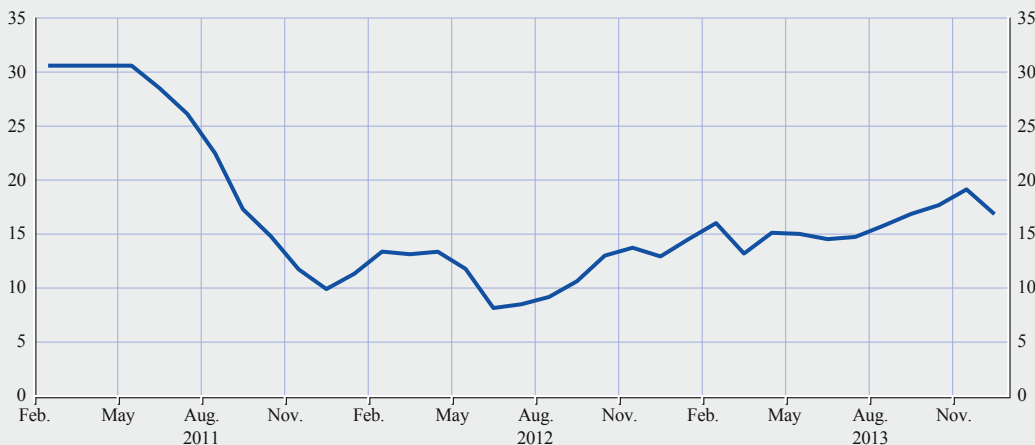
Source: Fitch Ratings.
Notes: Prime money market funds participating in the survey include the ten largest US money market funds. Short-term instruments issued by euro area banks include certificates of deposit (CDs), commercial paper (CP), repos and other instruments. The latest observation is for December 2013.

the euro area sovereign debt crisis in 2011 and the first half of 2012, reaching a historical low of 8.2% in June 2012 (see Chart 10). Following the policy measures taken by European authorities in summer 2012, the share of short-term instruments issued by euro area banks gradually recovered, reaching 17.9% in the final quarter of 2013, the highest level since mid-2011.

4 RECENT DEVELOPMENTS IN THE INTERNATIONAL USE OF THE EURO

4.1 THE EURO IN GLOBAL FOREIGN EXCHANGE RESERVES AND EXCHANGE RATE ANCHORING

The share of the euro in global foreign exchange reserves continued to decline in 2013. While the share of the US dollar remained broadly unchanged, the shares of the Australian and Canadian dollar further increased, possibly reflecting central banks' intention to further diversify reserve holdings towards non-traditional reserve currencies.

Foreign exchange reserves continued to grow in 2013, though at reduced speed, reaching a new historical high of USD 11.7 trillion at the end of 2013 (see Chart 11a and Table A1 in the Statistical Annex). According to IMF data, which, however, only cover the currency composition of 53% of global foreign exchange reserves, the shares of major reserve currencies showed just small changes throughout 2013 (see Chart 11b). Such inertia in the currency composition of foreign exchange reserves is likely to result from a combination of factors, including network externalities, exchange rate anchoring and the liquidity properties of major reserve currencies.[5] The euro's share in global foreign exchange reserves continued to decline moderately – a trend observed from mid-2010 – and stood at 24.4% at the end of 2013 (down by 0.9 percentage point since the end of 2012, after adjustment for exchange rate effects). Over the same period, the share of US dollar-denominated assets in global foreign exchange reserves remained stable at 61.2%. By contrast, the share of reserves invested in the Japanese yen increased for the second consecutive year, albeit from a low level. At the end of 2013 the yen's share stood at its highest level since 2006 (at 3.9%). Similarly, the importance of the Canadian dollar and the Australian dollar as non-traditional reserve currencies continued to grow.[6] At the end of 2013 their combined share stood at 3.4%, an increase of 0.8 percentage point compared with the end of 2012.

Chart 11 Currency composition of global foreign exchange reserves

(USD trillions; at current exchange rates)

(percentages; at constant end-2013 exchange rates)

a) Amounts

- USD
- EUR
- JPY
- undisclosed
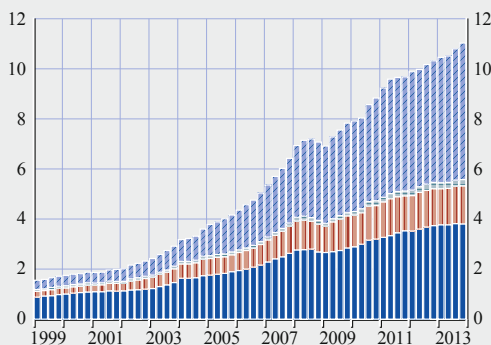
b) Shares

- USD
- EUR
- JPY
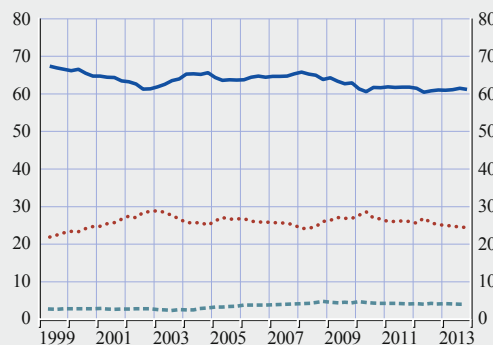
Sources: IMF and ECB calculations.
Note: The latest observation is for the final quarter of 2013.

5 See, for example, Beck and Rahbari (2011).
6 For a discussion of the determinants of the growing importance of non-traditional currencies since the onset of the global financial crisis see ECB (2013), Special Feature A entitled "Global safe asset shortage, non-traditional reserve currencies, and the global financial crisis".

The share of "other currencies" (comprising all currencies other than the special drawing right (SDR) currencies, namely the Australian dollar, the Canadian dollar and the Swiss franc) in global foreign exchange reserves remained rather stable, slightly down from 3.2% to 2.9%.

At the disaggregated level, the share of the euro in the official reserves of the central banks of advanced economies declined in 2013, following the temporary increase in 2012, which partly reflected the large-scale purchases of euro-denominated assets by the Swiss National Bank.[7] By contrast, the share of the Canadian dollar and the Australian dollar, as well as that of the Japanese yen increased over the same period, possibly reflecting central banks' intention to further diversify reserve holdings.

The share of euro reserves held by emerging market central banks again declined in 2013, albeit at a much slower pace than in 2012, when the euro's share had decreased by 3.5 percentage points, possibly reflecting heightened tensions in euro area sovereign debt markets and a relatively high share of euro-denominated assets prior to the crisis. The decline in 2013 by 1.1 percentage points was mirrored in increases in the shares of foreign currency reserves in most other currencies, with the exception of the pound sterling. Again, to the extent that emerging market central banks are holding reserves in excess of precautionary needs, diversification may have been a possible driver.[8]

Among the non-euro area central banks which disclose the currency composition of their foreign exchange reserves, Croatia, Lithuania, Romania, the United Kingdom and Canada reported decreases in the share of reserves in euro, while the Czech Republic and the United States reported increases. For the other countries, it remained relatively stable (see Table A2 in the Statistical Annex).

Putting these developments into a somewhat longer-term perspective, and focusing on developments since the start of the global financial crisis, the share of the US dollar in foreign exchange reserves has declined by 4.1 percentage points since the end of 2007 (at constant exchange rates). Over the same period, the euro's share declined by only 0.6 percentage point. This decline in the shares of the US dollar, and to a lesser extent the euro, was mirrored by increases in the shares of reserves in "other" currencies – not the traditional reserve units reported by the IMF – and Japanese yen. This indicates that while the share of the euro in global reserves continues to be on a slightly declining trend, overall the developments might also reflect a broader diversification of portfolios in the wake of the global financial crisis, which seems to be carried out at the expense of both the euro and the US dollar. In fact, an empirical analysis of the drivers of the rise in non-traditional reserve currencies suggests that heightened credit risk of some advanced economy sovereigns has been an important factor in this context (ECB, 2013).

Overall, these findings suggest that the euro continued to perform its function as the second-most important reserve currency in the world in 2013, and that the US dollar's status as the leading global reserve currency remained unchanged.

The use of the euro as a reference currency for the anchoring of exchange rates remained broadly unchanged. As in previous years, the use of the euro in the exchange rate regimes of countries outside the euro area was, to a large extent, underpinned by geographical and institutional factors, being observed mainly in countries neighbouring the euro area and countries that have established special institutional arrangements with the EU or its Member States (see Table A3 in the Statistical Annex). With the exception of the countries participating in ERM II, the decision to use the euro as

7   See ECB (2013).
8   See Beck and Rahbari (2011) and Beck and Weber (2011).

an anchor currency is a unilateral one and does not involve any commitment on the part of the ECB. The US dollar, on the other hand, continues to be widely used as an exchange rate anchor both in Asia and in Central and South America.

4.2 THE EURO IN INTERNATIONAL DEBT MARKETS

The share of the euro in international debt markets continued to decrease in the course of 2013, based on both the "broad" and "narrow" concept of international debt markets. The euro's share declined in tandem with that of the Japanese yen and those of "other" currencies. By contrast, the US dollar continued to expand its share in international debt markets at the expense of all other funding currencies.

According to the "broad" measure of international debt securities, as defined in this report, total outstanding amounts increased to USD 20.2 trillion as of the end of 2013.[9] This corresponds to an increase of around USD 700 billion or 3.5% compared with the end of 2012. Euro-denominated debt securities accounted for around USD 7.6 trillion, a share of 37.8% (see Table A4 in the Statistical Annex). By comparison, at the end of 2012 the euro's share stood 0.6 percentage point higher at 38.4% at current (end-2013) exchange rates. When controlling for exchange rate movements the euro's share dropped by 1.8 percentage points, reflecting the pronounced appreciation of the euro exchange rate in the course of 2013.

As in the past, this report focuses on the "narrow" concept of outstanding international debt securities, which comprises only issuance in a currency other than that of the country in which the borrower resides. According to the "narrow" measure, the total volume of outstanding international debt securities increased by around USD 250 billion compared with the previous year, reaching USD 12.4 trillion. Euro-denominated debt issuance increased by around USD 120 billion to a total of USD 3.1 trillion. The share of the euro dropped by 0.4 percentage point to 25.3% at current exchange rates and by 1.4 percentage points when controlling for exchange rate movements.

Taking a longer-term perspective and looking at developments in international debt markets since the onset of the global financial crisis, the share of the euro (at constant exchange rates) decreased gradually from 31.0% in 2007 to 25.3% in 2013 (based on the "narrow" measure) (see Chart 12). This decline was coupled with a steady increase in the share of US dollar-denominated debt from 44.3% to a new historical peak of 54.8% over the same period. The marked rise in the US dollar's share – which started as early as 2005 and has gained speed since the onset of the financial crisis – came not only at the expense of the euro but also of the Japanese yen and "other currencies", the shares of which have declined by 2.3 and 2.4 percentage points, respectively, over the past six years.

The increasing reliance of global borrowers on the US dollar as a funding currency in international debt markets can possibly be explained by a number of factors. First, the lower cost of international debt issuance in the US dollar relative to other currencies has supported US dollar issuance in recent years. Specifically, until late 2013, deviations from uncovered interest rate parity have made

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9   The Bank for International Settlements (BIS) defines the "broad" measure as debt "issued in a market other than the local market of the country where the borrower resides" (see also *BIS Quarterly Review*, December 2012). In this report, the BIS measure of international debt securities is further refined in order to exclude all debt issuance which is purely domestic when the euro area is considered a single economic area (e.g. a bond issued by a German resident with registration domain or listed in Luxembourg). The ECB's "broad" measure of international debt issuance thus excludes intra-euro area issuance from the international debt securities reported by the BIS.

(USD trillions; at current exchange rates)   (percentages; at constant end-2013 exchange rates)

a) Outstanding amounts   **b) Shares**

- USD
- EUR
- JPY
- other currencies

- USD
- EUR
- JPY
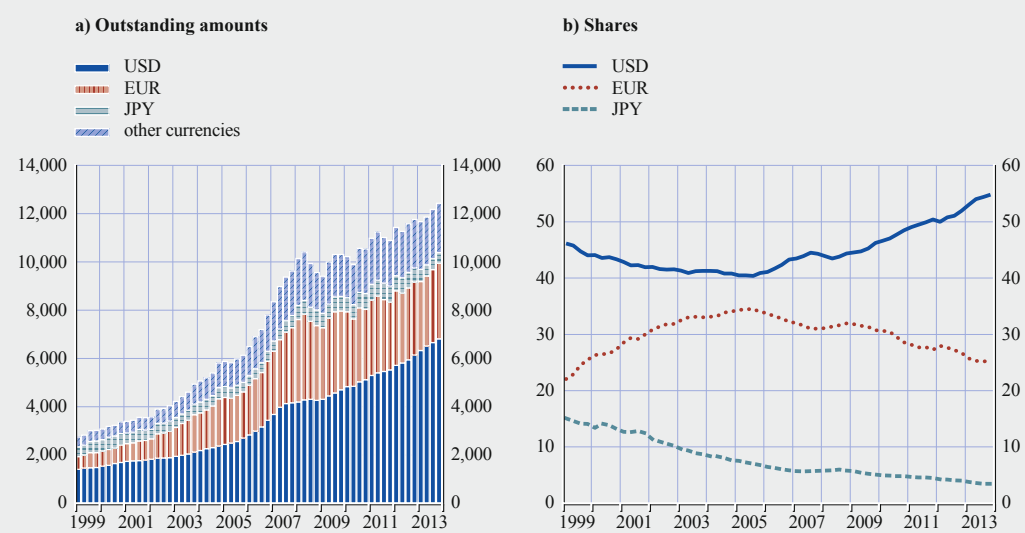
Sources: BIS and ECB calculations.
Note: The latest observation is for December 2013.

it cheaper to borrow in US dollars and swap the proceeds into other currencies, including euro, than to borrow in other currencies directly. Second, until mid-2013, interest rate and exchange rate expectations may have also worked in favour of the US dollar. In particular, against the background of the US Federal Reserve's monetary policy, which included among other unconventional monetary policies a large-scale asset purchase programme, market participants expected relatively low US interest rates and muted US dollar exchange rate volatility over a protracted period (see also Special Feature C). Third, recent dynamics in international bond issuance have been largely driven by emerging market economies, which have increasingly tended to switch from local to international bond market issuance.[10] This increase in external financing has been particularly pronounced in Latin American countries, which tend to issue in US dollars, taking advantage of the favourable liquidity conditions prevailing in US dollar-denominated debt markets. Finally, the lingering effects of the euro area sovereign debt crisis may have continued to have an impact on the demand for euro-denominated international debt issuance.

4.3 THE EURO AS A PARALLEL CURRENCY

4.3.1 CASH SUBSTITUTION

Foreign demand for euro banknotes increased for the third consecutive year, as the annual growth rate remained clearly higher than that of the banknotes in domestic circulation, suggesting that the euro area sovereign debt crisis did not have any major impact on the use of euro banknotes outside the euro area.

10 See Caballero, J., Panizza, U. and Powell, A. (2014), "Balance Sheets and Credit Growth", in Powell, A. (ed.), Global Recovery and Monetary Normalization: Escaping a Chronicle Foretold?, *Latin American and Caribbean Macroeconomic Report 2014*, Inter-American Development Bank, Chapter 4.

The use of euro banknotes outside the euro area cannot be estimated with exact precision. One estimate of the amount of euro banknotes circulating abroad (and reported regularly in this report) is represented by the accumulation over time of net shipments of euro banknotes by euro area monetary financial institutions (MFIs) to destinations outside the euro area. On the basis of this method, around EUR 143 billion worth of euro banknotes (after adjusting for seasonal effects) are estimated to have been in circulation outside the euro area at the end of December 2013 (see Chart 13). This was around 16% of the total euro currency in circulation in that month in the euro area. This estimate is regarded as a clear lower bound, given that the banking channel is just one of the several channels through which euro banknotes leave and re-enter the euro area. Anecdotal evidence suggests that the outflows of euro banknotes via non-MFI channels (e.g. via tourism or workers' remittances) are, for most countries, greater than the inflows via such channels. Therefore, the net shipments by banks offer an incomplete picture of true net flows of banknotes. Other estimates suggest that around 25% of euro currency in circulation (potentially slightly higher) were circulating outside the euro area at the end of 2013.

In 2013 foreign demand for euro banknotes continued to grow for the third consecutive year at a double-digit rate, and the annual growth rate remained clearly higher than that of the banknotes in circulation within the euro area. Indeed, the annual growth rate of foreign demand for euro banknotes (based on the accumulation over time of net shipments of euro banknotes by euro area MFIs to destinations outside the euro area) stood at a similar level as that of 2011 (10% in December 2013), and just slightly lower than the level recorded in December 2012 (11%), while the domestic circulation of euro banknotes strengthened somewhat in 2013 (to 5.3%, from 2.4% in December 2012). Nonetheless, monthly net shipments in the last three years have not been as large

Chart 13 Net shipments of euro banknotes to destinations outside the euro area

(EUR billions; adjusted for seasonal effects)

- monthly shipments (left-hand scale)
- cumulative shipments (right-hand scale)
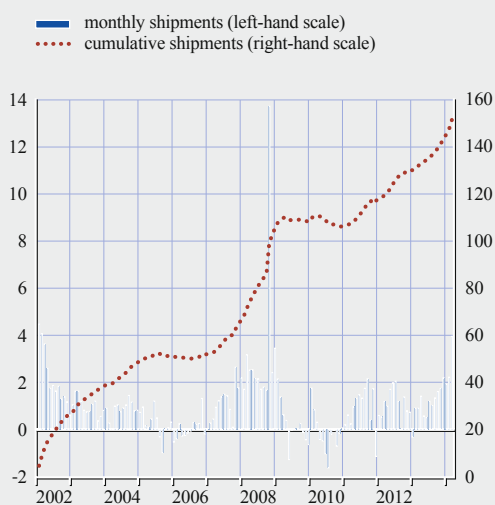
Source: Eurosystem.
Notes: Net shipments are the sum of euro banknotes sent to destinations outside the euro area minus euro banknotes received from outside the euro area. The latest observation is for March 2014.

Chart 14 Foreign currency brought into and taken out of the Russian Federation by authorised banks

(USD billions; USD/EUR)

- in/out balance US dollar (left-hand scale)
- in/out balance Euro (left-hand scale)
- USD/EUR exchange rate (right-hand scale)
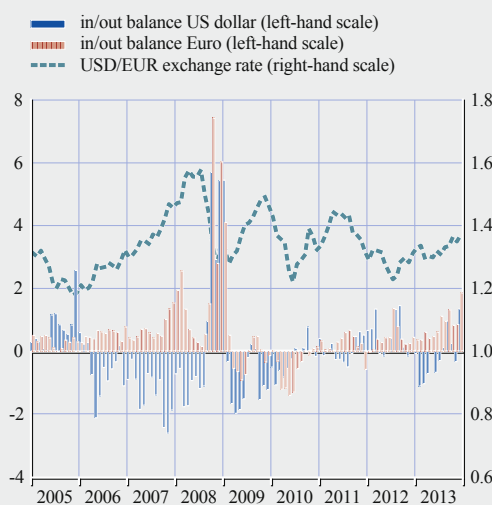
Sources: Bank of Russia and ECB.
Note: The latest observation is for December 2013.

Central and South America   rest of Europe
North America   Russia
Africa   non-EU Member States in eastern Europe excluding Russia
Asia and Australia   other non-euro EU
Middle East   non-euro area EU Member States in eastern Europe
Switzerland

a) Sales

b) Purchases

Sources: ECB (based on data from wholesale banks).
Notes: These data exclude trade between wholesale banks. From 2012 onwards figures contain data obtained from one additional wholesale bank which previously had not responded to this survey. These data differ from statistics on net shipments, as the latter do not take account of the recirculation of banknotes by wholesale banks outside the euro area (e.g. where a wholesale bank purchases a euro banknote from a client in Asia and sells it to a client in Russia).

as the average shipments observed in the period 2007-08, when foreign demand for euro banknotes peaked, in particular following the collapse of Lehman Brothers. The robust net shipments of euro banknotes in 2013 reflected both higher gross backflows of euro banknotes from non-euro area residents and higher gross outflows of banknotes outside the euro area. Overall, recent developments in the net shipments of euro banknotes abroad continue to suggest that the euro area sovereign debt crisis did not have any major impact on the use of euro banknotes outside the euro area.

Further evidence on the holdings of euro currency abroad can be derived from statistics provided by the monetary authorities of non-euro area countries. For example, the Central Bank of Russia publishes data on foreign currency brought into and taken out of the Russian Federation by authorised banks. These statistics show that in 2013 the net shipment of euro banknotes to Russia increased for the third consecutive year (see Chart 14), after the persistent net outflows observed for most of 2009 and 2010. The net increase in euro banknotes brought into the Russian Federation by authorised banks in 2013 was much higher than in the previous year. The data thus suggest that Russian residents may have increased their euro banknote holdings in the last three years, after reducing their holdings in 2010. By contrast, net holdings of US dollar banknotes brought into the Russian Federation by authorised banks declined in 2013, posting a marginal decrease (as had last occurred in 2010), in line with the strengthening of the euro vis-à-vis the US dollar.

Data collected from international banknote wholesale banks show increased sales of euro banknotes to regions outside the euro area in 2013 (see Chart 15). The increase is mainly due to increased demand from Russia. In value terms, net exports of euro banknotes to Russia doubled in 2013 as compared with 2012. As in previous years, a large share of euro banknote sales went to Switzerland

and to the United Kingdom. Both countries together had a share of nearly 50% of the total sales value. At the same time, backflows of euro banknotes (i.e. purchases from wholesale banks) stemmed mainly from EU Member States in eastern Europe and from Turkey, broadly in line with developments in previous years.

4.3.2 ASSET AND LIABILITY SUBSTITUTION

After households in most CESEE countries temporarily reduced the share of foreign currency savings in their deposits in 2012, recent developments tentatively suggest that preferences are shifting back towards having foreign currency deposits, and in particular euro-denominated deposits, as their share in total foreign deposits rose in most CESEE countries in 2013. At the same time, the euro's share in total deposits remained broadly stable compared with 2012.

Economic agents in central, eastern and south-eastern Europe use the euro widely in the domestic economy, notwithstanding the fact that the euro is not the legal tender in most of these countries.[11]

The euroisation of the liability side of banks' balance sheets remained extensive in several non-euro area EU Member States from central and eastern Europe[12], as well as in most EU candidate and potential candidate countries in south-eastern Europe.[13] The use of the euro seems to be most widespread in the Western Balkans, a region which has previously experienced periods of macroeconomic instability. In 2013 the share of euro-denominated deposits in total deposits of EU Member States ranged from 55.8% in Croatia to 6.8% and 6.1% in the Czech Republic and Poland respectively (see Table A14 in the Statistical Annex). By comparison, in the Western Balkans this share ranges from 70.7 % in Serbia to 30.3% in Albania.

Furthermore, the euro remained the preferred store of value relative to other foreign currencies.[14] Compared with 2012, the euro's share in total foreign deposits rose in most CESEE countries (see Chart 16). This development could point to a possible reversal of currency preferences to the levels observed before the intensification of the euro area crisis in the first half of 2012. While economic agents in most CESEE countries reduced the share of both euro and other foreign currency savings in their deposits and thus turned to the local currency in 2012, there are indications that there was a shift in currency preferences towards foreign currency deposits, and in particular towards euro deposits in 2013. Evidence provided by the OeNB Euro Survey confirms that trust in the euro increased in CESEE countries in the autumn of 2013 (see Section 4.3.3 below).

On the asset side of banks' balance sheets euroisation continues to be pronounced, in line with the developments on the liability side, also reflecting trade patterns and geographic proximity. The share of euro-denominated loans in total loans varies across countries but in general remains high, in particular in countries with exchange rate regimes in which the euro is the reference currency, notably countries having currency board arrangements, or pegged or tightly managed exchange rates. The share of euro-denominated loans in total loans ranged from 70.3 % in Lithuania to 9.4 % in the Czech Republic in 2013 (see Table A13 in the Statistical Annex).

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11 Kosovo (in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence) and Montenegro use the euro as the official legal tender and are therefore excluded from this analysis.
12 Bulgaria, the Czech Republic, Croatia, Hungary, Lithuania, Poland and Romania.
13 Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Serbia and Turkey.
14 Valuation effects might explain these developments to some extent, as the data are not adjusted for exchange rate movements.

Chart 16 The euro's share in total foreign currency deposits in CESEE countries

(in percent of foreign currency deposits)

- 2012
- 2013
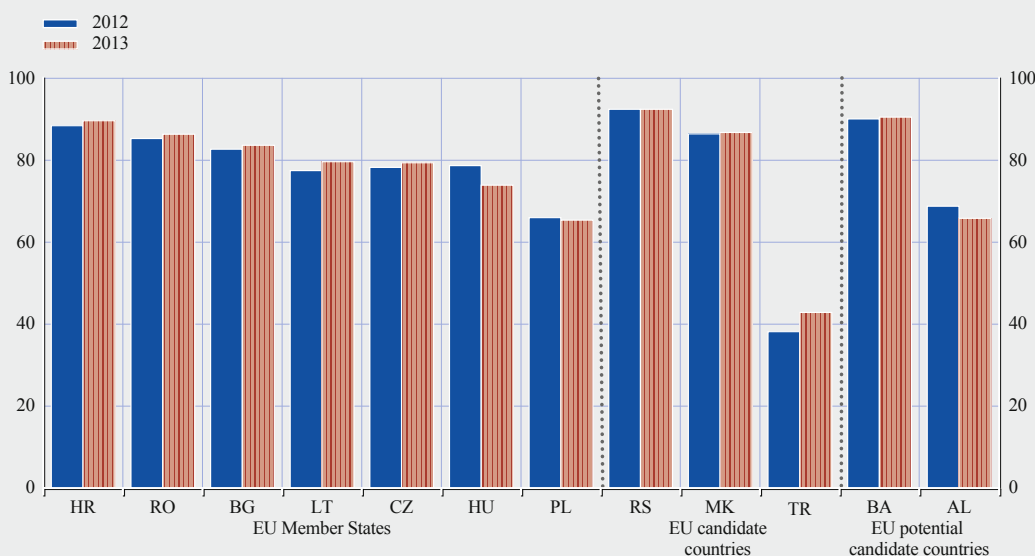
Sources: ECB, national central banks and ECB calculations.
Notes: The definition of deposits is not unified across CESEE countries and deposits indexed to the euro, or other foreign currencies are not included. In December 2013 the ratio of foreign currency indexed deposits to total deposits was 3.3% in Croatia, 0.6% in the former Yugoslav Republic of Macedonia and 0.9% in Serbia. Kosovo (in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence) and Montenegro are excluded due to the lack of their own currency. Outstanding amounts are recorded at the end of December in each year.

In general, loans denominated in foreign currencies could entail macroeconomic costs and pose risks to financial stability, specifically when economic agents face currency mismatches on their balance sheets.[15] Against this background, various CESEE countries have embarked on de-euroisation strategies in the wake of the financial crisis. In particular, the implementation of the ESRB Recommendation on lending in foreign currencies should help reduce the number of new foreign exchange loans in these economies. However, the outstanding stock of foreign exchange loans is likely to disappear only gradually over time. In this context, the ratio of euro-denominated loans to euro-denominated deposits still remains relatively high in many countries.[16]

4.3.3 RESULTS FROM THE OENB EURO SURVEY OF HOUSEHOLDS IN CENTRAL, EASTERN AND SOUTH-EASTERN EUROPE

Results from the OeNB Euro Survey suggest that CESEE households' trust in the euro has recovered markedly across all countries since spring 2012, and currently stands close to the levels observed prior to the onset of the sovereign debt crisis. In addition, the autumn 2013 Euro Survey results suggest that the euro is relatively "more trusted" than both the local currency and the US dollar in the majority of CESEE countries.

15 In order to address the risk stemming from lending in foreign currencies the European Systemic Risk Board published the Recommendation on lending in foreign currencies in October 2011 (see ESRB Recommendation on foreign exchange lending). In November 2013 the ESRB published a report assessing the implementation of the recommendation (see ESRB report on the implementation of the recommendation on foreign exchange lending). Further information can be found in The International Role of the euro, 2011, Box 3: "Risks and costs associated with foreign currency lending".

16 This should not, however, mask the fact that banks are subject to indirect credit risk on account of exposure to unhedged borrowers, in particular households.

Chart 17 Trust in the euro

a) EU Member States

— Czech Republic   — Bulgaria
···· Hungary   ···· Croatia
---- Poland   ---- Romania

b) Potential candidate countries

— Albania   ---- FYR Macedonia
···· Bosnia and Herzegovina   — Serbia

2007 1 Spring
2 Autumn
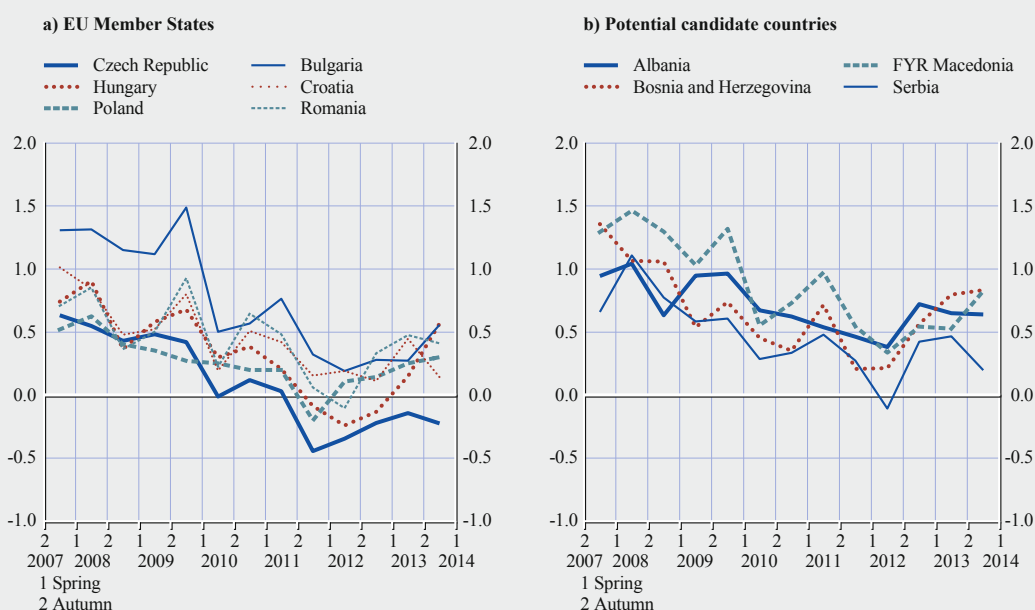
Source: OeNB Euro Survey.
Notes: Respondents were asked to what extent, on a scale from 1 (strongly agree) to 6 (strongly disagree), they agreed with the above statement. The normalised sample means ranged from -2.5 ("exclusively trust in the domestic currency") via 0 ("neutral") to 2.5 ("exclusively trust in the euro").

The OeNB Euro Survey of households has been conducted in ten CESEE countries since 2007 to shed light on the different dimensions, extent and drivers of euroisation. It collects information on the role of the euro for currency substitution, asset substitution and liability substitution as well as on households' sentiments, expectations and trust in institutions.[17]

The results from the OeNB Euro Survey suggest that households' trust in the euro temporarily decreased during the sovereign debt crisis, reaching historic lows in the autumn of 2011 and in spring 2012 (ECB 2013). However, trust in the euro has since recovered across countries (Chart 17). Households' trust in the euro in most countries is gradually returning to the levels observed prior to the onset of the sovereign debt crisis in spring 2010. In nine out of ten countries, the majority of households agreed that "the euro will be very stable and trustworthy over the next five years".[18]

This measure of "trust in the euro" is, of course, a very broad metric. It focuses on the long-term and encompasses monetary expectations as well as trust in (European) institutions (Beckmann and Scheiber, 2012). Previous research has shown that both factors play a role in euroisation.[19]

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17 For more details on the survey, recent publications and a summary of recent results see: http://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html

18 For Croatia, the decline from spring 2013 to autumn 2013 coincides with accession to the European Union, but is likely to be due to a change in the interviewer team, which led to a decline in the overall response rate and more pessimistic responses, even to questions unrelated to European issues.

19 Regarding monetary expectations, Ize and Levy Yeyati (2003) argue that households will opt for the foreign currency if they expect the volatility of inflation to be higher than the volatility of the real exchange rate. This "minimum variance portfolio" theory has been (re)confirmed empirically, e.g. by Levy Yeyati (2006) using aggregate data, and by Fidrmuc et al. (2013) using micro-data. Regarding institutions, De Nicolo et al. (2005) find that a lack of government efficiency and of the rule of law, as well as a notable incidence of corruption, is associated with higher levels of dollarisation.

Differences in exchange rate regimes across countries also play an important role in influencing the preferences for one currency against another.

In a recent in-depth analysis of deposit euroisation based on the Euro Survey data, Brown and Stix (2014) show that one factor driving households' preferences for euro deposits is their distrust in the stability of their domestic currency. They find that households which view their local currency as not trustworthy are around 10 percentage points more likely to prefer foreign currency deposits. By contrast, households which view the euro as not trustworthy are around 10 percentage points less likely to prefer foreign currency deposits.

Chart 18 shows households' trust in the euro in the autumn of 2013 in relation to their trust in the stability of the local currency and also to their trust in the US dollar, which could potentially act as an alternative safe-haven

Chart 18 Trust in the euro versus trust in domestic currencies and the US dollar

(percentages)

- Euro
- US dollar
- local currency

Sources: OeNB Euro Survey, Autumn 2013.
Notes: Values show the percent of respondents who agree to the statement that "Over the Next Five Years the respective currency will be a very stable and trustworthy currency". Respondents answering "Don't know" and "No answer" are excluded.

currency. Of course, the results are just a snapshot of current household sentiments, which should be interpreted with due caution. The chart shows, that in the autumn of 2013 the euro is relatively "more trusted" than the local currency in all countries except the Czech Republic.[20] However, in some countries the difference between trust in the euro and trust in the local currency is not very large. Compared with the US dollar the euro is relatively more trusted in seven out of ten countries. Nevertheless, the differences are again minor in most countries.

The relatively small differences in trust could suggest that even small changes in monetary expectations would have an impact on the portfolio choice of households and thus on overall euroisation levels. However, Brown and Stix (2014) find that while monetary expectations are an important determinant of deposit euroisation, network effects in savings also significantly contribute to the persistence of euroisation: when deposit substitution is widespread, other households also choose foreign currency deposits. This is a result of the fact that they consider a devaluation, which would hit savers in the domestic currency hard, more likely.[21] Furthermore, Brown and Stix find that deposit euroisation is still strongly influenced by households' experiences of the financial crises in the 1990s.

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20 The relatively high trust in the koruna compared with the euro in the Czech Republic is probably due to both historical reasons and more recent policies: the Czech Republic did not experience hyperinflation during transition and it was the first country to bring inflation below 20% back in 1994, successfully keeping it at low levels since then. In addition, the local currency has been appreciating against the euro steadily over the past years. The recent depreciation in November 2013 took place after the Euro Survey was conducted in the autumn of that year.

21 In addition, Valev (2012) argues that network effects in payments also affect households' preferences for foreign currency.
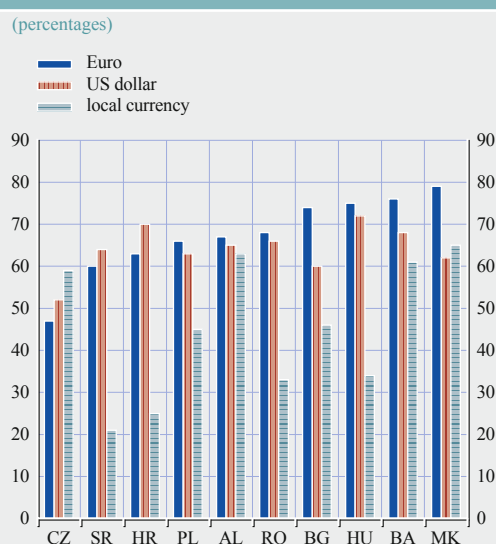
4.4 THE EURO IN OTHER MARKET SEGMENTS

4.4.1 THE USE OF THE EURO IN FOREIGN EXCHANGE MARKETS

Data on foreign exchange settlements in the CLS cash settlement system suggest that foreign exchange transactions in spot and derivative markets have remained broadly stable in 2013, notwithstanding some volatility (see Chart 19). CLS Bank International is the main settlement institution for foreign exchange transactions. The figures are therefore indicative of trends in global foreign exchange settlement.

With regard to the currency structure of total foreign exchange settlements, the US dollar was the counterpart in more than 90% of all currency exchanges, confirming its role as the main vehicle currency in foreign exchange markets. The use of the euro in foreign exchange settlement has picked up somewhat since mid-2013 after recording its lowest share ever in May 2013 (35.8%). Currently, the euro is a counterpart in 38.9% of all transactions. The temporary decline in the euro's share is mirrored by a temporary increase in the share of the Japanese yen in spring 2013 (from 16.9% in December 2012 to 19.4% in April 2013) before abating to its previous level of around 17% (see Chart 20). This pattern, which is also observed in global foreign exchange turnover figures (see Box 1), reflects increased market volatility in the yen exchange rate at the time of the Bank of Japan's April 2013 monetary policy announcement.

Chart 19 Total daily settlement volume in the CLS system

(monthly data in EUR billions per day)
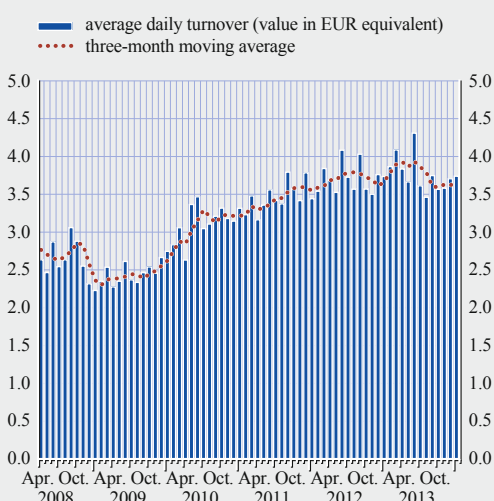
- average daily turnover (value in EUR equivalent)
- three-month moving average

Source: CLS.
Notes: The share of all currencies adds up to 200% reflecting that each settlement has two counterparty currencies. The latest observation is for January 2014.

Chart 20 Share of the euro and the Japanese yen in foreign exchange settlement

(percentage share)

- euro (left-hand scale)
- Japanese yen (right-hand scale)

Source: CLS.
Notes: The share of all currencies adds up to 200% reflecting that each settlement has two counterparty currencies. The latest observation is for January 2014.

Box I

THE ROLE OF THE EURO IN GLOBAL FOREIGN EXCHANGE TRADING – THE BIS TRIENNIAL CENTRAL BANK SURVEY

The euro's share in global foreign exchange trading and settlement remained broadly stable in 2013 compared with the end of 2012. The temporary dip in the euro's share in spring 2013 to its lowest ever level, as documented in the BIS Triennial Central Bank Survey, was considerably influenced by increased trading activity in Japanese yen following the Bank of Japan's announcement to loosen its monetary policy stance on 4 April 2013.

In July 2013 the BIS published its Triennial Central Bank Survey of turnover in foreign exchange markets. The 2013 triennial survey showed a sharp increase in foreign exchange market activity. Daily global foreign exchange market turnover rose to USD 5.3 trillion in April 2013, from USD 4.0 trillion in April 2010, which corresponds to an annual increase of 10.5% over this three-year period. The euro's share in global foreign exchange turnover fell from 39.1% in April 2010 to 33.4% in April 2013, its lowest level since the introduction of the euro (see Chart).

Currency composition of global foreign exchange trading

(as of April 2013; in percent)

Source: BIS Triennial Survey.
Note: The share of all currencies adds up to 200%, reflecting that each settlement has two counterparty currencies.

The decline in the euro's share can be attributed to two main factors. First, more structurally, the decline reflects the increase in the share of emerging market currencies over the past three years (from 8.9% in 2010 to 14.2% in 2013). The increasing importance of emerging market currencies, in particular of the Chinese renminbi, has also been documented in international trade finance operations, as seen in SWIFT data (see also Box 2). This increase also indirectly impacts the euro's share as, with the exception of central and eastern European currencies, emerging market currencies are mainly traded against the US dollar, strengthening the dollar's central role in foreign exchange markets relative to the euro. Second, the decline in the euro's share also stems from the specific timing of the survey. In particular, speculative trading activity in the yen currency pairs increased sharply in April 2013 following the Bank of Japan's announcement to engage in large-scale asset purchases over the coming years which evoked a sell-off of the Japanese currency. The fact that this episode coincided with the 2013 Triennial Survey contributed to a four percentage point increase (from 19.0% in 2010 to 23.0% in 2013) of the yen's share in global foreign exchange turnover.

Looking at different market segments and instruments, non-market-making financial institutions, such as institutional investors or hedge funds, have been the major source of foreign exchange turnover growth over the past three years. The recent decline in the share of market-making

financial institutions was largely driven by two factors. First, an increasing number of major dealing banks are able to match their customer trades directly on their own books, reducing the need to offload inventory imbalances and hedge risk via the traditional inter-dealer market. Second, more sophisticated electronic dealing technology which has promoted a more efficient liquidity aggregation and algorithmic trading has become accessible to a much broader range of market participants (including smaller banks, hedge funds and private individuals). Finally, the continuing decline in trading costs has made algorithmic high-frequency trading more profitable, adding to overall turnover in all segments of the market. Turning to instruments, spot trading has grown by 38% over the last three years to a daily turnover of USD 2.05 trillion which is now close to the USD 2.20 trillion daily trading in foreign exchange swaps (+27%). Finally, forwards (USD 680 billion; +43%) foreign exchange options (USD 337 billion; +63%) and currency swaps (USD 54 billion; +26%) make up a smaller fraction of the foreign exchange market.

Considering that the timing of the 2013 Triennial Survey most likely led to an overstatement of both the total daily foreign exchange turnover figure and the share of the Japanese yen in global foreign exchange markets, the BIS provided an extrapolation of the survey data for the period between April and October 2013 in its December 2013 Quarterly Review. According to these estimates, total foreign exchange trading has abated moderately, by USD 300 billion to USD 5.0 billion per day, since April 2013. At the same time, trading in the JPY/USD daily spot and derivative markets fell from USD 800 billion to USD 700 billion and trading in JPY/EUR halved to USD 90 billion per day after doubling in the period between winter 2012 and spring 2013. Finally, trading in the USD/EUR spot and derivative markets rebounded from USD 1.2 trillion to USD 1.3 trillion per day.

4.4.2 THE USE OF THE EURO IN INTERNATIONAL TRADE INVOICING

Available data on the use of the euro as an invoicing currency for extra-euro area exports and imports suggest that the share of the euro has increased slightly between 2012 and 2013, in particular in the services sector.

In 2013 the use of the euro in the settlement or invoicing of international trade flows increased compared with 2012. The share of the euro in the euro area's exports of goods rose by 0.5 percentage point to 67.2% (see Table A11 in the Statistical Annex). The share of the euro in the euro area's imports of goods, at 51.7%, was also higher in 2013 than in 2012, when it stood at 51.3%. Regarding services, the euro's share in international trade increased significantly, for both exports and imports of services (by 6.7 and 5.6 percentage points, respectively).

Taking a medium-term perspective, the euro's share in the euro area's exports of goods was, at 67.2%, significantly higher than in 2007 before the onset of the global financial crisis, when it stood at 59.6%. Similarly, the euro's share in the imports of goods recovered to levels markedly above those observed in 2007.

Notwithstanding these advances, aggregate changes for the euro area hide some developments in stressed euro area countries, for instance in most countries there has been a decline in the use of the euro as the invoicing currency for goods since the sovereign debt crisis. Bilateral trade statistics from the IMF suggest that this could be due to a reduction in the levels of trade these countries have with European trading partners, while their trade with the developing Asian and Middle Eastern countries has increased over this period, resulting mainly in an increase in the use of the US dollar

and of "other" currencies as the invoicing currency. This is also consistent with the finding that the growing presence of the Chinese renminbi in the international monetary system continued in 2013 (see Box 2). Stressed countries also tend to use the euro as invoicing currency the least, while the new euro area member states, which have a stronger trade link with CESEE countries, which in turn tend to trade in euro, show the largest shares for the euro as the invoicing currency.

The share of the euro as an invoicing/settlement currency in the external trade of most non-euro area EU Member States remained by and large stable in 2013 in relation to the 2012 figures (see Table A12 in the Statistical Annex).

THE USE OF THE CHINESE RENMINBI IN INTERNATIONAL TRADE FINANCING

The increased use of the Chinese renminbi in international trade financing continued in 2013, partly supported by a number of policy measures taken by the Chinese authorities.

The emergence of the Chinese renminbi as a currency used in international financial transactions is particularly visible in the area of trade financing. According to data from SWIFT, the share of the renminbi in traditional instruments of trade finance has risen sharply over the past few quarters.[5] In October 2013 the renminbi advanced to become the second most used currency for settling cross-border payments in trade finance, with a share of 8.7%, while the US dollar still accounts for the lion's share in worldwide trade finance.[6] In the period between April 2012 and October 2013 the share of the renminbi increased by 4.6 percentage points. Over the same period, the euro's share remained broadly stable (-0.4 percentage point), while the US dollar's share decreased by more than 3 percentage points.[7]

Currency shares in global trade finance transactions

January 2012
April 2012
October 2013
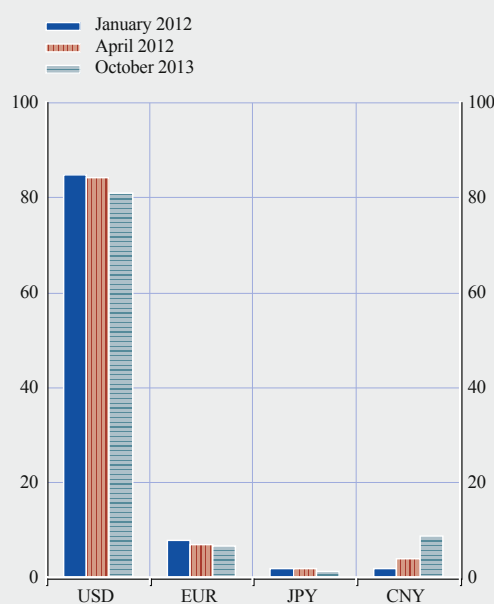
Source: SWIFT. RMB Monthly Tracker.
Note: Based on value of payments.

Recent measures taken by the Chinese authorities will further enable the international use of the Chinese renminbi. In particular, over the past year the authorities announced several steps to liberalise its external and financial sector. The country's broader financial reform agenda includes a gradual retreat from foreign exchange intervention towards a managed floating exchange rate regime, a softening of capital controls, the introduction of greater competition

1   See SWIFT, Renminbi Tracker November 2013.
6   Note that available data does not allow conclusions to be drawn on the currency of invoicing.
7   One of the top five countries using the Chinese renminbi for trade finance was situated in the euro area; the others were exclusively located in the Asia-Pacific region, according to SWIFT.

in the banking sector and a liberalisation of interest rates (by abolishing deposit rate ceilings). A step forward in this medium-term reform agenda was taken in April 2014 when the People's Bank of China announced a doubling of the fluctuation band of the Chinese renminbi from +/-1% to +/-2 per cent in relation to its central parity with the US dollar.

Moreover, offshore clearing facilities for trade in renminbi have been expanded, which could further facilitate its use in international financial transactions. Specifically, Frankfurt and London took steps to become clearing hubs in Europe after the People's Bank of China signed memoranda of understanding on renminbi clearing and settlement with the Deutsche Bundesbank and the Bank of England. Similarly, in order to foster the international use of the renminbi in trade, a network of bilateral swap agreements between the People's Bank of China and 25 foreign central banks with a total amount of more than USD 400 billion (as of May 2014) has been established.[8]

8 For an analysis of the link between trade finance and central bank swap lines, see CGFS (2014).

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SPECIAL FEATURES

A   DISSECTING FOREIGN INVESTMENTS IN EURO AREA BOND MARKETS DURING THE SOVEREIGN DEBT CRISIS[22]

At the peak of the euro area sovereign debt crisis (around the second half of 2011 and the first half of 2012) foreign investors retrenched from euro area bond markets. However, it is unclear to what extent these outflows reflected a general pattern of repatriation of overseas debt investments by global investors or a decision to disproportionately reduce foreign investments in euro area bond markets. Against this background, this special feature uses a standard gravity model of international portfolio flows to assess the extent to which the reduction in foreign investments in euro area bond markets was disproportionately large and whether this pattern changed after a number of policy measures were taken at the European level around the middle of 2012. It has been found that foreign investments in bond markets of stressed euro area countries were disproportionately small. In addition, this underinvestment cannot be fully explained by rating changes affecting the stressed countries. There is also evidence that this underinvestment disappeared after the announcement of the ECB's OMT programme. To the extent that euro area financial market fragmentation was driven by foreigners' disproportionate investments across euro area debt markets, this special feature finds that the impact of foreign investors has most likely been small. This largely reflects the limited quantitative significance of foreign portfolio debt investments in stressed countries and the absence of overinvestment in non-stressed economies. The temporary underinvestment in stressed euro area bond markets is consistent with the muted and temporary portfolio outflows from the euro area as a whole and the limited decline in the international use of the euro witnessed during the period of the euro area sovereign debt crisis.

I   INTRODUCTION

It has been well documented that the launch of Economic and Monetary Union in 1999 resulted in greater financial integration in the euro area and in an increase in foreign investments in euro area debt and equity markets which also contributed to the growing importance of the euro in the international monetary system (see Lane, 2006; Spiegel, 2009; Blank and Buch, 2007; ECB, 2008a; ECB, 2008b; and Papaioannou and Portes, 2008). This period of global financial integration[23] was temporarily halted and partly reversed with the onset of the global financial crisis in 2008, when gross portfolio flows dropped sharply on account of repatriation of capital by global investors in response to heightened volatility in financial markets during the post-Lehman period.

While several studies have examined international portfolio flows during the global financial crisis (see Fratzscher, 2012; Milesi-Ferretti and Tille, 2011; and Galstyan and Lane, 2013), few studies have so far looked at the patterns of international portfolio flows during the euro area sovereign debt crisis.[24] In this respect, it remains unclear to what extent the retrenchment by foreign investors from euro area debt markets at the peak of the sovereign debt crisis (Chart 21) continued to reflect the earlier tendency of global investors to repatriate their foreign portfolio debt from all destination countries across the globe; or to what extent these outflows reflected a systematic underinvestment of foreign investors in euro area debt markets more specifically, possibly driven by the high bond

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22 Prepared by R. Beck, G. Georgiadis and J. Gräb.

23 Financial globalisation in the pre-crisis era reflected a number of factors, including, in particular, a generalised financial deepening, a reduction in home bias and lower capital-flow restrictions (see Milesi-Ferretti and Tille, 2011).

24 Examining foreign portfolio flows to the euro area may shed light on the evolution of the international role of the euro because they are largely denominated in euro and thus involve the purchase of euro-denominated debt or equity by non-residents. At the end of 2013 the outstanding amounts of securities other than shares issued by euro area residents stood at €16,385.7 billion, of which €14,533.9 billion (around 89%) were denominated in euro.

market volatility in the euro area at the time or the perceived tail risk of a euro area break-up. All in all, the extent of retrenchment from the euro area as a whole appears limited and therefore raises the question of whether foreign investors essentially underinvested in stressed euro area countries, while at the same time tending to overinvest in non-stressed euro area countries. This approach of disproportionately adjusting investments across euro area debt markets points to the contribution that foreign investors may have made to euro area financial market fragmentation.[25]

Against this background, Section 2 of this special feature uses a standard gravity model of international portfolio investments to put the observed portfolio bond flows during the euro area sovereign debt crisis in the perspective of global investments that could have been expected from standard investment determinants. Building on these findings, Section 3 empirically analyses the role of sovereign credit ratings in the observed pattern of foreign portfolio investments in euro area bond markets during the sovereign debt crisis, and whether flows to the euro area differed systematically prior to and after the announcement of the ECB's OMT programme. This programme aimed to reduce the unjustifiably high credit risk in certain euro area countries that had emerged on account of the perceived tail risk of a euro area break-up.

Chart 21 Foreign demand for euro area longterm debt instruments

(flows in EUR billion; 12-month cumulated)
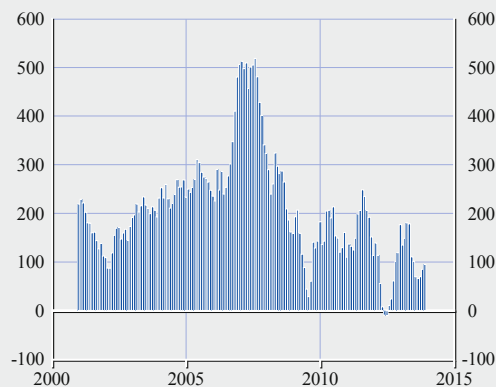
Source: Euro area balance of payments data.

2   A STANDARD GRAVITY MODEL OF INTERNATIONAL PORTFOLIO FLOWS

2.1 STYLISED FACTS

In order to benchmark international bond flows in the period of the euro area sovereign debt crisis, we use a standard gravity model of international financial investment. Since the seminal paper of Portes and Rey (2005), gravity models have been used extensively over the last ten years to model bilateral patterns in international financial investments (see, for example, Lane, 2006 and Spiegel, 2009). Ideally, one would need to resort to bilateral flow data, for example balance of payments data. However, euro area balance of payments data on portfolio flows do not provide information on the assets and liabilities of euro area countries by counterparty. Therefore, in this special feature data from the IMF's Coordinated Portfolio Investment Survey (CPIS) on bilateral gross portfolio debt and equity holdings are used. The annual dataset covers around 70 investor countries and over 200 destination countries for the period from 2001 to 2012.[26] Given that the euro area crisis

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25 The non-stressed euro area countries include Germany, France, the Netherlands, Austria, Belgium and Finland. The stressed euro area countries include Italy, Spain, Ireland, Greece and Portugal. Other euro area countries are excluded owing to insufficient data availability.

26 The CPIS has various limitations (see Lane and Milesi-Ferretti, 2006). First, data for some major economies, including China, are missing. Second, the CPIS only provides information on the proximate destination of foreign portfolio investments, distorting the data for financial centres; for this reason major financial centres, such as Luxembourg, Switzerland and offshore tax havens, are excluded from the analysis. Third, being based on the residence principle, the CPIS does not account for the possibility that a resident entity may be foreign-owned. This represents an important deficiency to understand trends in foreign investment. In fact, BIS cross border banking statistics point out that banks in several jurisdictions had been using subsidiaries outside of the euro area to obtain funding; this trend could be related with the sovereign debt crisis or just a consequence of the strategy of asset liability management. Finally, the CPIS does not distinguish between debt issued by public and private agents, including financial institutions and corporate issuers.

manifested itself in financial stress in debt markets, the analysis presented here is confined to long-term debt securities.[27]

In order to analyse foreign portfolio debt investments in the euro area during the crisis, we consider the period between the end of 2009 and the end of 2011. The reasons for choosing this start and end point are straightforward: first, foreign holdings of euro area debt instruments as of the end of 2009 should not have been affected by the looming euro area crisis by that point in time; second, considering the annual frequency of the CPIS data, holdings as of the end of 2011 should better reflect the cumulated impact of the sovereign debt crisis on foreign investors' euro area debt holdings than the end-2012 positions, which may have already been affected by the policy measures that were taken at the European and national levels during the second half of 2012, which

Chart 22 Major non-euro area countries' holdings of euro area debt in 2009

(volumes in USD billion)

Source: CPIS.
Note: The countries shown on the horizontal axis refer to investor countries.

included the launch of the banking union, the entry into effect of the ESM Treaty, the use being made by banks of the two three-year long-term refinancing operations offered by the ECB, the ECB's announcement of the modalities of the OMTs and various other measures taken by national governments.

Chart 22 suggests that as of the end of 2009 major non-euro area economies' holdings of euro area countries' debt were largely concentrated on non-stressed countries, while holdings of stressed countries' debt were relatively low. In fact, as of the end of 2009, France's holdings of stressed euro area countries' debt instruments (amounting to USD 745 billion) were almost 50% higher than the combined holdings of the United States, the United Kingdom and Japan (USD 510 billion). Moreover, (non-valuation-adjusted) changes in stock positions between 2009 and 2011 suggest that holdings of stressed euro area countries' debt by major non-euro area countries dropped by around USD 115 billion (20%). At the same time, holdings of non-stressed euro area countries' debt by major non-euro area countries increased by around 3% (USD 38 billion).[28]

27 The CPIS also includes information on bilateral equity and short-term debt asset and liability positions. However, foreign equity holdings might be driven by factors that are different from those that determine debt securities holdings. Short-term debt securities are not analysed because the available information in the CPIS is considerably sparser across countries than for long-term debt securities. By definition, the CPIS does not contain data on interbank markets which are covered under "Other investment flows" in the balance of payments data but which also showed very clear signs of financial stress.
28 By comparison, holdings of stressed euro area countries' debt in non-stressed economies plunged by almost 50%, equivalent to around USD 600 billion.
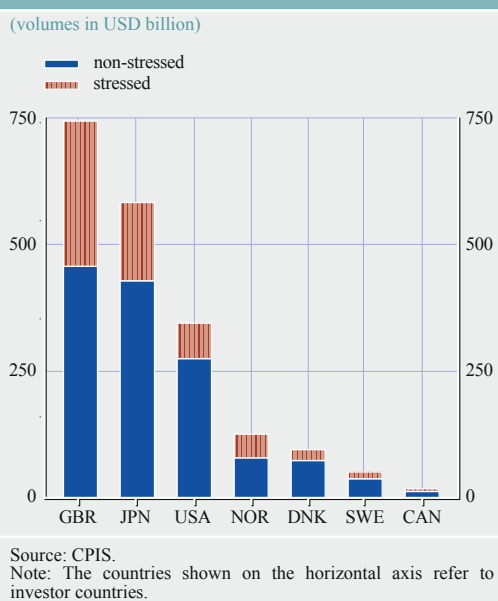
2.2 EMPIRICAL SPECIFICATION

In line with the literature on international portfolio flows, the variation in changes in bilateral portfolio debt holdings between the end of 2009 and the end of 2011 across 53 investor countries and 113 destination countries is examined based on the following gravity model (see Galstyan and Lane, 2013 and Lane, 2006):

$$\Delta \ln(Stock_{ij0911}) = \alpha_i + \alpha_j + \beta_1 \ln(Stock_{ij09}) + \beta_2 \ln(Stock_{ij09})^2 + \beta_3 \ln(Imp_{09ij}) + \beta_4 \ln(Dist_{ij}) + \beta_5 Lang_{ij} + \beta_6 Z_{ij} + \varepsilon_{ij} \qquad (1)$$

where $\Delta \ln(Stock_{ij0911})$ is the log change of country i's holdings of country j's long-term debt between the end of 2009 and the end of 2011; $\alpha_i + \alpha_j$ are investor and destination country fixed effects, respectively; $\ln(Stock_{ij09})$ is country j's debt held by country i at the end of 2009; $\ln(Imp_{ij09})$ is the value of bilateral imports of country i from country j in 2009; and $Dist_{ij}$ and $Lang_{ij}$ are standard gravity variables that control for the distance between countries i and j and whether they share a common language. Finally, Z_{ij} is a vector of dummy variables, which equals one for specific country pairs. The latter are included in order to test whether changes in portfolio debt holdings between specific country groups during the euro area sovereign debt crisis were disproportionate relative to what standard gravity variables would predict.

The investor and destination country fixed effects capture common portfolio dynamics (see Galstyan and Lane, 2013) and, importantly, multilateral resistance terms (Okawa and van Wincoop, 2013). Specifically, α_i controls for uniform shifts in investor country i's holdings of foreign debt assets, thereby capturing exogenous changes in a country's net foreign asset position vis-à-vis all destination countries. By comparison, α_j controls for uniform shifts in the destination country j's foreign debt liability position, thereby capturing valuation effects that arise as a result of exchange rate and asset price movements.[29, 30]

2.3 EMPIRICAL RESULTS

The regression results are reported in Table 3. The regression in column (1) tests whether foreign investors have disproportionately adjusted their investment in euro area bond markets during the sovereign debt crisis. Specifically, the dummy variable "EA" equals one if the investor country is a non-euro area economy and the destination country is a euro area country; the coefficient estimate is negative and statistically significant, suggesting that in the period between the end of 2009 and the end of 2011 foreign investors underinvested in euro area bond markets relative to the predictions of a gravity model. In fact, foreign investors were underweighted in euro area debt securities by around 20% relative to average investments across all country pairs over this period.[31]

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29 Note that exchange rate effects are captured since CPIS data are reported in US dollar for all countries. This notwithstanding, $=$ is unlikely to capture all valuation effects (because of differences in portfolio composition) and will capture variations in factors other than valuation effects (such as the average change in global investors' perception of country j).

30 The specification outlined in equation (1) may lead to a misinterpretation of the coefficients of the dummy variables, Z_{ij}. In particular, for each dummy variable that is included in equation (1) one investor or destination country fixed effect is dropped from the regression as a result of multicollinearity. This changes the benchmark group, i.e. the group against which the comparisons are made, and hence complicates the interpretation of the respective dummy variable. To overcome this issue, the regression outlined in equation (1) is replaced by a two-stage estimator. In the first-stage regression, the dependent variable is regressed on the investor country and destination country fixed effects only, which removes aggregate common factors from the data: $\Delta \ln(Stock_{ij0911}) = \alpha_i + \alpha_j + \varepsilon_{ij}$ The residuals from this regression, $\hat{\varepsilon}_{ij}$, are then used to estimate the second-stage regression: $\hat{\varepsilon}_{ij} = \beta_1 \ln(\widehat{Stk}_{ij09}) + \beta_2 \ln(\widehat{Stk}_{ij09})^2 + \beta_3 \ln(\widehat{Im}_{ij09}) + \beta_4 \ln(\widehat{Dst}_{ij}) + \beta_5 \widehat{Lng}_{ij} + \beta_6 Z_{ij}$ The regressions are estimated using generalised least squares. Robust standard errors are reported.

31 Note again, that one important caveat about these results is that the model specification is unlikely to capture all valuation effects (because of differences in portfolio composition) and will capture variations in factors other than valuation effects.

The regression reported in column (2) tests whether the observed underinvestment by foreign residents in euro area bond markets occurred uniformly across stressed and non-stressed euro area countries, or whether non-euro area investors potentially overinvested in non-stressed euro area countries by rebalancing away from stressed euro area countries towards non-stressed euro area countries. The dummy variable "Non-stressed", which equals one if the investor country is a non-euro area economy and the destination country is a non-stressed euro area country, is statistically insignificant, suggesting that there is no evidence of overinvestment by foreign investors in non-stressed bond markets. By contrast, the coefficient estimate of the dummy variable "Stressed", which equals one for non-euro area investor countries and stressed euro area destination countries is negative and statistically significant. The results thus suggest that underinvestment by foreign

Table 3 Regression estimates of changes in long-term debt

	(1)	(2)
Stock in 2009	-0.266***	-0.266***
	(0.024)	(0.024)
Stock in 2009 ^{2}	0.029***	0.028***
	(0.007)	(0.007)
Imports in 2009	0.105*	0.103*
	(0.058)	(0.058)
Distance	-0.287***	-0.284***
	(0.046)	(0.046)
Common language	0.304***	0.306***
	(0.113)	(0.113)
EA	-0.225***	
	(0.079)	
Non-stressed		-0.164
		(0.104)
Stressed		-0.276**
		(0.123)
Observations	1526	1526
Marginal-R2	0.21	0.21

* p<0.10, ** p<0.05, *** p<0.01
Notes: Standard errors in parentheses. The marginal R^2 captures the explanatory power of the bilateral regressors that is not explained by the investor and destination country fixed effects. Estimated by GLS.

investors in euro area debt markets has been confined to stressed euro area countries and that there is little evidence that foreign investors have engaged in intra-euro area rebalancing. To the extent that euro area financial market fragmentation was driven by foreigners' disproportionate investments across euro area debt markets, these findings thus suggest that their contribution was small: first, foreign investors' exposure to stressed countries was limited, as shown in Section 2.1; and second, there is little evidence of a parallel overinvestment in non-stressed economies.

3   IMPACT OF SOVEREIGN RATING CHANGES AND PORTFOLIO ASYMMETRIES AFTER OMT

The observed underinvestment by foreign investors in euro area bond markets during the sovereign debt crisis could presumably be attributed to perceptions of heightened sovereign credit risk in stressed euro area countries (see Box). Against this background this section analyses the extent to which rating changes explain the disproportionate levels of portfolio debt investments in the euro area during the sovereign debt crisis, as documented in Section 2. The CPIS data cannot be used to examine this question, as their annual frequency makes it difficult to include cyclical fundamentals, such as ratings, in the regression. Therefore, data on net euro area bond purchases by foreign residents provided by the US Treasury and the Japanese Ministry of Finance have been used.[32] While representing a considerably narrower sample in terms of the nationality of foreign investors, these data are available at a much higher frequency.[33]

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32 The data from the US Treasury cover monthly net foreign bond purchases by US residents. Similarly, the data from the Japanese Ministry of Finance cover net foreign bond purchases by Japanese residents.

33 The data have been transformed so that positive numbers reflect inflows to destination countries. Euro area countries are treated individually in the regressions for Japanese data and aggregated into stressed and non-stressed blocks for the US data in order to account for secular trends in net bond purchases in some individual non-stressed euro area countries.

THE ROLE OF SOVEREIGN CREDIT RATINGS FOR THE BEHAVIOUR OF FOREIGN INVESTORS DURING THE EURO AREA CRISIS

The observed underinvestment by foreign investors in euro area bond markets during the sovereign debt crisis could presumably be attributed to perceptions of heightened sovereign credit risk in stressed euro area countries. Specifically, for some foreign investors downgrades of the sovereign credit rating of several stressed euro area countries might have forced them to reduce their exposure to these economies as minimum rating requirements were no longer met. This stylised mechanical behaviour by foreign investors – which is more typical of institutional investors – might have been a result of regulation and market conventions (Basel Committee on Banking Supervision, 2009), and has been documented as one reason for the pro-cyclical behaviour of some institutional investors during the crisis (Papaioannou et al., 2013).[22]

In order to illustrate the possible effects of rating downgrades on foreign portfolio debt investments in the euro area, two alternative stylised investment strategies have been considered. First, a global investor pursuing a portfolio rebalancing strategy which is subject to minimum rating requirements is considered.[23] This strategy involves the investor keeping pre-crisis portfolio weights unchanged by responding to changes in market prices and exchange rates with rebalancing flows. For example, if the market price of a certain asset in the portfolio rises (or falls), the investor would sell (or buy) this asset so that its portfolio weight once again corresponds to the initial weight. In addition, it has been assumed that the investor applies a simple rating rule to his entire portfolio, requiring all assets held to be rated above a certain threshold. The rating threshold has been set to AA-, implying that several stressed euro area countries would no longer have been eligible for investments at some point during the sovereign debt crisis. As shown in Chart A (a), under this rebalancing strategy an investor would have rebalanced away from stressed euro area countries towards non-stressed euro area countries in late 2011 and early 2012, keeping the exposure to the euro area as a whole unchanged.

The second investment strategy considered is a simple buy-and-hold strategy, which is subject to the same rating requirements as the rebalancing strategy. This strategy involves the investor holding all debt securities until maturity (which is assumed to lie outside the time horizon under consideration) unless a debt security no longer meets the minimum rating requirement. As shown in Chart A (b), under this strategy the investor would have sold bonds of euro area stressed countries as well, but would not have increased its exposure to non-stressed euro area countries. As a result, under the buy-and-hold strategy the investor's exposure to the euro area as a whole would have decreased moderately during late 2011 and early 2012.

Comparing the capital flows generated by the two stylised investment strategies to actual euro area balance of payments data on portfolio debt liabilities suggests that a simple buy-and-

22 For example, under the Basel II framework, the standardised approach for assessing credit risk allows the application of zero-risk weights to claims on highly rated sovereigns (AAA to AA-). In addition, only investment-grade assets are included in certain government bond indices which are often tracked by investment funds.

23 Under such a strategy, the investor is assumed to hold a global debt portfolio composed of government securities in US dollars, euro, Japanese yen, pounds sterling and Swiss francs. For illustrative purposes, the investor's initial asset allocation is assumed to correspond to the currency composition of global foreign exchange reserves as at the end of 2007, with allocations to euro area countries corresponding to their weight in euro area debt markets. As a result, the exposure of the investor to stressed euro area countries is assumed to have been limited to around 9% of total assets, whereas the exposure to non-stressed euro area countries is assumed to have been around 17%. Moreover, it is assumed that securities denominated in these currencies have been issued by the respective governments. In the case of the euro, it is assumed that the portfolio weights reflect the market size of outstanding debt securities by euro area country.

Chart A Hypothetical euro area capital flows for a global investor with a stylized investment strategy

(capital flows in USD billions)

a) Investment strategy 1: Portfolio rebalancing with minimum rating requirements

— euro area
····· non-stressed euro area countries
- - - stressed euro area countries

b) Investment strategy 2: Buy-and-hold with minimum rating requirements

— stressed euro area countries
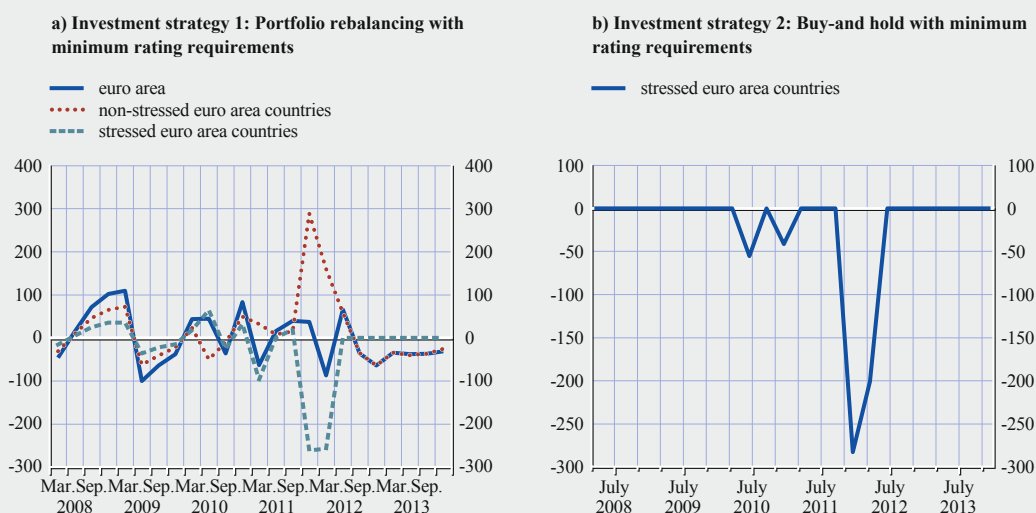
Sources: ECB, IMF, Bloomberg, Datastream and ECB calculations.
Notes: It is assumed that the market prices and exchange rates change monthly and that the investor always rebalances the portfolio at the end of each quarter. Changes in market prices have been approximated with the price change of ten-year benchmark government bonds. Hypothetical capital flows are scaled for illustrative purposes to a total portfolio size of USD 6,700 billion, corresponding to total foreign exchange reserves as at the end of 2007. Under the second investment strategy, flows to non-stressed euro area countries are zero, i.e. outflows from the euro area correspond to those out of stressed countries.

hold strategy subject to minimum rating requirements can replicate outflows from euro area debt markets relatively well – at least regarding their timing (Chart B).[24] A portfolio rebalancing strategy which is subject to minimum rating requirements appears to be a less accurate approximation of the actual behaviour of foreign investors as it generates only marginal outflows from the euro area as a whole in late 2011 and early 2012.

Overall, these conclusions are consistent with the empirical findings presented in Section 2, namely that there is evidence for underinvestment by foreign investors in stressed euro area debt markets during the sovereign debt crisis, in particular in late 2011 and early 2012, but no evidence for overinvestment in non-stressed euro area countries during the same period.

Chart B Hypothetical and actual capital flows compared

(USD billions)

— buy-and-hold with min. rating
····· euro area portfolio liabilities (right-hand scale, b.o.p. flows)

Sources: ECB, IMF, Bloomberg, Datastream and ECB calculations.

24 Some investors – in particular central banks – appear to have pursued at least some portfolio rebalancing, as the share of euro-denominated assets in global foreign exchange reserves as reported in the IMF's COFER database remained more vstable than under the buy-and-hold strategy with minimum rating requirements.

Columns (1) and (2) in Table 4 report results from regressions of net bond purchases (scaled by the destination country's GDP) np_{it} by Japanese and US residents in a standard gravity type model as already examined in Section 2; the regressions again include dummy variables EA_i^j indicating stressed and non-stressed euro area countries, the sum of the change of Moody's, Fitch and S&P sovereign credit ratings $\Delta ratings_{i,t-1}$, as well as total net foreign bond purchases by US and Japanese investors across all destination countries $totpurch_{it}$, which capture the effects of global variables, such as risk aversion.[34]

$$np_{it} = \alpha + \beta_1 \ln(Stock_{i09}) + \beta_3 \ln(Imp_{i09}) + \beta_4 \ln(Dist_i) + \beta_5 Lang_i + \beta_6 totpurch_{it} + \beta_7 \Delta ratings_{i,t-1}$$
$$+ \beta_8 EA_i^{stressed} + \beta_9 EA_i^{non\text{-}stressed} + \varepsilon_{it} \qquad (2)$$

The regressions are run separately for the data from the US Treasury and for the Japanese Ministry of Finance in order to allow for differences in the behaviour of the corresponding foreign investors. The coefficient estimates suggest that a rating downgrade of a destination country was indeed associated with a reduction of net foreign bond purchases by US and Japanese residents, even though the coefficient estimate is statistically significant only for the latter.[35] Moreover, in line with the results from Section 2, both Japanese and US investors underinvested in stressed euro area debt markets during the euro area sovereign debt crisis, as reflected by the statistically significant and negative dummy variable for stressed euro area countries. Most importantly, this result persists even though changes in sovereign ratings are controlled for. Thus, foreign investors' underinvestment in stressed euro area countries during the sovereign debt crisis cannot be fully accounted for by changes in the countries' sovereign ratings.

Table 4 Regression estimates for net foreign bond purchases by US and Japanese residents

	(1) US TICS, pre OMT	(2) JP MoF, pre OMT	(3) US TICS, post OMT	(4) JP MoF, post OMT
Stock in 2009	0.001	0.013**	-0.005	-0.002
	(0.005)	(0.005)	(0.007)	(0.002)
Imports in 2009	0.004	-0.021*	0.012	0.005
	(0.007)	(0.011)	(0.011)	(0.005)
Distance	-0.051***	-0.009	-0.025*	-0.000
	(0.011)	(0.011)	(0.013)	(0.007)
Common language	-0.000		0.015	
	(0.022)		(0.023)	
Total bond purchases	0.797*	0.350***	0.537+	0.410*
	(0.443)	(0.120)	(0.392)	(0.207)
Lagged change in rating	-0.105	-0.220*	0.349	0.118
	(0.135)	(0.115)	(0.461)	(0.267)
Non-stressed	0.000	-0.013	0.039+	0.059*
	(0.013)	(0.020)	(0.023)	(0.031)
Stressed	-0.035***	-0.088***	0.014	0.005
	(0.011)	(0.026)	(0.020)	(0.016)
Constant	0.380***	-0.002	0.219*	-0.007
	(0.122)	(0.117)	(0.130)	(0.094)
Observations	925	823	615	541
Adjusted R-squared	0.04	0.12	0.02	0.05

Notes: Standard errors in parentheses
+ p<0.2, * p<0.1, ** p<0.05, *** p<0.01

34 Higher values reflect better ratings. The change in ratings is included in lagged terms in order to alleviate possible endogeneity. The results are robust to the inclusion of additional cyclical fundamentals, such as interest rate differentials, industrial production growth and changes in political risk.
35 Note that the model specification does not take into account that rating effects may be non-linear. For instance, the impact of a rating change (by one notch) that implies the loss of investment grade may be significantly larger than any other rating change by one notch.

Existing evidence suggests that the policy measures taken by the ECB during the sovereign debt crisis, including the two three-year long-term refinancing operations and the announcement of the modalities of OMTs, the launch of the banking union, and the entry into effect of the ESM Treaty have contributed to alleviating euro area financial market fragmentation and effectively eliminating the perceived tail risk of a euro area break-up (see Altavilla, Giannone and Lenza, 2014; De Santis, 2014; and ECB 2013). Against this background, columns (3) and (4) in Table 4 report the results from regressions for the time period from the announcement of the OMTs until May 2013, asking whether it also helped to cease the underinvestment by foreign investors in euro area debt markets. The results suggest that neither Japanese nor US investors continued to underinvest in stressed euro area countries after July 2012. Moreover, the (marginally) statistically significant and positive coefficient estimate for the non-stressed euro area country dummy variable suggests that Japanese and US investors seem to have somewhat overinvested in the portfolio debt of non-stressed euro area countries.

4   CONCLUSION

This special feature examines the behaviour of foreign investors during the euro area sovereign debt crisis based on a standard gravity model, and finds that international investors significantly underinvested in stressed euro area countries' debt markets during the peak period of this crisis. This underinvestment cannot be fully accounted for by changes in sovereign credit ratings of the countries concerned. To the extent that euro area financial market fragmentation was influenced by foreigners' underinvestment in euro area stressed countries, this special feature finds that their impact was small and disappeared after the middle of 2012.

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B   RESERVE DIVERSIFICATION AND GLOBAL FOREIGN EXCHANGE MARKETS: AN OVERVIEW OF THE LITERATURE[36]

The global financial crisis has reignited discussions as to whether emerging market central banks – such as large reserve holders in emerging Asia or oil-exporting economies – might diversify their foreign exchange reserves away from traditional reserve assets. These discussions have in turn fuelled speculation among market observers as to the extent of the potential impact that reserve diversification – if any – could have on global foreign exchange markets. As a follow-up to last year's report, which examined the emergence of non-traditional reserve currencies and that of the Chinese renminbi as an international currency, this special feature aims to provide an overview of the academic literature on the global financial impact of official reserve diversification. It discusses the multifaceted concept of official reserve diversification, examines the main theoretical channels through which its impact may unfold and reviews the empirical evidence available. The special feature shows in particular that the impact of reserve diversification on global foreign exchange markets is not mechanical, but that it depends on an array of factors, such as the degree of substitutability between reserve assets and related changes in interest rates; the endogenous adjustment of the current account in the medium term; and, importantly, whether private investors – whose portfolio holdings are even larger than those of central banks – regard diversification as a credible signal that prompts them to alter the composition of their own holdings.

I   INTRODUCTION

The global financial crisis has reignited discussions as to whether emerging market central banks – such as large reserve holders in emerging Asia or oil-exporting economies – might diversify their foreign exchange reserves away from traditional reserve assets, including US dollar-denominated financial assets. Some observers – such as Frankel (2013) and Prasad (2014) – stress that the crisis has underscored the US dollar's resilience as a reserve currency, insofar as its share in global foreign exchange reserves has remained stable despite the downgrade of US sovereign debt by one rating agency. Others suggest that the crisis might induce reserve-hoarding countries to diversify their holdings into other currencies, such as the euro, owing to renewed confidence in the long-term stability of the euro area, as well as into non-traditional reserve currencies, such as the Australian dollar and Canadian dollar, and the Chinese renminbi, if and when it becomes fully convertible (see ECB, 2013, for additional evidence). These discussions have fuelled speculation among market observers as to the extent of the potential impact that reserve diversification – if any – could have on global foreign exchange markets.[37]

This special feature aims to provide an overview of the academic literature on the global financial impact of reserve diversification. A well-established feature of the composition of foreign exchange reserves is its persistence over time, which arises from the network externalities and lock-in effects that characterise international reserve currency status.[38] Another conventional consideration is that

36 Prepared by Arnaud Mehl.
37 For instance, Goldman Sachs staff, based on a hypothetical scenario in which emerging market central banks would revert to their pre-crisis allocations in euro, estimate that the latter may lead to a sizeable appreciation of the euro exchange rate, to 1.88 USD/EUR (see Goldman Sachs, "What if reserve managers aimed for pre-crisis EUR allocations?", *Global Markets Daily*, 21 October 2013). Such estimates are overly simplistic, however. They are based on the assumption that changes in reserve allocations materialise solely via valuation effects. They hence assume that there is, for example, no endogenous response in bond yields, no medium-term effect on the current account, and no changes in allocations of private sector portfolios. Taking into account these effects could change the estimates substantially (and potentially even reverse the results).
38 Such inertia can emerge from optimal reserve composition models that incorporate precautionary motives (or other reserve holding motives) as well as specific currency unit characteristics. The currency composition of reserves tends to be driven by determinants which change slowly over time, including trade invoicing practices, the currency composition of external debt, exchange rate anchoring, inflation developments, financial market depth as well as trade and financial openness.

changes to the composition of foreign exchange reserves are likely to be hampered by the fact that large reserve holders are presumed to be reluctant to sell significant amounts of assets denominated in a particular currency, out of concerns about incurring valuation losses on their existing holdings.

The academic literature suggests that reserve diversification is, in fact, a multifaceted concept. It may take three distinct forms – namely passive, active and stabilising – although their relative importance is difficult to identify empirically. It is especially active diversification – i.e. when central banks buy (or sell) currencies that are appreciating (or depreciating) – which has raised concerns among observers. In theory, its impact on global foreign exchange markets is not mechanical but depends on an array of factors. These include the degree of substitutability between reserve assets and related changes in interest rates, the current account's adjustment over the medium-term, and whether private investors – whose portfolio holdings are even larger than those of central banks – regard diversification as a credible signal that prompts them to alter the composition of their own holdings.

The historical and empirical evidence offers additional insights into the actual impact of reserve diversification on global foreign exchange markets. It suggests that concerns over the destabilising impact of reserve diversification on financial markets are primarily rooted in the experience of the interwar period, when uncooperative policies led to the collapse of the gold standard. Moreover, the demise of the pound as a major reserve currency in the early 1970s shows that a major rebalancing in reserve currency shares does not necessarily occur through the liquidation of existing reserve holdings, but rather through the acquisition of additional (in this case dollar-denominated) assets. The developments in the later part of the 1970s, when concerns surfaced about the dollar's future as a reserve asset, suggest that these concerns did not lead to large sales of dollar assets, but instead to concerted efforts to stabilise the dollar. In line with this, several empirical studies on the more recent period find that reserve diversification has been stabilising, and that central banks tend to lean against the wind in managing their reserve holdings, which also helps to explain the relative stability of currency shares in global reserve holdings.

Finally, the resilience of the share of the US dollar in global foreign exchange reserves since the global financial crisis suggests that if the international monetary system were to evolve in the medium term, this would most likely be towards multi-polarity – with several international currencies playing consequential roles – rather than towards the replacement of the US dollar by another unit as the leading international currency.

Section 2 of this special feature reviews the alternative definitions of reserve diversification. In Section 3, the main theoretical channels of the impact of diversification on global foreign exchange markets are presented. The historical evidence and empirical evidence available are examined in Section 4, while Section 5 provides concluding remarks.

2   RESERVE DIVERSIFICATION AS A MULTIFACETED CONCEPT

In theory, reserve diversification can take three distinct forms (see, for example, Truman and Wong, 2006; and Wong, 2007). Passive diversification refers to changes in the currency composition of reserve holdings that are due not to actual sales or purchases of foreign assets, but to valuation effects on existing holdings. These valuation effects arise from capital gains and losses, interest payments or exchange rate changes. They can be sizeable, notably if reserve holdings are large. Stabilising diversification in turn refers to situations when central banks lean against the wind and

intervene in foreign exchange markets against the market trend (i.e. they purchase a currency when it depreciates, or sell it when it appreciates). This often occurs when central banks seek to stabilise or anchor their exchange rate relative to a specific foreign currency or basket of foreign currencies. Active diversification refers to the opposite strategy: central banks alter the currency composition of their holdings according to the direction of the market trend, hence further adding pressure on foreign exchange markets in this direction. It is especially active diversification away from the US dollar – and its alleged potential impact on global financial markets – which has initiated discussions among observers. As Truman and Wong (2006) explain, one concern is that significant changes in the currency composition of major reserve holders in emerging market economies would trigger marked exchange rate adjustments, which, in turn, would have adverse spillover effects on other financial market segments, along with possible macroeconomic effects.

Empirically identifying the relative importance of passive, stabilising and active diversification is challenging. Available data on the currency composition of foreign exchange reserves are reported on a value basis, which incorporates all three forms of diversification. The data include changes which are due to both movements in major exchange rates and asset prices, as well as to actual official transactions in foreign exchange markets. Reserve changes therefore need to be adjusted for valuation effects to distinguish between developments that are due to prices and those that are due to quantities. This exercise requires an array of assumptions and is thus subject to some degree of uncertainty (see, for example, the discussion in Dominguez, Hashimoto and Ito (2012) for an attempt to estimate valuation effects as determinants of reserve holding developments in emerging economies during the early phase of the global financial crisis).[39] Nevertheless, empirically identifying the effect of active, passive or stabilising diversification remains difficult. Since official transactions in foreign exchange markets do not occur randomly, but are always a reaction to conditions in these markets, the direction of causality between official transactions and exchange rate movements is indeed unclear (Engel, 2013). In other words, do exchange rate movements induce central banks to diversify their reserves? Or does diversification cause movements in exchange rates, in anticipation of the latter? This simultaneity bias is particularly important in the literature on foreign exchange interventions – where central banks are typically presumed to lean against the wind – but no satisfactory solution has emerged so far from this literature (ibid).[40]

3 THEORETICAL CHANNELS OF THE IMPACT OF RESERVE DIVERSIFICATION ON GLOBAL FOREIGN EXCHANGE MARKETS

In portfolio balance models, the impact of reserve diversification on global foreign exchange markets depends on the degree of substitutability between reserve assets in particular. A key assumption made in these models (see, for example, Branson and Henderson, 1984) is that domestic and foreign bonds are imperfect substitutes. This implies that expected yields on domestic and foreign bonds – adjusted for expected exchange rate movements – are not necessarily equal.[41]

[39] A casual inspection of the data on the currency composition of global foreign exchange reserves reported in this report suggests that central banks pursue mixed strategies, since current weights remain broadly – albeit not completely – stable over time.

[40] For instance, some studies have used high-frequency data to identify their "true" impact (i.e. with a view to minimising noise arising from other market-moving factors, such as macro data releases) at the cost of being mute on the long-term effect of interventions. Some studies use lagged interventions, but lose sight of their contemporaneous effects (which are presumably important). Finally, it is very difficult to find a valid instrument to deal with the simultaneity bias since almost any variable that is correlated with interventions will also be correlated with economic determinants of the exchange rate.

[41] In other words, international investors may regard domestic and foreign bonds as having different characteristics other than their currency of denomination (such as liquidity or usability as an international reserve unit) and may regard one of the bonds as being riskier than the other. They will hence require a premium to hold this bond. By contrast, there is no distinction between domestic and foreign bonds in monetary models of exchange rate determination, and domestic and foreign assets are modelled as perfect substitutes.

In simple portfolio balance models with three regions (the United States, the euro area and emerging markets) and three currencies (two reserve currencies, i.e. the US dollar and the euro, and a third domestic currency), a change in the currency composition of the reserve holdings of emerging markets – initially assumed to be heavily tilted towards the US dollar – can be interpreted as a change from a situation in which the world investor base has an extreme preference for US dollars to one in which there is a stronger preference for the euro (see also Blanchard, Giavazzi and Sa, 2005, for a related discussion). Such changes in preferences lead to a decrease in the demand for US dollars and to an increase in the demand for the euro. As the relative demand for the euro increases, it leads to an appreciation of the latter vis-à-vis the US dollar, everything else being equal. But the magnitude of the euro's appreciation vis-à-vis the US dollar may be less pronounced if investors consider euro and US dollar-denominated bonds as imperfect substitutes and US yields react to changes in reserve holdings. If the risk premium increases significantly together with US yields, the appreciation of the euro may even be reverted.[42] In portfolio balance models with three or more currencies the extent of this effect, and whether bonds denominated in different currencies are substitutes or complements, depends on an array of factors, such as the correlation of their respective returns and relative variance magnitude (Branson and Henderson, 1984, p. 78).

More sophisticated models suggest that distinguishing between short-term and long-term effects, as well as portfolio and current account effects, is also important. An important study in this respect is by Blanchard, Giavazzi and Sa (2005), who use a portfolio balance framework to model the joint dynamics of the current account and the exchange rate, while allowing for imperfect asset substitutability and valuation effects. They show that a three-country version (the United States, the euro area and China) of their model sheds light on the impact of a revaluation of the Chinese renminbi on the euro's exchange rate. In this model, if the renminbi appreciates against the US dollar, the euro also strengthens against the US dollar, due to portfolio and trade effects. As to the portfolio effect, the revaluation of the renminbi shifts Chinese demand away from US dollar-denominated assets towards euro-denominated assets, which puts upward pressure on the euro's exchange rate. In terms of the trade effect, the revaluation induces US demand to shift away from Chinese goods (which have become more expensive) towards euro area goods, which also contributes to a strengthening of the euro.[43] In a similar vein, the model helps to shed light on marked differences between the short-term and long-term impact of a change in the composition of China's reserves away from the US dollar. In line with a portfolio effect, a decline in the share of the US dollar in China's reserves leads to an initial depreciation of the US dollar and to an appreciation of the euro. In the longer run, however, the US current account balance improves, together with the US net external debt position. This enables the US dollar to gradually strengthen and eventually leads to a smaller depreciation.[44] Simulations based on a calibrated version of the model (in which parameter values are taken as of 2005) suggest that changes in the composition of China's reserves – if they are significant – can have a large impact on the US dollar exchange rate. Assuming a decline in the share of the US dollar in total foreign (private and central bank) portfolios from 30% to 28% (which corresponds to halving the share of the US dollar in the reserves of both the People's Bank of China and the Bank of Japan, according to Blanchard, Giavazzi and Sa), the

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42 By contrast, a sterilised foreign exchange intervention has no effect on exchange rates or interest rates in monetary models of exchange rate determination. In these models, such interventions indeed result in an exchange of perfectly substitutable domestic assets for foreign assets on the central bank's balance sheet, while money supply remains unchanged.

43 Bernanke (2005) observes that this effect depends in turn on patterns of substitution and complementarity among goods and currencies. For instance, if Chinese goods and euro area goods are viewed as complements by potential buyers in other countries, a renminbi revaluation may reduce global demand for euro area exports to such an extent that it could lead to a weakening of the euro.

44 Bernanke further observes that the speed of adjustment of the exchange rate and the current account in this model crucially depends on the elasticities of foreign and domestic asset demands with respect to expected return differentials. As he puts it, dynamics may be even more complex if the degree of asset substitutability is not constant but varies over time or across (private vs public) investors (see Bernanke, 2005, p. 51).

dollar would depreciate by up to 9% in real effective terms (see Blanchard, Giavazzi and Sa, 2005, p. 31). Recent extensions of the model have also helped to shed light on the impact of the growing role of the Chinese renminbi on other major currencies.[45]

The impact of reserve diversification also largely depends on whether private investors regard it as a credible signal which prompts them to alter the composition of their own holdings. It has been argued that the impact of official reserve management on exchange rates has weakened with the rapid expansion of private sector transactions in foreign exchange markets. As the argument goes, the magnitude of official transactions is now simply too small relative to the depth and liquidity of global foreign exchange markets to have any discernible effect, which would be a major difference relative to patterns of the more distant past.[46] However, the impact of official diversification may be amplified by a signalling or coordination channel, following the model of Sarno and Taylor (2001). Statements (or even rumours) by emerging market authorities about a possible diversification of their reserve holdings in the future may indeed be interpreted by private investors as a signal that relative demand for global currencies could fundamentally change. Concerns about frontloading may prompt these investors to alter the composition of their own holdings, before any official transaction has taken place. In turn, this may create bandwagon effects which magnify the potential effect of actual official reserve diversification.

4 EMPIRICAL EVIDENCE ON THE IMPACT OF RESERVE DIVERSIFICATION ON GLOBAL FOREIGN EXCHANGE MARKETS

Concerns about the destabilising impact of reserve diversification on foreign exchange markets originate primarily from the experience of the interwar period, when uncooperative policies led to the collapse of the gold standard. In this period, France's concerns were similar to those of China now (Accominotti, 2009). The Banque de France held more than half of the world's foreign reserves, which were allocated into gold, pounds sterling and US dollars. Concerns that the pound might be taken off the gold standard after 1929 provided an incentive for the Banque de France to liquidate its holdings denominated in the British currency. But the large size of its holdings made it difficult to do so without precipitating the pound's collapse and severe valuation losses. The Banque de France decided therefore not to liquidate its sterling reserves, but rather to intervene in foreign exchange markets in support of the pound sterling. However, its eventual exit from the gold standard in 1931 resulted in such heavy losses for the Banque de France, that it had to be put in technical bankruptcy and bailed out by the French government under strict conditionality. As concerns mounted that the US dollar would also leave the gold standard, the French authorities' decision to resolutely stick to gold caused the Banque de France to convert all of its US dollar assets into gold, through fear of incurring additional losses. This helped precipitate the devaluation of the US dollar in 1933 and to the global transmission of a severe monetary contraction in subsequent years.[47]

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45 For instance, in a three-currency model (dollar, euro, renminbi) the growing role of the renminbi as an investment currency (modelled as higher renminbi-denominated holdings in both US and euro area portfolios) can be shown to be either neutral or stabilising for the euro-dollar exchange rate, be it under a renminbi peg with respect to the dollar or a free float (see Bénassy-Quéré and Forouheshfar, 2013).

46 For instance, Truman and Wong (2006) report that the average absolute change in the US dollar's share of global reserves between 1970 and 2005 stands at 2.2% (net of valuation effects). They calculate that, in terms of foreign exchange reserve holdings of US dollars as of the end of 2005, this corresponds to USD 92 billion for a full year, or less than USD 400 million per trading day, compared with about USD 2 trillion a day in turnover in global foreign exchange markets at that time.

47 See Eichengreen (1992) for an in-depth discussion of the role of the gold standard in the international transmission of the Great Depression.

The demise of the pound sterling as a major reserve currency in the early 1970s shows that a major rebalancing in reserve currency shares does not necessarily occur through the liquidation of existing reserve holdings, but rather through the acquisition of additional (in this case US dollar-denominated) assets. Between 1969 and 1975 the share of the pound sterling in global reserves declined markedly from about 25% to less than 4%. This decline did not mainly occur as a result of the liquidation of sterling assets (also known as "sterling balances").[48] It stemmed from the accumulation of significant US dollar-denominated assets, notably by industrialised and oil-exporting economies, due to foreign exchange market interventions in the wake of the collapse of the Bretton Woods system and to inflows of petrodollars after the first oil price shock. The outstanding amount of US dollar-denominated reserves more than sextupled between 1969 and 1975, from about USD 20 billion to over USD 120 billion. Sterling-denominated reserves, in turn, remained broadly unchanged, from USD 8 billion in 1969 to USD 6 billion in 1975.[49] These developments therefore explain, to a large extent, the marked decrease in the relative share of the pound sterling in world reserves and the concomitant increase in the share of the US dollar (from about 63% to almost 80%). In future, if the experience of the early 1970s is any guide, large reserve holders could similarly diversify their holdings by purchasing large amounts of assets denominated in currencies other than the US dollar. Hence they would not necessarily need to liquidate their dollar-denominated assets to that end.

The later part of the 1970s, when concerns surfaced about the US dollar's future as a reserve asset, suggests that these concerns did not materialise into the liquidation of US-dollar assets, but instead into concerted efforts to stabilise the US dollar. After the collapse of the Bretton Woods system, the continued depreciation of the US dollar in the 1970s – together with stagflation and US current account deficits of an unprecedented size – raised discussions about the future of the US dollar as a reserve currency.[50] The creation of a "substitution account" to address an alleged "dollar overhang" in the portfolios of foreign central banks and to avoid putting additional downward pressure on the US dollar was openly discussed. This notwithstanding, central banks continued to accumulate US dollar-denominated reserves throughout the 1970s to stabilise the value of their existing dollar-denominated assets, including through concerted interventions in support of the US dollar that involved the Federal Reserve System, the Deutsche Bundesbank and the Bank of Japan. Consistently with this, Horii (1986) finds no evidence of large-scale diversification of reserves away from the US dollar in this decade, after controlling for valuation effects.[51] In future, if this historical experience is also any guide, a loss of confidence in the US dollar's ability to serve as an official store of value would not necessarily be associated with massive US dollar sales in the short term, since large reserve holders might have an interest in intervening in markets to stabilise the value of their existing US dollar holdings.

In line with this, several empirical studies that have focused on the more recent period find that reserve diversification was stabilising, and that central banks tend to lean against the wind in managing their reserve holdings. In particular, Lim (2007) uses the IMF's aggregated COFER data for the period 1999-2005 and finds evidence that changes in the share of the US dollar (adjusted for valuation effects) are negatively correlated with the US dollar's exchange rate. He interprets these findings as evidence that reserve diversification in response to exchange rate changes has tended to be stabilising for exchange markets, which also helps explain the relative stability of currency shares in global reserve holdings. Wong (2007) finds similar evidence over the same sample period,

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48 See Schenk (2010) for more details.
49 Moreover, part of the decline may have been due to valuation effects. For an analysis of these developments, see also McKinnon (2013).
50 See Henning (1994) on these discussions.
51 By contrast, he finds some evidence for stabilising reserve diversification in the early part of the 1980s, when the dollar was appreciating.

with the share of the dollar in global reserves being negatively correlated with the US dollar's exchange rate. Moreover, she finds that Japan was the main source of stabilising diversification among the advanced economies. Ouyang and Li (2013) reach similar conclusions for emerging economies over the period 1999-2012. As they explain, emerging economies tend to buy (or sell) assets denominated in depreciating (or appreciating) currencies, after controlling again for valuation effects, but also for a host of other determinants of reserve currency choice.

Finally, recent studies provide evidence in support of the existence of a signalling channel of reserve diversification. In particular, Fratzscher and Mehl (forthcoming) find that statements by Chinese authorities pointing to the possible diversification of China's reserves led to a disproportionately large appreciation of the euro against the US dollar, and of the currencies anchored to the euro. This confirms earlier results in Fratzscher and Mehl (2009), according to which statements on exchange rates and reserves by emerging market policy-makers exert a statistically and economically significant impact on the exchange rate of the euro and the yen vis-à-vis the US dollar on the day they occur, with the euro being affected the strongest. On average, a statement pointing to the possibility of loosening the US dollar peg or diversifying reserves away from the US dollar leads to an appreciation of 0.25% of the euro and of 0.15% of the yen against the US dollar.

5 CONCLUDING REMARKS

While the aforementioned considerations were of particular relevance for the short to medium term, from a longer-term perspective, one open issue that might remain is whether a more diversified international monetary system – i.e. one with multiple international currencies, where the US dollar, the euro and possibly the renminbi and other currency units would all play consequential roles – would in turn be a source of stability or instability in global foreign exchange and financial markets.

Some observers have argued that the emergence of a multipolar monetary system would help solve Triffin's dilemma and address potential shortages of global safe assets (see Fahri, Gourinchas and Rey, 2011). Since the supply of reserve assets would indeed become more elastic, a multipolar system could respond more flexibly to the growth in international real and financial transactions and grow with the global economy's needs. Moreover, since investors would increasingly consider reserve assets denominated in different currencies as substitutes, a multipolar system might also exert disciplinary effects on the policies of reserve currency issuers. They would need to more swiftly address a worsening in their fundamentals to avoid potentially large and disruptive capital outflows. The ability of reserve currency issuers to run large current account deficits and use foreign capital to indulge in financial excesses would hence be markedly limited, which would make the global economy financially safer (Eichengreen, 2010).

However, other observers have expressed concerns that increasing substitutability between reserve currencies would foster instability in global foreign exchange and financial markets. As they argue, a multipolar currency system could increase the likelihood of self-fulfilling runs on reserve currencies, among both private and official investors, each of whose interests consist of anticipating crises ahead of others and in converting their holdings first. At the same time, official reserve managers have less incentive to "herd" – i.e. to buy or sell a currency because others do it – than other investors (ibid.). They often take a longer-term perspective, because, unlike private fund managers, they are not accountable to short-term-oriented investors. In addition, official reserve managers often pursue objectives which are not strictly related to the maximisation of risk-adjusted

returns, but to precautionary motives or global financial stability. In other words, official reserve managers are more likely to act as stabilising investors which, as a result, should contribute to stabilising global exchange rate configurations.

In any case, it remains essential that any transition towards a multipolar international monetary system occurs in an orderly manner so that disruptions and excessive volatility can be avoided.

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C   AN OVERVIEW OF TRENDS IN BOND MARKET ISSUANCE DENOMINATED IN FOREIGN CURRENCY[52]

This special feature article highlights a number of stylised facts on bond issuance that is denominated in a currency which is not the domestic one (i.e. foreign currency issuance). Since 2009 an increasingly large fraction of bonds have been issued in foreign currency, especially in emerging markets, where borrowers enjoyed a substantial "discount" by issuing in foreign currency. This suggests that interest rate differentials might be an important determinant of the currency choice of issuance, at least in emerging markets. Of the bonds issued in non-domestic currencies, the share issued in euro has declined since the start of the global financial crisis in 2008. This decline mainly reflects lower issuance in euro by non-euro area financial corporations and a strong increase in US dollar issuance by non-US issuers. Overall, the total amounts of the issuance in euro by non-euro area non-financial corporations and sovereigns were not strongly affected by the crisis and have picked up recently. The strong rise in US dollar issuance (by non-US issuers), especially by non-financial corporations, suggests that quantitative easing policies might have affected the currency composition of global bond issuance in recent years by lowering US yields.

I   INTRODUCTION

Since the global financial crisis started in 2008, the landscape of international financial markets has changed substantially. As international bank activity shrank and the stock of bank cross-border claims decreased across the globe, sovereigns and firms increasingly relied on direct market financing by issuing bonds (Turner, 2014). This trend was supported by an unprecedented monetary accommodation at the global level, which created favourable financing conditions that further increased the incentives to issue bonds worldwide (Lo Duca, Nicoletti and Vidal, 2014).

In this context, gross global issuance of bonds reached record levels in 2013. While the largest share of bonds was issued in domestic currency, since 2009 an increasingly large proportion of the new issuance has been denominated in foreign currencies, especially in emerging market economies. On the one hand, these developments have enlarged the scale of local bond markets, which is an important step towards complete and developed financial markets in emerging economies.[53] On the other hand, the increasingly large issuance of foreign currency bonds suggests that the exposure of sovereigns and firms to foreign exchange risk might be increasing in the presence of less than perfect hedging possibilities. The risks implied by currency mismatches for bond markets worldwide have been discussed recently (Turner, 2014; and Caballero, Panizza and Powell, 2014) and a number of commentators (Shin, 2013) have related the recently observed larger sensitivity of emerging markets to global financial conditions to their increased borrowing in foreign currency. Overall, large currency mismatches might amplify the transmission mechanism of external shocks, increase business cycle synchronisation worldwide and thereby have pro-cyclical implications for the global macro-financial cycle.

Against this background, the first part of this special feature article presents an overview of the literature on the reasons behind the choice of currency in which the debt is denominated. The second part reviews the most recent trends in the issuance of bonds denominated in foreign currencies, assesses the features of bonds issued in foreign currency relative to bonds denominated in local currency and discusses the role of the euro and the US dollar in the issuance of new bonds at the global

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52 Prepared by Marco Lo Duca and Giulio Nicoletti.
53 However, in the absence of sound fundamentals, appropriate institutional frameworks and diversified domestic investors bases, local bond markets might be volatile, especially if the participation of leveraged foreign investors is substantial.

level.[54] The article focuses on gross bond issuance (i.e. the flow of new bonds issued worldwide), rather than on the existing stock of outstanding bonds as the former captures new trends.[55]

2   WHICH FACTORS AFFECT THE CHOICE OF CURRENCY IN WHICH THE DEBT IS DENOMINATED?

Issuers might decide to adopt non-domestic currencies for a number of reasons. The literature mainly differentiates between motives for the private sector and those for sovereigns.

Concerning the private sector, the literature has highlighted several factors which can induce a firm to issue debt in a foreign currency. These factors include the macroeconomic context, microeconomic settings and conditions, and country or market-specific institutional features.

Relative costs, such as interest rate differentials – both real and nominal – as well as exchange rate expectations and currency volatility can influence issuers in their choices of currency (see, for example, BIS, 2005).[56] While in an ideal market the uncovered interest parity should prevent arbitrage between exchange rates and interest rates, the validity of this relationship at short horizons is limited from an empirical point of view. These motives have been examined in the recent literature also with respect to the decision of borrowing via bank loans in foreign currency.[57] In recent years, two factors may have induced firms and sovereigns to issue in foreign currency. First, higher interest rates in emerging markets relative to advanced economies have been accompanied by a continued appreciation of emerging market currencies. This made issuing debt in foreign currency attractive for emerging market borrowers as their currency was appreciating and increased investors' demand for such securities, owing to a search for higher yields. Second, monetary accommodation, associated with expectations of low interest rates for a protracted period of time could have encouraged the private sector to issue more debt in US dollars in key financial centres.

The microeconomic dimension or firms' characteristics can also play a role in the currency choice of debt. For example, internationally active firms might find it attractive to issue liabilities that match the currencies of a part of their assets or the currency of their revenues (Kedia and Mozumadar, 2003). This may be the case for financial firms that have cross-border activities or non-financial corporations, especially exporting firms, when the currency of invoicing is not the domestic currency. While in this case the issuance in foreign currency reflects the choice of the borrower, firm-specific characteristics can also affect the ability of the borrower to issue in foreign markets, and thus the ability to use foreign currency.[58]

54 The article focuses on gross bond issuance (i.e. the flow of new bonds issued worldwide), distinguishing between the currency denomination of bonds (domestic currency versus foreign currency). As the focus is on the role of currencies, the article does not distinguish between bond issuance targeted at resident investors and bond issuance targeted at non-resident investors. This partially differs from the BIS data used in Section 4.2 of this report which looks at international bond issuance, i.e. issuance targeted at non-resident investors (BIS, 2003).

55 Also, this article focuses on the concept of nationality when separating bonds across countries. This means that a bond is classified as a foreign currency bond if the currency of denomination is not the domestic currency of the country of origin of the borrower. As noted by the BIS (see Turner, 2014), looking at the concept of nationality, which relates to the consolidated balance sheet of firms, is a more appropriate approach than the residence principle when evaluating the external positions of countries or sectors within a country.

56 For governments in particular, an important cost factor in the decision to issue more bonds in US dollars could have been the negative swap basis observed between euro and US dollar observed from the time of the Lehman collapse until recently; this additional factor made it cheaper to issue in US dollars and convert to euro via a swap.

57 Habib and Joy (2010) find that the choice of issuance currency is sensitive to deviations resulting from uncovered interest parity – especially for financial rather than non-financial issuers – but insensitive to deviations resulting from covered interest parity.

58 As asymmetric information between borrowers and lenders is typically higher in foreign markets compared with domestic ones, only firms that are perceived as more sound are typically able to issue in foreign markets. Having more tangible assets in the balance sheet and already being listed in a foreign equity market for example, are typically associated with stronger ability of the firm to issue debt in foreign currency, as such features help mitigate asymmetric information problems between borrowers and lenders in foreign markets (see Allayannis, Brown and Rodgers 2003).

Finally institutional and market-specific features, such as the lack of a stable domestic investor base or the lack of relatively sophisticated institutional investors, have been shown to induce borrowers to be more oriented towards foreign rather than domestic currency borrowing (see IMF, 2013). To provide a brief example, market regulation and the tax design for corporate bond markets as well as efficiently designed auctions for government securities can all be important institutional features that help developing local currency bond markets.

For sovereigns, beside the cost motives, such as interest rate differentials in two different currencies, the literature on the so-called "original sin" (Eichengreen, Hausmann and Panizza, 2003) has highlighted that when debt is denominated in the domestic currency, a sovereign issuer is able to manipulate the cost of it at the expense of the creditors, for example by creating inflation. For this reason, issuance of debt at long maturities by emerging market sovereigns tends to be denominated in foreign currency. Also in this context, institutional features, such as central bank independence and credibility, sound fiscal policies and political stability, could improve the ability of sovereigns to issue in local currency at longer maturities.

3 TRENDS IN FOREIGN CURRENCY-DENOMINATED ISSUANCE[59]

3.1 OVERALL ISSUANCE

The global financial crisis has had strong implications for international finance. As internationally active banks reduced the size of their balance sheet, both at the domestic level and international level, and global monetary accommodation pushed interest rates to record low levels, sovereigns and firms across the globe increasingly relied on bond market financing. As a consequence, the gross issuance of bonds (Chart 23) was at unprecedented levels between 2009 and 2013. While gross issuance reached record levels in 2012 and 2013 across all issuer categories in emerging markets, in advanced economies gross issuance by financial corporations was lower in this period than the peaks before the crisis. In addition, bond market access has increased across the board in the past few years, with more sovereigns and lower-rated firms issuing bonds.

A striking feature of this "booming bond issuance" is that since 2009 an increasingly large proportion of bonds have been issued in foreign currencies (Chart 23 and Chart 24). While the trend is evident in both advanced and emerging economies, in the latter group of countries bond issuance in foreign currencies has increased more markedly. In 2013 it reached record levels, being just below 30% of total issuance in emerging economies. Looking at the composition of issuers in 2013, in emerging markets around 60% of sovereign bond issuance was in foreign currencies. This contrasts with the virtual lack of sovereign issues in foreign currencies in advanced economies. In addition, it also contrasts with the declining trend in the proportion of sovereign issuance in foreign currency which was observed before the crisis. In 2013 the share of foreign issuance in emerging markets was 40% for non-financial corporations and below 20% for financial corporations, while corresponding figures for advanced economies were about 30% for non-financial corporations and below 16% for financial corporations. In all of these cases, the numbers indicate an increase in the share of foreign currency issuance relative to the lower levels observed before the onset of the crisis in 2008.

Looking at the regional dimension, issuance of bonds in foreign currency in 2013 was particularly elevated in Latin America, emerging EU countries and other G20 emerging market economies[60]

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59 For this analysis we use data from Dealogic, a private data provider.
60 "Other emerging market economies" refers to the Russian Federation, Turkey and South Africa.

Chart 23 Global gross bond issuance

(all countries, all sectors, billions of euro)

- total domestic
- total foreign
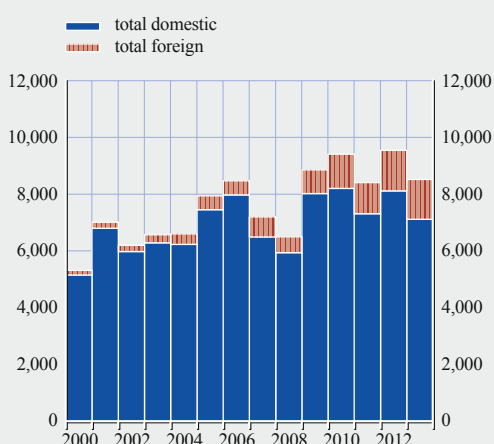
Source: Dealogic.

Chart 24 Share of bonds issued in foreign currency in total gross bond issuance

(all countries; all sectors; percentages)

- AE
- EME
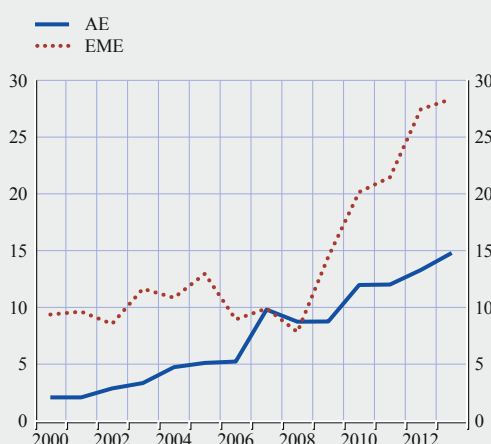
Source: Dealogic.

(Chart 25), while remaining relatively subdued in emerging Asia. Among other things, these figures might reflect the relative proximity and the large interconnection between the United States and Latin America, and between the euro area and emerging EU countries.

While in Latin America issuance in foreign currency has been broadly balanced across sectors, in the emerging EU countries and "other emerging market economies" the high share reflects strong foreign currency issuance by the private sector, including both financial and non-financial corporations. In the United Kingdom the high share of bonds issued in foreign currency partially reflects the international role of large firms effectively incorporated in the UK, such as public utilities and real estate corporations.

3.2 A COMPARISON OF THE FEATURES OF BOND ISSUANCE IN FOREIGN AND DOMESTIC CURRENCIES

In this section we look at differences in characteristics between bond issuance in foreign and domestic currencies. Some descriptive

Chart 25 Share of gross bond issuance in foreign currency by country/region

(percentage of total gross bond issuance in the country/region; all sectors)

1 NDEA	4 JPN	7 ASPAC
2 DEA	5 USA	8 LATAM
3 GBR	6 OTHEU	9 OTH EME
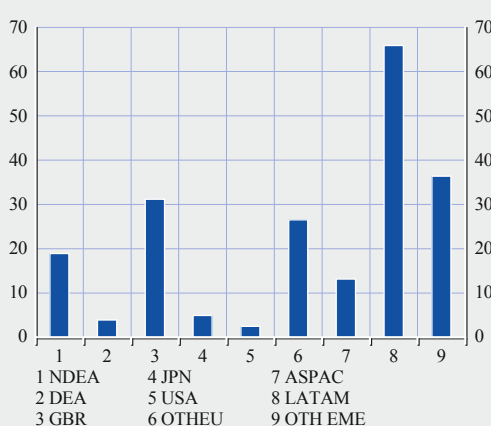
Source: Dealogic.
Notes: "NDEA" includes euro area countries with large bond issuance that did not experience severe financial stress in relation to the banking and sovereign crisis (Austria, Belgium, Finland, France, Germany, Netherlands and Luxembourg). "DEA" includes euro area countries that experienced financial stress in relation to the banking and sovereign crisis (Cyprus, Greece, Ireland, Italy, Spain and Portugal). "OTH EU" includes other large EU countries (Bulgaria, Czech Republic, Hungary, Poland and Romania). "AS PAC" includes large emerging countries in the Asia Pacific region (China, Hong Kong, India, Indonesia, Korea, Malaysia, Singapore and Thailand). "LAT AM" includes large emerging countries in Latin America (Argentina, Brazil, Chile and Mexico). "OTH EME" includes other large emerging market economies belonging to the G20 (Russia, South Africa and Turkey).

statistics are collected in Table 5 for the period from 2012 to 2013, when issuance denominated in foreign currency was particularly elevated.

First of all, there is no substantial difference between the **rating** of the bonds issued in foreign and domestic currency, suggesting that similar firms – from a credit risk perspective – were able to issue either in foreign or domestic currency even in emerging markets.

Second, while there is not much difference between the **maturity** of foreign and domestic currency issuance for financial corporations, sovereigns and non-financial corporations tend to issue at longer maturities in foreign currencies, while in advanced economies the opposite is true. This finding may be a reflection of the "original sin" problem. It might also suggest that some issuers in emerging market economies are willing to trade foreign exchange risk against rollover risk. The same is true for foreign investors that are willing to finance EME issuers at longer maturities if their exposure to foreign exchange risk is lower.

Third, the overall high share of **floating rate** bonds could be reconciled in an environment of generally low interest rates, a situation in which investors are keen to hedge against likely future rate increases. Emerging markets tend to have a larger share of floating rates when they issue both in domestic and in foreign currency and across all issuers, probably also as a reflection of the "original sin", at least for the domestic component, as interest rates might easily be influenced by governments.

Finally, we compare the **yields** of domestic currency bonds to foreign currency ones. To do this we control for sources of heterogeneity across bonds other than the currency of issuance that might affect yields. In particular, we calculate a spread of foreign versus domestic bonds by comparing yields of bonds from the same country and sector, with the same (or nearly the same) rating and maturity,

Table 5 Features of foreign currency bond issuance relative to bond issuance in domestic currency

(percentages)

	Advanced Economies		Emerging Markets	
Currency of issuance:	Domestic	Foreign	Domestic	Foreign
Rating (average)	**AA-**	**A+**	**BBB+**	**BBB+**
Sovereigns	AA	AA+	BBB+	BBB+
Financials	AA	AA-	A-	A-
Non-Financials	BBB	BBB+	BBB+	BBB-
Years to Maturity (median)	**7.0**	**5.0**	**4.0**	**4.0**
Sovereigns	8.5	4.8	5.1	10.0
Financials	6.1	5.0	3.0	2.0
Non-Financials	7.2	7.0	5.0	5.6
Share of Floating (average)	**67**	**58**	**80**	**74**
Sovereigns	73	55	84	95
Financials	64	55	78	68
Non-Financials	79	77	82	89
Spread foreign over domestic				
(median in p.p., similar deals)	**0.80**		**-1.60**	
Sovereigns	-0.39		-1.44	
Financials	1.06		-1.65	
Non-Financials	0.03		-0.72	
Spread foreign over domestic				
(median in p.p., tranches within a deal)	**-0.03**		**-3.22**	

Source: Dealogic.

that were issued in the same period[61] ("similar deals" in Table 5). The numbers in Table 5 suggest that emerging market borrowers enjoyed a substantial "discount" when issuing in foreign currency. This was especially true for financial corporations and sovereigns (the median "discounts" were -1.65 percentage points and -1.44 percentage points respectively), while the effect for non-financial corporations is more limited (-0.72 percentage point). The overall advantage of issuing in foreign currency for emerging market private sector issuers is confirmed also when controlling for all unobserved firm characteristics, which is done by looking at tranches of a single deal which differs only in the currency of denomination ("tranches within a deal" in Table 5)[62]. Overall, these findings suggest that while in advanced economies the issuance in foreign currency could probably be explained by the need to match liabilities with foreign assets and revenues, in emerging markets it mostly reflects interest rate differentials.[63]

3.3 THE EURO AND THE US DOLLAR IN FOREIGN CURRENCY ISSUANCE

Since the global financial crisis started in 2008, the increased reliance on bond finance and the rising share of bonds denominated in foreign currencies coincided with changes in the shares of the euro and the US dollar in global bond issuance.

As for the euro, after reaching a peak of almost 40% in the share of new bonds denominated in foreign currency in 2007, its share declined to a minimum of around 16% in 2012, also reflecting the intensification of the sovereign and banking crisis in Europe. In 2013, however, the share of the euro in new foreign currency issuance posted the first increase since 2007, reaching around 20%.

Looking at different issuer categories, the share of new euro-denominated bonds issued by non-financial corporations and by sovereigns did not decrease much compared with pre-2007 levels (Chart 26). Furthermore, it was already rebounding after 2011, reaching 20% in 2013. Conversely, issuance by financial corporations was severely impaired by the financial crisis and the ensuing recession, and has not recovered since. In particular, the decline of issuance in euro by financial corporations reflected lower issuance by firms registered in the United Kingdom.

Overall, the decline in the share of the euro in foreign currency issuance since 2007 mainly reflects three factors: first, the reduced issuance of financial corporations outside the euro area, as a consequence of structural changes in banking systems, the retrenchment of international banking and the prolonged difficulties faced by the banking sector in Europe; second, lower euro-denominated issuance in non-euro area EU countries; third, a sharp increase in US dollar-denominated issuance. While in 2006 issuance in US dollars and euro by foreigners was around EUR 500 billion each, in 2013 issuance in euro was EUR 200 billion and issuance in US dollars was EUR 700 billion. Differences emerged as a result of a sharp increase in US dollar issuance by sovereigns (+ EUR 40 billion compared with 2007) and non-financial corporations (+ EUR 200 billion compared with 2007), and a sharp decrease in euro issuance by financial

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61 More specifically, in addition to matching foreign and domestic currency bonds by sector, we impose that the years to maturity at issuance for "peers" can differ by no more than 20%, the rating by no more than half a notch and that the settlement date of the two bonds cannot differ by more than ten days. The chosen set of controls, especially the matching by sector, could also partially control for whether the company has some natural hedging sources. Looking at tranches of the same deal (last row of Table 5), controls for the existence of natural hedging sources, although in this setting the number of available deals is much smaller.

62 We have also checked that the difference in the maturity of different tranches does not exceed 20% of years to maturity at issuance.

63 A more in-depth and robust analysis would need to control for the currency composition of assets and revenues of firms when comparing the results across emerging and advanced economies. However, the fact that the increase in foreign currency issuance in emerging market economies occurred with retrenching global trade and decreasing yields in financial centres supports the view that interest rate differentials played a role in driving it. More "static" firm features, such as the currency composition of assets and revenues, does not seem at first glance to be able to explain the timing of the increase in foreign currency issuance.
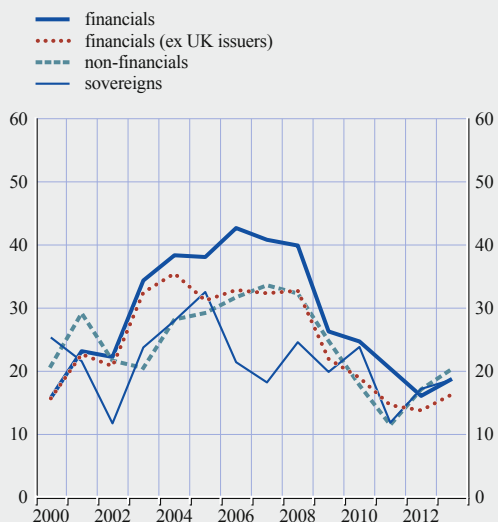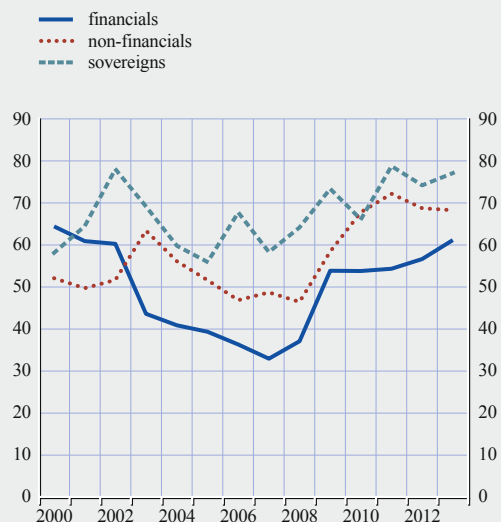
corporations (- EUR 300 billion compared with 2007).[64] As a consequence of these developments, the share of the US dollar (Chart 27) has increased since 2008 for all issuing sectors. In future, some of the factors that dragged down the share of issuance in euro may be seen as transitory, while others may reflect more structural issues. The reduction in issuance by financial intermediaries partially reflects a temporary weakness of the banking sector and deleveraging in the euro area and in this respect it can be seen as temporary in nature; however, in future, we might expect more subdued issuance activity from financial corporations compared with the pre-2007 period, given the new financial regulations and the need for increased equity to fulfil the Basel III requirements. The strong issuance in US dollars may significantly diminish in future by the part that has come about as a result of the expansionary monetary policy of the Federal Reserve System, which is currently tapering its Large-Scale Asset Purchase programme.

4   CONCLUSIONS

This special feature article highlighted a number of stylised facts on bond issuance denominated in a non-domestic currency (i.e. foreign currency issuance). Since the start of the global financial crisis, gross bond issuance across the globe reached unprecedented levels as borrowers diversified away from bank loans and took advantage of yields that were pushed to low levels by global monetary accommodation. Since 2009 an increasingly large proportion of bonds have been issued in foreign currency, especially in emerging markets which enjoyed a substantial "discount" when borrowing in foreign currency. Monetary accommodation in financial centres may have had an impact on the currency choice of bond issuance in two ways. First, from the issuers' point of view, it reduced yields in financial centres and made "core" currencies attractive for foreign issuers. Second, from the investors' point of view, monetary accommodation encouraged a search for yield:

64 It is important to recall that none of these figures refer to total issuance in one currency: they refer to issuance denominated in a non-domestic currency.

global investors could buy bonds issued by foreigners but denominated in "core" currencies, thus enjoying higher yields, but remaining more insulated from exchange rate risk. Regarding advanced economies, the absence of any discount when issuing in foreign currency suggests that the currency choice of issuance could be the result of firms' attempts to match the currency composition of assets and revenues with the currency denomination of liabilities.

The share of the euro in global bond issuance denominated in foreign currency (i.e. issuance in euro by non-euro area issuers) has declined since the start of the global financial crisis in 2008. However, the decline stems mainly from lower issuance in euro by non-euro area financial corporations and from a strong increase in issuance denominated in US dollars (by non- US issuers). Overall, the issuance in euro by non-euro area non-financial corporations and sovereigns was not strongly affected by the crisis in absolute terms and has recently picked up. The strong rise in US dollar issuance, especially by non-financial corporations, and the relatively low yields of securities issued in US dollars suggest that quantitative easing may have affected the currency composition of bond issuance in recent years.

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STATISTICAL ANNEX

I THE EURO IN GLOBAL FOREIGN EXCHANGE RESERVES AND EXCHANGE RATE ANCHORING

Table A1 Global holdings of foreign exchange reserves

	All countries							Advanced economies	
	Total holdings of foreign reserves [1]	EUR	USD	JPY	GBP	Other [2]	CAD+AUD	Total holdings of foreign reserves [1]	EUR
Outstanding amounts (in USD billions, at current exchange rates)									
2000	1,936	278	1,080	92	42	23	.	1,218	204
2001	2,049	301	1,122	79	42	21	.	1,248	213
2002	2,408	425	1,194	89	52	28	.	1,444	297
2003	3,025	556	1,455	98	64	45	.	1,768	359
2004	3,748	655	1,739	114	93	50	.	2,072	417
2005	4,320	679	1,891	113	107	50	.	2,081	387
2006	5,253	827	2,158	115	150	60	.	2,257	440
2007	6,704	1,076	2,631	131	199	76	.	2,438	522
2008	7,346	1,104	2,685	146	178	93	.	2,496	511
2009	8,165	1,270	2,848	133	195	139	.	2,785	616
2010	9,265	1,343	3,193	189	203	229	.	3,099	647
2011	10,206	1,394	3,525	204	217	308	.	3,404	672
2012	10,952	1,474	3,731	249	246	197	175	3,698	797
2013 Q1	11,090	1,435	3,772	240	237	197	190	3,679	772
Q2	11,132	1,451	3,768	237	233	168	206	3,676	783
Q3	11,439	1,492	3,819	240	244	173	209	3,771	817
Q4	11,674	1,521	3,806	245	249	179	209	3,817	839
Currency shares in foreign exchange reserves with disclosed currency composition (at constant exchange rates)									
2000	.	24.7	64.7	6.0	2.8	1.4	.	.	24.8
2001	.	26.6	63.5	5.6	2.7	1.2	.	.	26.3
2002	.	28.7	61.3	5.2	2.8	1.5	.	.	28.2
2003	.	26.7	64.0	4.4	2.6	2.0	.	.	24.7
2004	.	25.0	65.7	4.2	3.0	1.9	.	.	23.2
2005	.	26.7	63.7	4.3	3.4	1.7	.	.	23.8
2006	.	25.9	64.4	3.9	3.8	1.8	.	.	23.0
2007	.	25.0	65.3	3.5	4.1	1.9	.	.	23.1
2008	.	26.0	63.9	3.0	4.8	2.2	.	.	23.1
2009	.	26.9	62.9	2.6	4.4	3.1	.	.	24.7
2010	.	26.8	61.7	2.8	4.2	4.4	.	.	24.7
2011	.	26.0	61.8	2.6	4.1	5.4	.	.	23.7
2012	.	25.3	61.2	3.3	4.1	3.2	2.6	.	25.4
2013 Q1	.	25.0	61.1	3.5	4.2	3.2	2.8	.	25.1
Q2	.	24.8	61.2	3.6	4.1	2.7	3.3	.	25.0
Q3	.	24.6	61.6	3.6	4.0	2.8	3.3	.	24.9
Q4	.	24.4	61.2	3.9	4.0	2.9	3.4	.	24.8
Currency shares in foreign exchange reserves with disclosed currency composition (at current exchange rates)									
2000	.	18.3	71.1	6.1	2.8	1.5	.	.	18.4
2001	.	19.2	71.5	5.0	2.7	1.3	.	.	19.0
2002	.	23.7	66.5	4.9	2.9	1.6	.	.	23.3
2003	.	25.0	65.4	4.4	2.9	2.0	.	.	23.1
2004	.	24.7	65.5	4.3	3.5	1.9	.	.	22.9
2005	.	23.9	66.5	4.0	3.7	1.7	.	.	21.2
2006	.	25.0	65.1	3.5	4.5	1.8	.	.	22.2
2007	.	26.1	63.9	3.2	4.8	1.8	.	.	24.2
2008	.	26.2	63.8	3.5	4.2	2.2	.	.	23.3
2009	.	27.7	62.0	2.9	4.2	3.0	.	.	25.4
2010	.	26.0	61.8	3.7	3.9	4.4	.	.	23.9
2011	.	24.7	62.4	3.6	3.8	5.5	.	.	22.3
2012	.	24.2	61.3	4.1	4.0	3.2	2.9	.	24.3
2013 Q1	.	23.6	62.0	3.9	3.9	3.2	3.1	.	23.6
Q2	.	23.9	62.0	3.9	3.8	2.8	3.4	.	24.0
Q3	.	24.1	61.7	3.9	3.9	2.8	3.4	.	24.4
Q4	.	24.4	61.2	3.9	4.0	2.9	3.4	.	24.8

Sources: IMF and ECB calculations.
1) The total includes unallocated reserves, i.e. reserves with undisclosed currency composition, as well as allocated reserves with disclosed currency composition.
2) The category "other" also excludes CHF.

Advanced economies					Total holdings of foreign reserves [1]	Emerging and developing economies					
USD	JPY	GBP	Other [2]	CAD+AUD		EUR	USD	JPY	GBP	Other [2]	CAD+AUD
Outstanding amounts (in USD billions, at current exchange rates)											
772	81	31	17	.	718	74	307	11	11	6	.
792	68	30	15	.	802	88	330	11	12	5	.
850	69	36	20	.	963	127	345	19	16	9	.
1,045	81	36	32	.	1,257	197	410	18	27	13	.
1,228	91	48	38	.	1,676	238	511	23	44	12	.
1,261	86	50	34	.	2,239	292	630	26	57	16	.
1,350	84	65	38	.	2,996	387	807	31	85	22	.
1,424	85	76	45	.	4,267	554	1,208	46	123	30	.
1,476	94	59	54	.	4,850	592	1,209	52	118	39	.
1,582	95	68	63	.	5,380	653	1,266	38	127	76	.
1,762	121	68	105	.	6,166	696	1,431	68	135	124	.
2,004	132	77	124	.	6,801	722	1,521	72	140	184	.
2,049	165	100	96	68	7,255	677	1,682	84	146	101	108
2,055	160	97	98	75	7,411	663	1,717	80	140	99	114
2,053	155	95	68	98	7,456	668	1,715	82	138	101	108
2,092	159	102	71	101	7,668	675	1,727	81	142	102	109
2,104	161	104	74	101	7,856	682	1,701	84	146	105	108
Currency shares in foreign exchange reserves with disclosed currency composition (at constant exchange rates)											
63.3	7.3	2.8	1.4	.	.	24.4	68.5	2.8	2.7	1.4	.
62.5	6.7	2.7	1.2	.	.	27.4	65.9	2.7	2.8	1.0	.
61.3	5.7	2.7	1.4	.	.	29.9	61.5	3.9	3.0	1.5	.
65.7	5.2	2.1	2.0	.	.	31.6	60.0	2.7	3.7	1.9	.
67.4	4.9	2.3	2.1	.	.	29.2	61.9	2.7	4.6	1.4	.
66.5	5.1	2.5	1.8	.	.	31.8	58.7	2.8	5.1	1.5	.
67.3	4.8	2.7	1.9	.	.	30.2	60.1	2.6	5.4	1.7	.
67.2	4.3	3.0	2.1	.	.	27.2	63.3	2.6	5.3	1.6	.
67.4	3.7	3.1	2.5	.	.	29.1	60.0	2.2	6.7	1.9	.
66.1	3.5	2.9	2.6	.	.	29.3	59.4	1.6	6.1	3.6	.
65.1	3.5	2.7	3.9	.	.	29.1	57.9	2.1	5.8	5.0	.
66.2	3.2	2.7	4.1	.	.	28.7	56.8	2.0	5.6	6.9	.
62.4	4.1	3.1	2.9	1.8	.	25.2	59.8	2.5	5.3	3.6	3.5
62.1	4.3	3.2	2.9	2.0	.	24.9	59.9	2.5	5.3	3.5	3.6
62.2	4.4	3.1	2.1	2.9	.	24.7	60.0	2.7	5.2	3.5	3.7
62.4	4.4	3.1	2.1	2.9	.	24.2	60.7	2.6	5.1	3.6	3.7
62.1	4.7	3.1	2.2	3.0	.	24.1	60.1	3.0	5.2	3.7	3.8
Currency shares in foreign exchange reserves with disclosed currency composition (at current exchange											
69.7	7.3	2.8	1.5	.	.	18.0	74.9	2.8	2.6	1.5	.
70.5	6.1	2.7	1.4	.	.	19.6	73.9	2.4	2.8	1.1	.
66.4	5.4	2.8	1.6	.	.	24.6	66.7	3.8	3.2	1.6	.
67.1	5.2	2.3	2.0	.	.	29.6	61.5	2.7	4.1	1.9	.
67.3	5.0	2.7	2.1	.	.	28.7	61.6	2.8	5.3	1.4	.
69.2	4.7	2.7	1.8	.	.	28.6	61.7	2.6	5.6	1.6	.
68.1	4.2	3.3	1.9	.	.	29.0	60.5	2.3	6.4	1.7	.
66.0	4.0	3.5	2.1	.	.	28.2	61.5	2.3	6.3	1.5	.
67.2	4.3	2.7	2.5	.	.	29.4	60.1	2.6	5.9	1.9	.
65.1	3.9	2.8	2.6	.	.	30.2	58.6	1.8	5.9	3.5	.
65.1	4.5	2.5	3.9	.	.	28.3	58.3	2.8	5.5	5.0	.
66.5	4.4	2.5	4.1	.	.	27.3	57.6	2.7	5.3	7.0	.
62.4	5.0	3.0	2.9	2.1	.	24.2	60.0	3.0	5.2	3.6	3.8
63.0	4.9	3.0	3.0	2.3	.	23.5	60.9	2.8	5.0	3.5	4.1
63.0	4.8	2.9	2.1	3.0	.	23.7	60.9	2.9	4.9	3.6	3.8
62.5	4.8	3.0	2.1	3.0	.	23.8	60.8	2.8	5.0	3.6	3.8
62.1	4.7	3.1	2.2	3.0	.	24.1	60.1	3.0	5.2	3.7	3.8

Table A2 Currency composition of foreign exchange reserves for selected countries

(share of the euro in total foreign exchange reserve holdings; percentages; at current exchange rates)

	2008	2009	2010	2011	2012	2013
Non-euro area EU Member States	61.3	63.7	61.1	60.9	58.0	55.6
Bulgaria	99.1	99.1	99.6	99.9	99.9	100.0
Croatia	76.6	71.7	73.7	75.9	80.3	68.7
Czech Republic	62.6	61.3	57.4	60.1	58.7	69.7
Lithuania	97.3	96.9	98.9	94.9	83.4	79.1
Poland	33.7	36.7	35.0	30.4	30.9	30.7
Romania	63.2	65.2	67.2	77.8	73.0	65.9
Sweden	48.5	48.1	50.0	37.0	37.1	37.0
United Kingdom	41.4	65.5	59.9	59.1	60.4	43.0
Candidate and potential candidate countries						
Turkey	46.0	44.6	46.5	40.3	27.3	n.a.
Other industrial countries						
Canada	40.4	41.9	40.0	37.0	34.9	31.9
Norway	48.3	47.2	36.4	36.1	35.9	36.5
Russia	40.0	33.2	43.1	42.1	40.4	41.0
Switzerland	47.9	55.6	54.9	57.0	50.1	49.2
United States	53.7	54.0	54.2	53.5	57.0	62.8
Latin American countries						
Chile	37.3	34.8	35.2	35.5	20.3	19.6
Peru	14.9	17.4	16.8	38.0	30.0	30.0

Sources: National central banks and ECB calculations.
Notes: Calculations are in general based on the international reserve and foreign currency liquidity statistics. Figures for Sweden and Poland up to 2010 refer to currency benchmarks as published in the annual reports of the central banks of these countries. Figures for Bulgaria and Serbia refer to currency compositions as published in the annual reports of the central banks of these countries. Figures for the United Kingdom refer to combined currency shares for the Bank of England and the UK government (including other foreign currency assets such as claims vis-à-vis residents). Data for the United States refer to combined currency shares for the Open Market Account (SOMA) at the Federal Reserve and the US Treasury Exchange Stabilization Fund (ESF); reciprocal currency arrangements are not included. In the case of Norway, currency shares refer to the fixed income part of Norges Bank's foreign exchange reserve investment portfolio, while the currency composition is taken from quarterly reports. Data for Chile refer to the combined currency shares in the liquidity and the investment portfolio of the Central Bank of Chile. In the case of Peru, the share of the euro refers to reserve assets denominated in currencies other than the US dollar. According to the Central Reserve Bank of Peru, these are mostly euro-denominated assets. Latest data for Russia is for June 2013.

Table A3 Countries and territories with exchange rate regimes linked to the euro

(as at end-May 2014)

Region	Exchange rate regimes	Countries
EU (non-euro area)	ERM II	Denmark, Lithuania
	Euro-based currency boards	Bulgaria Croatia, Czech Republic,
	Managed floating regime with the euro as reference currency and an inflation target	Romania
	Pro memoria: Free-floating regime with an inflation target	Hungary, Poland, Sweden, United Kingdom
EU acceding, candidate and potential candidate countries	Unilateral euroisation (no separate legal tender)	Kosovo, Montenegro
	Euro-based currency boards	Bosnia and Herzegovina
	Stabilised arrangement with euro as a reference currency	Former Yugoslav Republic of Macedonia
	Pro memoria: Free-floating regime with an inflation target	Albania, Iceland, Serbia, Turkey
Others	Euroisation	European microstates, some French overseas collectivities
	Pegs based on the euro	CFA franc zone, CFP franc zone, Cape Verde, Comoros, São Tomé e Príncipe
	Other arrangements using the euro as a reference currency	Switzerland
	Crawling peg involving the euro	Botswana
	Pegs and managed floats based on the SDR and other currency baskets involving the euro (share of the euro)	Algeria, Belarus, Fiji, Iran, Kuwait, Libya, Morocco (80%), Russian Federation (45%), Samoa, Singapore, Syria, Tunisia, Vanuatu

Sources: National central banks, IMF and ECB.
Notes: Croatia: Managed floating regime with no preannounced path for the exchange rate.
Denmark: Participates in ERM II with a +/-2.25% fluctuation band.
Lithuania: Participates in ERM II with a +/-15% fluctuation band. Lithuania continues with its currency board arrangement as a unilateral commitment.
Bulgaria: Maintains a fixed exchange rate to the euro within the framework of a currency board arrangement.
European microstates: Republic of San Marino, Vatican City, Principality of Monaco and Andorra. The other countries and jurisdictions are entitled to use the euro as their official currency. Liechtenstein uses the Swiss franc as its official currency.
Saint Barthelémy, Saint Martin and Saint-Pierre and Miquelon are French overseas collectivities but use the euro as their official currency.
CFA franc zone: WAEMU (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo) and CEMAC (Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea and Gabon).
CFP franc zone: New Caledonia and the French overseas collectivities of French Polynesia and Wallis and Futuna.
Switzerland: On 6 September 2011 the Swiss National Bank issued a statement establishing a minimum exchange rate for the euro of CHF 1.20 per euro. As stated in the Swiss National Bank's annual report for 2011, the Swiss National Bank would "enforce this minimum rate with the utmost determination and was prepared to buy foreign currency in unlimited quantities."
Algeria: Managed floating regime with no preannounced path for the exchange rate.
Belarus: The currency was pegged to a basket comprising the euro, the US dollar and the Russian rouble at the beginning of 2009, with a fluctuation margin of 10%. In April 2011 the Belarussian rouble lost more than a third of its value against the US dollar after the central bank introduced a free floating exchange rate for trade between banks.
Botswana: Weighted basket of currencies comprising the SDR and the South African rand (crawling peg since 2005).
Fiji: The currency was pegged to a basket of international currencies in May 2007.
Iran: Maintains de jure a managed floating arrangement against a basket of currencies including the euro, the US dollar and the Japanese yen.
Kuwait: The currency was pegged to a basket of international currencies in May 2007.
Libya: The rate of exchange is established using a basket of SDR currencies with a fluctuation margin of 25%.
Morocco: Bi-currency basket comprising the euro (80%) and the US dollar (20%).
Russian Federation: Trade-weighted currency basket for monitoring and setting ceilings for real appreciation (combined share of euro and eurolinked currencies of around 60%); since February 2005 US dollar-euro basket for daily exchange rate management (since February 2007 the euro's share has been 45%). The Bank of Russia does not target a specific exchange rate level against the currency basket.
Samoa: The central bank maintains an exchange rate peg based on a basket comprising the currencies of Samoa's six main trading partners and countries that represent primary sources of tourism revenue, namely New Zealand, Australia, the United States and the euro area. The exchange rate can fluctuate within +/- 2% band.
Singapore: Since 1981 a managed floating regime against an undisclosed basket of currencies maintained within an undisclosed target band.
Syria: In August 2007, the authorities changed the de facto exchange rate regime from a peg to the US dollar to an SDR basket within a relatively wide fluctuation margin.
Tunisia: The de facto exchange rate regime is a conventional peg to an undisclosed basket of currencies.
Vanuatu: Weighted basket comprising (undisclosed) currencies of Vanuatu's major trading partners.

2 THE EURO IN INTERNATIONAL DEBT MARKETS

Table A4 Outstanding international debt securities by currency

		Narrow measure				Broad measure					Memo item: BIS broad measure	
		Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other	Total	EUR
Outstanding amounts (in USD billions, at current exchange rates, end of period)													
2000		3,370	721	1,691	471	488	4,994	1,184	2,517	505	787	5,434	1,624
2001		3,542	817	1,788	425	512	5,766	1,430	3,044	456	836	6,337	2,001
2002		4,039	1,100	1,887	410	641	6,840	1,983	3,353	453	1,052	7,669	2,811
2003		4,928	1,551	2,116	438	823	8,465	2,926	3,671	500	1,368	9,670	4,131
2004		5,810	1,957	2,373	454	1,026	9,980	3,748	3,965	538	1,730	11,470	5,238
2005		6,131	1,913	2,695	397	1,126	10,487	3,851	4,253	474	1,910	11,902	5,265
2006		7,794	2,441	3,438	410	1,505	13,177	5,192	4,960	492	2,533	15,036	7,051
2007		9,619	3,105	4,161	506	1,848	16,009	6,648	5,665	602	3,094	18,402	9,041
2008		9,561	3,098	4,258	646	1,559	16,413	6,891	5,740	768	3,015	18,887	9,364
2009		10,302	3,262	4,703	591	1,746	18,324	7,859	6,212	699	3,554	20,909	10,444
2010		10,531	2,920	5,112	656	1,842	18,515	7,484	6,596	770	3,665	20,918	9,887
2011		10,882	2,803	5,525	664	1,890	18,673	7,334	6,901	762	3,675	21,019	9,681
2012		11,758	3,021	6,143	578	2,016	19,506	7,489	7,531	660	3,826	21,943	9,926
2013	Q1	11,669	2,850	6,328	505	1,986	19,171	7,132	7,720	579	3,742	21,511	9,471
	Q2	11,848	2,896	6,517	461	1,975	19,408	7,260	7,908	531	3,708	21,780	9,633
	Q3	12,175	3,020	6,653	456	2,045	19,887	7,492	8,012	528	3,854	22,351	9,957
	Q4	12,421	3,137	6,809	432	2,044	20,205	7,636	8,175	499	3,895	22,794	10,225
Percentages of outstanding amounts (at constant exchange rates, end of period)													
2000		100.0	27.4	43.3	13.2	16.1	100.0	30.4	43.6	9.6	16.5	100.0	37.4
2001		100.0	30.0	41.9	12.4	15.6	100.0	32.5	44.3	8.3	14.9	100.0	40.3
2002		100.0	31.9	41.6	10.2	16.4	100.0	34.1	43.9	6.7	15.2	100.0	42.4
2003		100.0	33.0	41.3	8.7	17.0	100.0	36.5	41.9	5.8	15.8	100.0	44.8
2004		100.0	34.1	40.8	7.6	17.5	100.0	38.2	40.0	5.3	16.5	100.0	46.4
2005		100.0	34.0	40.9	6.8	18.4	100.0	40.0	37.8	4.7	17.5	100.0	47.7
2006		100.0	32.2	43.3	5.9	18.7	100.0	40.8	37.2	4.2	17.9	100.0	48.3
2007		100.0	31.0	44.3	5.8	18.9	100.0	40.5	36.8	4.2	18.5	100.0	48.0
2008		100.0	32.0	44.3	5.8	17.9	100.0	41.2	34.7	4.0	20.1	100.0	48.8
2009		100.0	30.7	46.3	5.1	17.9	100.0	41.8	34.5	3.4	20.3	100.0	48.8
2010		100.0	28.6	48.5	4.8	18.1	100.0	41.2	35.2	3.2	20.4	100.0	48.1
2011		100.0	27.2	50.4	4.5	17.9	100.0	40.9	36.1	2.9	20.1	100.0	47.7
2012		100.0	26.7	52.0	4.0	17.3	100.0	39.6	38.1	2.7	19.6	100.0	46.5
2013	Q1	100.0	25.7	53.0	3.8	17.4	100.0	38.6	38.8	2.6	19.9	100.0	45.5
	Q2	100.0	25.3	54.0	3.6	17.1	100.0	38.3	39.6	2.5	19.5	100.0	45.2
	Q3	100.0	25.2	54.4	3.5	16.9	100.0	38.1	39.9	2.4	19.5	100.0	45.0
	Q4	100.0	25.3	54.8	3.5	16.5	100.0	37.8	40.5	2.5	19.3	100.0	44.9
Percentages of outstanding amounts (at current exchange rates, end of period)													
2000		100.0	21.4	50.2	14.0	14.5	100.0	23.7	50.4	10.1	15.8	100.0	29.9
2001		100.0	23.1	50.5	12.0	14.5	100.0	24.8	52.8	7.9	14.5	100.0	31.6
2002		100.0	27.2	46.7	10.2	15.9	100.0	29.0	49.0	6.6	15.4	100.0	36.7
2003		100.0	31.5	42.9	8.9	16.7	100.0	34.6	43.4	5.9	16.2	100.0	42.7
2004		100.0	33.7	40.8	7.8	17.7	100.0	37.6	39.7	5.4	17.3	100.0	45.7
2005		100.0	31.2	43.9	6.5	18.4	100.0	36.7	40.6	4.5	18.2	100.0	44.2
2006		100.0	31.3	44.1	5.3	19.3	100.0	39.4	37.6	3.7	19.2	100.0	46.9
2007		100.0	32.3	43.3	5.3	19.2	100.0	41.5	35.4	3.8	19.3	100.0	49.1
2008		100.0	32.4	44.5	6.8	16.3	100.0	42.0	35.0	4.7	18.4	100.0	49.6
2009		100.0	31.7	45.7	5.7	17.0	100.0	42.9	33.9	3.8	19.4	100.0	50.0
2010		100.0	27.7	48.5	6.2	17.5	100.0	40.4	35.6	4.2	19.8	100.0	47.3
2011		100.0	25.8	50.8	6.1	17.4	100.0	39.3	37.0	4.1	19.7	100.0	46.1
2012		100.0	25.7	52.2	4.9	17.1	100.0	38.4	38.6	3.4	19.6	100.0	45.2
2013	Q1	100.0	24.4	54.2	4.3	17.0	100.0	37.2	40.3	3.0	19.5	100.0	44.0
	Q2	100.0	24.4	55.0	3.9	16.7	100.0	37.4	40.7	2.7	19.1	100.0	44.2
	Q3	100.0	24.8	54.6	3.7	16.8	100.0	37.7	40.3	2.7	19.4	100.0	44.5
	Q4	100.0	25.3	54.8	3.5	16.5	100.0	37.8	40.5	2.5	19.3	100.0	44.9

Sources: BIS and ECB calculations.

Table A5 Outstanding international bonds and notes, by currency and by sector

(outstanding international bonds and notes; by sector and by currency)

		EUR				USD	
		Sovereigns	Other public entities	Financial institutions	International organisations	Sovereigns	Other public entities
(Outstanding amounts in USD billions, end of period)							
1999		101	21	332	128	412	82
2000		102	19	421	112	449	78
2001		99	18	514	101	454	79
2002		117	21	734	122	475	85
2003		149	26	1,089	150	486	96
2004		166	33	1,432	170	516	116
2005		156	28	1,439	149	519	143
2006		179	31	1,886	168	517	160
2007		198	32	2,452	190	516	185
2008		188	28	2,466	184	532	296
2009		217	24	2,531	243	620	399
2010		213	20	2,212	248	695	452
2011		198	18	2,040	338	760	503
2012		213	18	1,987	575	854	407
2013	Q1	202	19	1,869	537	859	423
	Q2	202	20	1,856	589	863	454
	Q3	214	21	1,903	636	891	475
	Q4	228	22	1,943	668	901	503
(Percentages of outstanding amounts, end of period)							
1999		17.3	3.6	57.0	22.0	32.9	6.6
2000		15.6	3.0	64.3	17.1	31.6	5.5
2001		13.5	2.5	70.2	13.8	30.1	5.2
2002		11.8	2.1	73.9	12.3	29.4	5.2
2003		10.5	1.8	77.1	10.6	26.6	5.2
2004		9.2	1.8	79.5	9.4	24.9	5.6
2005		8.8	1.6	81.2	8.4	21.8	6.0
2006		7.9	1.4	83.3	7.4	16.7	5.2
2007		6.9	1.1	85.4	6.6	13.7	4.9
2008		6.6	1.0	86.0	6.4	11.6	4.6
2009		7.2	0.8	84.0	8.1	12.1	5.5
2010		7.9	0.8	82.1	9.2	12.4	5.7
2011		7.6	0.7	78.7	13.0	12.5	5.7
2012		7.6	0.6	71.1	20.6	15.9	7.6
2013	Q1	7.7	0.7	71.2	20.4	15.6	7.7
	Q2	7.6	0.8	69.6	22.1	15.2	8.0
	Q3	7.7	0.8	68.6	22.9	15.4	8.2
	Q4	8.0	0.8	67.9	23.4	15.3	8.5

Sources: BIS and ECB calculations.
Notes: Narrow definition of international bonds and notes. Other public entities include public corporations, public banks and other public financial institutions.

| USD | | JPY | | | |
Financial institutions	International organisations	Sovereigns	Other public entities	Financial institutions	International organisations
(Outstanding amounts in USD billions, end of period)					
639	117	100	24	300	40
762	134	86	20	291	32
821	154	69	14	276	27
892	168	68	15	267	30
1,065	179	69	17	294	35
1,257	184	62	16	321	35
1,534	188	45	14	288	32
2,229	186	39	14	309	31
2,871	197	36	18	399	35
2,878	228	42	31	509	45
3,046	280	38	37	453	44
3,239	322	45	42	498	49
3,429	356	47	40	505	51
3,726	392	42	31	436	44
3,829	412	40	27	379	38
3,921	424	37	27	342	35
3,986	428	38	27	339	34
4,067	431	35	26	321	31
(Percentages of outstanding amounts, end of period)					
51.1	9.4	21.5	5.1	64.7	8.7
53.6	9.4	20.1	4.7	67.7	7.5
54.4	10.2	17.9	3.6	71.5	7.0
55.1	10.4	18.0	3.9	70.2	7.9
58.3	9.8	16.7	4.0	70.9	8.4
60.6	8.9	14.2	3.7	74.0	8.1
64.4	7.9	11.9	3.7	75.9	8.4
72.1	6.0	10.0	3.5	78.6	7.9
76.2	5.2	7.4	3.6	81.8	7.2
62.8	5.0	5.9	3.6	72.0	6.4
59.5	5.5	5.8	4.7	70.1	6.8
57.8	5.8	6.3	4.9	69.4	6.8
56.4	5.9	6.5	4.8	69.6	7.1
69.3	7.3	7.6	5.5	78.9	7.9
69.3	7.5	8.2	5.6	78.3	7.9
69.3	7.5	8.3	6.1	77.7	8.0
69.0	7.4	8.6	6.1	77.5	7.8
68.9	7.3	8.6	6.4	77.7	7.4

Table A6 Outstanding international bonds and notes in selected regions at the end of the review period, by currency

(end-2013, narrow measure; USD billions and as a percentage of the total amount outstanding)

	Total amounts outstanding (USD billions)	of which denominated in:			
		US dollar (percentage)	Euro (percentage)	Japanese yen (percentage)	Other currencies (percentage)
Africa	60	75.9	11.0	3.5	9.5
Asia and Pacific	1,213	64.5	12.4	4.3	18.7
of which:					
Japan	134	84.0	8.3	…	7.7
Europe	5,775	51.2	25.0	4.8	18.9
of which:					
Euro area	2,510	60.9	…	6.0	33.1
Denmark, Sweden, United Kingdom	2,568	42.1	46.9	3.8	7.3
Other non-euro area EU Member States	206	27.2	64.1	3.3	5.4
EU27	5,290	50.5	24.9	4.8	19.8
Non-EU developed Europe [1]	320	44.6	36.2	7.6	11.5
Non-EU developing Europe	184	81.5	14.2	0.0	4.3
International organisations	1,412	30.4	43.2	2.9	23.5
Latin America	595	82.3	7.8	1.4	8.4
Middle East	240	84.8	8.0	2.1	5.1
North America	1,426	34.7	30.7	4.7	29.8
of which:					
Canada	760	65.0	5.7	0.7	28.5
United States	666	…	59.3	9.4	31.3
Offshore centres	1,819	76.1	7.8	6.2	9.9
Total	**12,541**	**54.1**	**22.8**	**4.5**	**18.6**

Sources: BIS and ECB calculations.
1) Iceland, Norway, Switzerland and European microstates.

Table A7 International dimensions of euro-denominated debt securities

(EUR billions; percentages)

	Held by residents	Held by non-residents	Total
a) As at end-June 2013			
Issued by residents	11,383	3,316	14,700
	67%	*20%*	*87%*
Issued by non-residents	1,456	765	2,221
	9%	*5%*	*13%*
Total	12,840	4,081	16,921
	76%	*24%*	*100%*
b) As at end-June 2012			
Issued by residents	11,703	3,089	14,792
	68%	*18%*	*87%*
Issued by non-residents	1,486	814	2,300
	9%	*5%*	*13%*
Total	13,189	3,903	17,091
	77%	*23%*	*100%*

Source: ECB.

Chart A1 Debt securities issued by euro area countries, by holder

(percentages of total outstanding amounts; as at end-2012)

- holdings as reserve assets and by international organisations
- other holders (non-reporters to IMF surveys)
- holders outside EU
- other EU holders
- other euro area holders
- domestic holders
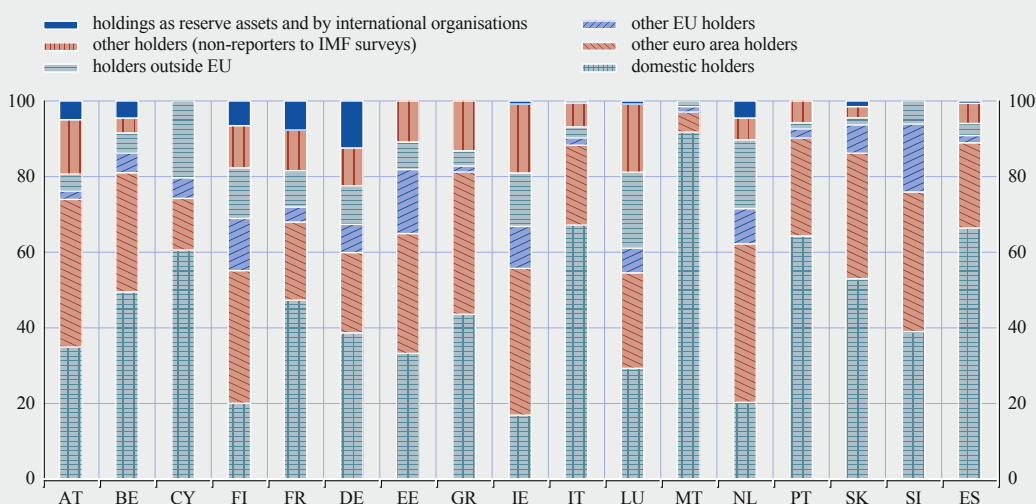
Sources: ECB calculations, IMF (CPIS, SEFER and SSIO surveys) and national sources (national accounts and i.i.p. data).
Notes: i.i.p. figures for Cyprus and the Netherlands include "special financial institutions". Reserve assets and holdings by international organisations cannot be allocated to reporting countries, since the results of the IMF's surveys on Securities Held as Foreign Exchange Reserves (SEFER) and Securities Held by International Organizations (SSIO) report figures only in aggregate form.

Chart A2 Debt securities issued by euro area residents held in the portfolios of selected countries outside the euro area

(as a percentage of total debt securities held as portfolio investment assets; as at end-2012)

Sources: ECB and IMF.

Table A8 The top 20 non-euro area issuers of euro-denominated bonds and non-US issuers of US dollar-denominated bonds

(total amount issued in 2013; EUR millions)

Top 20 non-Euro Area Issuers of euro-denominated bonds		Top 20 non-US issuers of US dollar-denominated bonds	
HSBC Holdings plc	6,330	KfW Bankengruppe – KfW	24,142
Nordea Bank AB	5,713	European Investment Bank – EIB	21,366
General Electric Co	5,340	Royal Bank of Canada	14,074
Kingdom of Sweden	5,000	Kommunalbanken AS	10,584
Standard Chartered plc	4,836	National Australia Bank Ltd	10,109
JPMorgan Chase & Co	4,606	Kingdom of Sweden	9,440
Australia & New Zealand Banking Group Ltd – ANZ	4,415	Bank of Nova Scotia	9,067
DnB ASA	4,142	Toyota Motor Corp	8,956
Microsoft Corp	4,050	Westpac Banking Corp	8,836
Svenska Handelsbanken AB	3,755	Toronto-Dominion Bank	8,571
AT&T Inc	3,650	Petroleo Brasileiro SA – PETROBRAS	8,468
Royal Bank of Canada	3,647	Banco Santander SA	6,862
National Australia Bank Ltd	3,532	Honda Motor Co Ltd	6,451
Skandinaviska Enskilda Banken AB – SEB	3,310	FMS Wertmanagement	6,319
Gazprom OAO	3,150	Commonwealth Bank of Australia	6,059
Sparebank 1 Gruppen AS	3,000	Svenska Handelsbanken AB	6,031
Banco Santander SA	2,800	Bank Nederlandse Gemeenten NV – BNG	5,968
Toyota Motor Corp	2,750	Royal Dutch Shell plc	5,813
Danske Bank A/S	2,742	Mitsubishi UFJ Financial Group Inc	5,558
Goldman Sachs Group Inc	2,613	Caisse d'Amortissement de la Dette Sociale – CADES	5,481
Philip Morris International Inc	2,500	Statoil ASA	5,481
Memo Items			
European Investment Bank – EIB	35,052		
European Union	10,050		

Source: DCM Analytics.

3 THE EURO IN INTERNATIONAL LOAN AND DEPOSIT MARKETS

Table A9 Outstanding international loans, by currency

	All cross-border loans [1]					Loans by banks outisde the euro area to borrowers outside the euro area [2]				
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
Outstanding amounts (in USD billions, at current exchange rates, end of period)										
2001	2,029	296	1,266	83	385	392	51	201	46	95
2002	2,226	376	1,343	106	402	379	80	189	50	61
2003	2,685	514	1,551	117	504	422	111	237	44	30
2004	3,092	657	1,702	152	581	455	159	236	42	18
2005	3,433	632	2,010	118	672	552	145	296	58	54
2006	4,528	809	2,672	119	928	735	176	412	51	96
2007	5,677	1,170	3,131	182	1,193	1,114	306	697	73	39
2008	5,437	1,101	3,064	168	1,105	1,153	238	784	78	54
2009	5,155	972	2,964	110	1,109	1,185	221	810	49	105
2010	5,583	1,029	3,218	125	1,212	1,242	214	863	52	114
2011	5,881	1,110	3,336	195	1,239	1,443	244	935	65	198
2012	6,090	1,193	3,436	165	1,297	1,535	221	983	54	278
2013	6,048	1,106	3,441	191	1,310	1,542	219	1,068	62	193
2013 Q2	6,081	1,143	3,461	193	1,284	1,571	215	998	60	298
Q3	6,063	1,134	3,431	198	1,301	1,543	218	1,025	68	233
Q4	6,048	1,106	3,441	191	1,310	1,542	219	1,068	62	193
Percentages of outstanding amounts (at constant exchange rates, end of period)										
2001	100.0	20.4	55.8	4.5	19.3	100.0	18.2	46.3	13.1	22.3
2002	100.0	20.7	56.2	5.0	18.1	100.0	25.4	45.8	13.7	15.2
2003	100.0	20.4	56.5	4.3	18.8	100.0	27.9	54.5	10.3	7.3
2004	100.0	21.6	55.1	4.8	18.5	100.0	35.3	51.7	9.0	4.0
2005	100.0	20.7	56.2	3.7	19.5	100.0	28.8	50.5	11.1	9.6
2006	100.0	18.6	58.5	3.0	19.9	100.0	24.5	54.9	7.7	12.9
2007	100.0	19.7	56.2	3.5	20.7	100.0	26.0	63.4	7.1	3.5
2008	100.0	20.0	56.1	2.7	21.3	100.0	20.6	68.5	5.9	5.0
2009	100.0	18.2	57.9	1.9	22.0	100.0	18.1	69.1	3.7	9.1
2010	100.0	18.9	57.3	1.7	22.0	100.0	17.8	69.7	3.2	9.3
2011	100.0	20.0	56.3	2.4	21.4	100.0	18.0	64.8	3.3	13.8
2012	100.0	20.4	56.1	2.2	21.4	100.0	15.0	64.0	2.9	18.1
2013	100.0	18.3	56.9	3.2	21.7	100.0	14.2	69.2	4.0	12.5
2013 Q2	100.0	19.5	56.1	3.0	21.4	100.0	14.3	63.1	3.6	19.0
Q3	100.0	19.0	56.4	3.0	21.5	100.0	14.4	66.4	4.1	15.1
Q4	100.0	18.3	56.9	3.2	21.7	100.0	14.2	69.2	4.0	12.5
Percentages of outstanding amounts (at current exchange rates, end of period)										
2001	100.0	14.6	62.4	4.1	19.0	100.0	12.9	51.3	11.7	24.1
2002	100.0	16.9	60.3	4.7	18.0	100.0	21.0	49.8	13.1	16.0
2003	100.0	19.1	57.7	4.3	18.8	100.0	26.3	56.1	10.4	7.2
2004	100.0	21.3	55.0	4.9	18.8	100.0	35.0	51.9	9.2	3.9
2005	100.0	18.4	58.6	3.4	19.6	100.0	26.2	53.6	10.5	9.7
2006	100.0	17.9	59.0	2.6	20.5	100.0	23.9	56.0	6.9	13.1
2007	100.0	20.6	55.2	3.2	21.0	100.0	27.4	62.6	6.6	3.5
2008	100.0	20.2	56.3	3.1	20.3	100.0	20.6	68.0	6.7	4.6
2009	100.0	18.9	57.5	2.1	21.5	100.0	18.7	68.3	4.1	8.9
2010	100.0	18.4	57.6	2.2	21.7	100.0	17.2	69.5	4.2	9.1
2011	100.0	18.9	56.7	3.3	21.1	100.0	16.9	64.8	4.5	13.8
2012	100.0	19.6	56.4	2.7	21.3	100.0	14.4	64.0	3.5	18.1
2013	100.0	18.3	56.9	3.2	21.7	100.0	14.2	69.2	4.0	12.5
2013 Q2	100.0	18.8	56.9	3.2	21.1	100.0	13.7	63.5	3.8	19.0
Q3	100.0	18.7	56.6	3.3	21.5	100.0	14.1	66.4	4.4	15.1
Q4	100.0	18.3	56.9	3.2	21.7	100.0	14.2	69.2	4.0	12.5

Sources: BIS and ECB calculations.
Note: Excluding interbank loans.
1) Including loans to/from Japan, Switzerland, the United Kingdom and the United States in their domestic currency.
2) Excluding loans to/from Japan, Switzerland, the United Kingdom and the United States in their domestic currency.

Table A10 Outstanding international deposits, by currency

	All cross-border deposits[1]				Deposits by depositors outisde the euro area in banks outside the euro area[2]				
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
Outstanding amounts (in USD billions, at current exchange rates, end of period)										
2001	2,404	409	1,440	83	472	776	103	546	37	91
2002	2,770	523	1,542	93	611	810	135	486	39	150
2003	3,475	720	1,914	84	757	970	192	558	42	178
2004	4,094	921	2,219	112	842	993	240	565	35	153
2005	4,254	879	2,418	117	840	1,108	249	696	55	109
2006	5,393	1,054	3,149	134	1,056	1,365	302	901	46	116
2007	6,738	1,350	3,951	146	1,291	1,748	441	1,137	48	121
2008	6,354	1,282	3,819	127	1,126	1,648	408	1,031	58	151
2009	5,952	1,216	3,476	94	1,165	1,689	415	986	41	247
2010	6,388	1,215	3,860	81	1,232	1,844	391	1,067	36	350
2011	6,365	1,195	3,799	118	1,253	1,890	377	1,157	48	309
2012	6,567	1,260	3,890	106	1,311	1,729	350	1,137	46	198
2013	6,760	1,324	3,984	121	1,331	1,684	356	1,143	48	139
2013 Q2	6,876	1,306	4,144	130	1,296	1,906	385	1,233	56	233
Q3	6,780	1,315	4,038	133	1,296	1,814	380	1,138	58	238
Q4	6,760	1,324	3,984	121	1,331	1,684	356	1,143	48	139
Percentages of outstanding amounts (at constant exchange rates, end of period)										
2001	100.0	23.5	52.9	3.8	19.8	100.0	18.9	64.0	5.4	11.8
2002	100.0	23.1	51.7	3.5	21.7	100.0	20.6	56.4	5.1	17.9
2003	100.0	22.1	54.0	2.4	21.5	100.0	21.2	56.5	4.3	18.0
2004	100.0	22.9	54.4	2.7	20.0	100.0	24.6	57.1	3.4	15.0
2005	100.0	23.2	54.5	3.0	19.4	100.0	25.1	60.0	5.3	9.6
2006	100.0	20.4	58.1	2.8	18.8	100.0	22.9	65.3	3.8	8.0
2007	100.0	19.2	59.9	2.4	18.5	100.0	24.2	66.4	3.0	6.4
2008	100.0	19.9	59.7	1.7	18.7	100.0	24.5	62.6	3.1	9.8
2009	100.0	19.7	58.8	1.4	20.1	100.0	23.8	59.0	2.2	15.0
2010	100.0	19.5	60.0	1.0	19.6	100.0	21.8	57.6	1.5	19.1
2011	100.0	19.8	59.0	1.4	19.9	100.0	21.1	60.7	1.8	16.4
2012	100.0	19.9	58.8	1.3	20.0	100.0	21.0	65.4	2.1	11.5
2013	100.0	19.6	58.9	1.8	19.7	100.0	21.1	67.8	2.8	8.2
2013 Q2	100.0	19.7	59.4	1.8	19.2	100.0	21.0	63.9	2.7	12.4
Q3	100.0	19.7	59.3	1.8	19.2	100.0	21.3	62.5	3.0	13.2
Q4	100.0	19.6	58.9	1.8	19.7	100.0	21.1	67.8	2.8	8.2
Percentages of outstanding amounts (at current exchange rates, end of period)										
2001	100.0	17.0	59.9	3.5	19.6	100.0	13.2	70.3	4.7	11.7
2002	100.0	18.9	55.7	3.4	22.1	100.0	16.7	60.0	4.8	18.5
2003	100.0	20.7	55.1	2.4	21.8	100.0	19.8	57.5	4.3	18.4
2004	100.0	22.5	54.2	2.7	20.6	100.0	24.2	56.9	3.5	15.4
2005	100.0	20.7	56.8	2.7	19.8	100.0	22.5	62.8	5.0	9.8
2006	100.0	19.6	58.4	2.5	19.6	100.0	22.1	66.0	3.4	8.5
2007	100.0	20.0	58.6	2.2	19.2	100.0	25.2	65.0	2.8	6.9
2008	100.0	20.2	60.1	2.0	17.7	100.0	24.7	62.6	3.5	9.2
2009	100.0	20.4	58.4	1.6	19.6	100.0	24.6	58.4	2.4	14.6
2010	100.0	19.0	60.4	1.3	19.3	100.0	21.2	57.9	1.9	19.0
2011	100.0	18.8	59.7	1.9	19.7	100.0	19.9	61.2	2.5	16.3
2012	100.0	19.2	59.2	1.6	20.0	100.0	20.2	65.7	2.6	11.4
2013	100.0	19.6	58.9	1.8	19.7	100.0	21.1	67.8	2.8	8.2
2013 Q2	100.0	19.0	60.3	1.9	18.8	100.0	20.2	64.7	2.9	12.2
Q3	100.0	19.4	59.5	2.0	19.1	100.0	21.0	62.7	3.2	13.1
Q4	100.0	19.6	58.9	1.8	19.7	100.0	21.1	67.8	2.8	8.2

Sources: BIS and ECB calculations.
Note: Excluding interbank loans.
1) Including loans to/from Japan, Switzerland, the United Kingdom and the United States in their domestic currency.
2) Excluding loans to/from Japan, Switzerland, the United Kingdom and the United States in their domestic currency.

4 THE EURO IN INTERNATIONAL TRADE IN GOODS AND SERVICES

Table A11 The euro's share as a invoicing/settlement currency in extra-euro area transactions of euro area countries

1. Exports and imports of goods (as a percentage of the total)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Exports										
Euro area	-	-	59.5	59.6	63.6	64.1	63.4	69.9	66.7	67.2
of which										
Belgium	57.7	54.8	58.5	52.8	56.2	57.4	52.3	55.3	56.6	-
France	49.2	49.8	50.8	51.5	49.3	52.3	51.8	51.9	48.4	52.8
Italy	59.0	58.3	59.4	64.3	68.7	69.2	67.4	-	-	-
Greece	41.8	35.1	34.1	35.5	32.6	36.3	33.7	35.5	32.3	31.3
Spain	62.4	62.1	61.6	65.2	60.6	62.8	59.6	52.5	56.2	59.3
Cyprus	-	-	-	2.8	21.2	24.3	25.9	49.1	-	-
Latvia	-	-	-	-	-	-	82.5	79.7	78.6	81.2
Luxembourg	61.8	61.4	57.7	59.2	51.9	50.3	63.2	55.3	-	-
Portugal	55.5	56.5	55.8	61.4	63.1	64.2	63.4	62.1	59.3	55.2
Slovenia	-	-	74.2	79.0	79.4	84.7	82.7	83.5	81.6	80.8
Slovakia	-	-	-	-	96.5	94.8	94.4	96.0	96.5	96.2
Estonia	-	-	-	-	-	52.4	48.2	69.7	71.5	79.6
Imports										
Euro area	-	-	48.8	47.9	47.5	45.2	49.4	52.2	51.3	51.7
of which										
Belgium	55.7	51.2	58.3	56.1	56.4	57.7	53.0	55.7	57.3	-
France	45.7	46.3	44.7	44.8	44.2	44.3	44.4	47.4	43.6	53.7
Italy	41.2	39.4	43.0	44.3	47.8	49.7	46.9	-	-	-
Greece	39.6	32.6	32.3	33.7	37.3	37.9	30.8	32.9	23.6	23.4
Spain	61.3	56.0	54.8	56.7	58.8	61.7	59.5	51.7	52.0	47.9
Cyprus	-	-	-	1.7	9.8	12.7	11.6	41.1	-	-
Latvia	-	-	-	-	-	-	78.8	79.3	83.6	80.5
Luxembourg	50.0	43.8	38.8	37.9	38.8	55.3	55.0	48.8	-	-
Portugal	58.0	54.4	52.6	51.8	53.7	56.6	51.4	45.9	39.8	36.3
Slovenia	-	-	64.0	73.1	75.0	69.9	61.9	64.2	54.1	59.0
Slovakia	-	-	-	-	82.1	77.8	76.5	69.2	67.6	67.3
Estonia	-	-	-	-	-	47.1	45.1	60.9	66.0	72.2

2. Exports and imports of services (as a percentage of the total)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Exports										
Euro area	-	-	51.0	54.5	55.5	53.4	52.7	55.0	49.6	56.3
of which										
Belgium	72.2	73.0	73.7	74.2	73.9	75.9	74.8	75.1	72.8	78.7
Italy	48.9	56.5	53.9	59.3	80.4	75.7	77.1	74.0	74.7	73.5
Greece	13.0	14.1	12.8	13.3	15.5	19.0	19.2	25.2	27.8	29.4
Spain	64.3	67.5	67.2	71.8	71.2	70.0	72.3	73.9	62.0	51.4
Cyprus	-	-	-	40.0	39.9	37.7	38.9	45.0	54.2	50.2
Latvia	-	-	-	-	-	-	58.3	59.0	61.3	63.0
Luxembourg	41.9	42.4	47.7	48.4	46.6	47.3	45.7	48.3	-	-
Portugal	56.2	58.2	60.8	59.9	65.8	68.1	62.1	62.1	60.1	63.0
Slovenia	-	-	80.1	80.8	83.2	82.7	80.1	85.4	85.8	90.7
Estonia	-	-	-	-	-	43.5	44.4	57.1	61.4	65.9
Imports										
Euro area	-	-	53.8	55.7	57.7	56.1	56.9	60.5	55.9	61.5
of which										
Belgium	68.3	71.2	73.9	72.4	74.0	71.1	72.2	70.2	67.9	72.4
Italy	52.3	55.5	56.0	59.1	65.6	62.7	64.4	64.3	61.8	62.7
Greece	21.3	22.5	24.5	27.5	28.9	34.5	28.5	31.7	33.7	39.6
Spain	57.0	60.2	60.3	60.7	61.5	61.8	61.8	62.6	63.3	64.7
Cyprus	-	-	-	27.9	13.3	50.9	51.2	45.7	58.2	59.7
Latvia	-	-	-	-	-	-	42.5	42.1	38.6	45.0
Luxembourg	30.2	31.2	29.8	34.0	38.4	41.2	48.0	45.8	-	-
Portugal	70.8	72.5	74.5	72.6	73.3	72.7	71.3	66.7	62.1	65.2
Slovenia	-	-	53.1	57.2	58.1	64.8	67.1	69.2	66.4	67.9
Estonia	-	-	-	-	-	43.0	43.9	53.3	57.8	60.7

Sources: National central banks and ECB calculations.
1) Data for Estonia (services), Greece, Cyprus, Slovenia, Spain, Italy (goods until 2010), Portugal and Luxembourg refer to the currency of settlement.
2) Services data for Greece, Cyprus, Spain, Italy (after 2008) exclude travel item.

Table A12 The euro's share in total exports and imports in non-euro area countries

(as a percentage of the total)

1. Exports and imports of goods

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Exports										
Bulgaria	62.2	60.4	57.7	60.5	61.5	68.6	62.2	62.7	61.1	60.9
Czech Republic	73.4	71.9	68.8	72.0	73.6	76.0	76.4	77.0	77.2	80.1
Croatia	-	-	-	-	-	-	-	-	81.0	80.0
Lithuania	49.7	51.3	56.2	56.5	55.7	60.5	59.7	58.1	59.5	60.7
Poland	69.3	70.1	69.9	69.8	68.2	66.1	-	-	-	-
Romania	66.3	64.3	67.6	67.7	68.5	75.9	71.3	67.1	70.1	73.5
Sweden	-	-	-	-	-	-	22.0	21.6	23.4	23.3
Imports										
Bulgaria	63.6	60.4	58.9	60.2	65.7	70.9	62.6	61.8	61.8	56.7
Czech Republic	71.3	70.6	67.8	68.0	68.3	68.9	68.5	68.0	68.0	68.9
Croatia	-	-	-	-	-	-	-	-	70.4	70.6
Lithuania	55.0	51.3	53.8	55.4	55.6	57.2	55.8	55.7	56.1	56.3
Poland	61.7	60.5	58.6	59.1	56.4	54.8	-	-	-	-
Romania	70.8	71.1	73.4	71.5	70.9	73.2	66.8	64.2	60.5	64.9
Sweden	-	-	-	-	-	-	18.8	18.5	17.3	19.1

2. Exports and imports of services

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Exports										
Bulgaria	-	-	73.1	76.3	77.9	79.0	84.5	82.6	81.4	74.0
Czech Republic	68.3	64.6	70.3	67.2	72.3	76.0	76.9	78.5	80.5	76.1
Lithuania	49.4	51.1	51.9	53.9	54.7	59.8	56.9	54.2	53.9	55.7
Poland	69.3	70.1	69.9	69.8	68.2	66.1	-	-	-	-
Romania	-	71.0	72.0	71.2	75.2	73.8	62.2	67.0	65.1	64.1
Imports										
Bulgaria	-	-	69.9	77.1	77.1	80.8	76.9	74.4	74.4	74.7
Czech Republic	64.8	61.1	61.4	61.3	69.3	78.4	75.6	75.3	77.3	74.3
Lithuania	47.0	47.8	54.1	53.5	51.0	52.4	50.5	50.8	56.0	58.1
Poland	53.0	54.8	54.3	54.0	54.0	58.9	-	-	-	-
Romania	-	64.0	69.0	74.6	74.5	78.6	69.4	69.5	63.7	68.1

Source: National central banks.
1) Data for Bulgaria and Romania refer to the currency of settlement.

5   THE EURO AS A PARALLEL CURRENCY: THE USE OF EURO-DENOMINATED BANK LOANS AND DEPOSITS IN COUNTRIES OUTSIDE THE EURO AREA

Table A13 Outstanding euro-denominated bank loans in selected countries

	Outstanding amounts (in EUR millions)		As a percentage of total loans		As a percentage of foreign currency loans		Outstanding amounts of foreign currency denominated loans	
	2012	2013	2012	2013	2012	2013	2012	2013
Non-euro area EU Member States								
Bulgaria	17,242	16,430	61.5	58.5	96.9	97.0	17,803	16,929
Czech Republic	6,354	7,550	7.5	9.4	92.4	93.4	6,878	8,086
Croatia	3,135	3,529	9.6	11.0	95.9	96.6	3,269	3,655
Lithuania	11,425	10,972	70.8	70.3	96.3	96.9	11,869	11,317
Poland	20,568	21,635	10.0	10.3	33.2	36.6	61,889	59,155
Romania	27,932	26,485	54.9	54.2	87.9	88.9	31,782	29,779
EU candidate and potential candidate countries								
Albania	2,151	2,085	55.3	54.4	89.0	89.7	2,416	2,324
Bosnia and Herzegovina	91	84	1.3	1.1	88.7	95.2	103	89
FYR Macedonia	1,819	1,855	52.5	50.2	95.9	96.3	1,898	1,926
Serbia	9,488	8,952	65.2	66.6	86.1	87.1	11,019	10,279
Turkey	19,759	22,168	8.3	9.1	31.2	32.3	63,363	68,736

Sources: National central banks and ECB calculations.
Notes: Definitions of loans may vary across countries. Data may be subject to revisions as compared with previous issues of this report owing to methodological changes. Foreign exchange-indexed loans are not included.

Table A14 Outstanding euro-denominated bank deposits in selected countries

	Outstanding amounts (in EUR millions)		As a percentage of total deposits		As a percentage of foreign currency deposits		Outstanding amounts of foreign currency deposits (in EUR millions)	
	2012	2013	2012	2013	2012	2013	2012	2013
Non-euro area EU Member States								
Bulgaria	9,393	10,358	35.2	35.7	82.6	83.7	11,365	12,380
Czech Republic	7,030	7,076	6.5	6.8	78.3	79.4	8,981	8,917
Croatia	17,939	18,364	55.7	55.8	88.4	89.6	20,293	20,497
Hungary	7,228	7,215	15.7	15.6	78.7	73.9	9,189	9,770
Lithuania	2,673	2,890	21.3	21.9	77.5	79.7	3,450	3,627
Poland	12,173	12,391	6.2	6.1	66.0	65.4	18,449	18,953
Romania	13,794	14,212	31.0	29.5	85.3	86.3	16,180	16,466
EU candidate and potential candidate countries								
Albania	2,233	2,138	32.5	30.3	68.7	65.8	3,248	3,250
Bosnia and Herzegovina	2,688	2,784	47.7	46.0	90.1	90.5	2,983	3,077
FYR Macedonia	1,665	1,664	41.7	39.5	86.4	86.8	1,927	1,918
Serbia	9,092	9,049	72.8	70.7	92.4	92.4	9,839	9,792
Turkey	37,185	46,687	11.7	14.9	38.1	42.9	97,548	108,921

Sources: National central banks and ECB calculations.
Notes: Definitions of deposits may vary across countries. Data may be subject to revisions as compared with previous issues of this report owing to methodological changes.