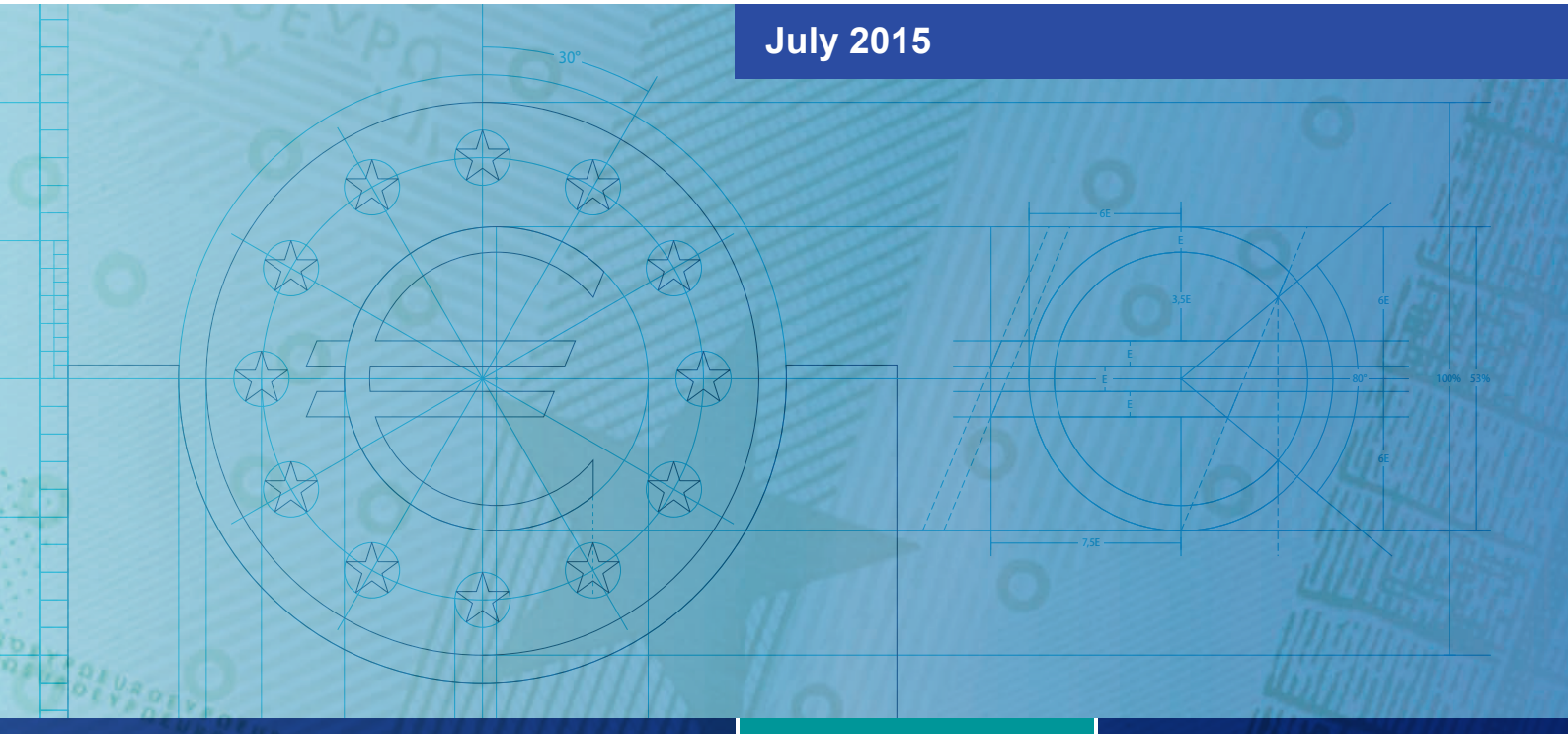
EUROPEAN CENTRAL BANK

EUROSYSTEM

The international role of the euro

July 2015



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Foreword

This is the 14th 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 Eurosystem as regards the development, determinants and implications of the use of the euro by non-euro area residents.

This review finds that developments in the international role of the euro during the review period in 2014 and early 2015 took place in an environment characterised by differences in economic recovery paths across major economies and divergences in monetary policy cycles. This environment had a differentiated impact on the euro's international status, which underlined its multifaceted nature. One salient development was the depreciation of the euro's exchange rate which affected various indicators of the euro's international use. At constant exchange rates, most indicators used to assess the euro's international use either further recovered from their preceding dip in the wake of the euro area sovereign debt crisis, or remained broadly stable over the review period. This observation covers the euro's use as a reserve, financing and invoicing currency.

This review also examines in greater depth issues that have a bearing on the euro's international role and the global currency system, including the implications of recent movements in the euro's exchange rate in relation to its role as an international invoicing currency, and how the roles of different national currencies as international reserves were affected by the shift from fixed to flexible exchange rates in the wake of the collapse of the Bretton Woods system. This analysis is presented in the form of two 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

1 Introduction

This report reviews developments in the international role of the euro in 2014 and early 2015, tracking a comprehensive set of indicators that cover a number of different market segments.

The first part 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. Moreover, the report presents survey-based evidence prepared by the OeNB 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 in-depth analysis of issues that have a bearing on the international role of the euro and the international monetary system. This year, it contains two special features: an analysis of the implications of recent movements in the euro's exchange rate in relation to its role as an international invoicing currency; and an analysis that sheds light on how the roles of different national currencies as international reserves were affected by the shift from fixed to flexible exchange rates in the wake of the collapse of the Bretton Woods system.

2 Main findings

Developments in the international role of the euro in 2014 and early 2015

The environment during the review period for this report was characterised by differences in economic recovery paths across major economies and divergences in monetary policy cycles. The ECB, for instance, took a number of standard and non-standard monetary policy measures that led to a more accommodative monetary policy stance, including the launch of the expanded asset purchase programme. This environment had a differentiated impact on the euro's international status, which underlines its multifaceted nature (for a discussion of the benefits and costs of international currency status see Box 1).

One salient development was the depreciation of the euro's nominal effective exchange rate by 10% in the 12 months to May 2015, following a period of sustained appreciation towards multi-year peaks in early 2014. Although significant by historical standards, the depreciation is broadly in line with a standard model of uncovered interest rate parity that takes into account expectations about future paths of relative real interest rates. The euro's depreciation affected various indicators of the euro's international use. At constant exchange rates, most indicators that were used to assess the euro's international use either further recovered from their preceding dip in the wake of the euro area sovereign debt crisis, or remained broadly stable over the review period. This observation covers the euro's use as a reserve, financing and invoicing currency (see also Table 1).

In an environment characterised by low and declining interest rates in the euro area, the euro was increasingly used as a funding currency by international borrowers. The share of the euro in international debt issuance increased by 9 percentage points to almost 30% in the first quarter of 2015, compared with the same quarter of 2014. Investment-grade corporations in advanced economies, mainly the United States, were particularly active issuers of international bonds denominated in euro. They made use of relatively low funding costs in the euro area. Specifically, relatively low euro credit spreads made euro borrowing attractive, despite the elevated cost of swapping it back into dollars. In addition, borrowers sought to match their euro-denominated assets with their euro-denominated liabilities to hedge against exchange rate risk. By contrast, emerging market borrowers continued to rely predominantly on US dollar funding, with some notable exceptions, such as the floatation by Mexico of the world's first 100-year bond in euros. Observers raised concerns about risks arising from currency mismatches in the wake of the recent US dollar appreciation.

The pattern of foreign demand for euro area financial instruments has also been consistent with diverging monetary policy cycles. Total foreign demand for euro area portfolio investments remained stable during the review period compared to the previous four quarters. Foreign investors shifted, however, part of their portfolios away from euro area fixed income assets towards higher-yielding assets, including foreign debt securities and foreign and domestic equities. This portfolio rebalancing testifies to the importance of the effects arising from divergences in interest rate levels and their impact on relative asset prices between the euro area and the rest of the world.

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	22.2	22.4	**-0.2**	11,601	11,674	USD billions	**-0.6**
	(Q4 2014)	*(Q4 2013)*		*(Q4 2014)*	*(Q4 2013)*		
Oustanding international debt securities: narrow measure, i.e. excluding home currency issuance, at constant exchange rates	23.4	23.2	**0.2**	12,609	12,426	USD billions	**1.5**
	(Q4 2014)	*(Q4 2013)*		*(Q4 2014)*	*(Q4 2013)*		
Foreign currency-denominated debt issuance at current exchange rates	29.2	20.0	**9.2**	890	615	USD billions	**44.7**
	(Q1 2015)	*(Q1 2014)*		*(Q1 2015)*	*(Q1 2014)*		
Euro nominal effective exchange rate (broad measure against 38 trading partners, annual change)	-9.9	3.9	**-13.8**	…	…		
	(May 2015)	*(May 2014)*		…	…		
Foreign demand for euro area portfolio investments (annual net flows, as a percentage of euro area GDP)	2.9	2.9	**0.0**	293	290	EUR billions	**1.0**
	(Q1 2015)	*(Q1 2014)*		*(Q1 2015)*	*(Q1 2014)*		
Daily foreign exchange trading (settled by CLS), annual averages, at current exchange rates, as a perecentage of foreign exchange settlement	38.5	37.4	**1.1**	3.84	3.76	EUR billions	**2.0**
	(2014)	*(2013)*		*(2014)*	*(2013)*		
Foreign currency-denominated loans in CESEE countries, as a percentage of total foreign currency loans, at current exchange rates	83.2	82.7	**0.5**	182.8	191.0	EUR billions	**-4.3**
	(2014)	*(2013)*		*(2014)*	*(2013)*		
Foreign currency-denominated deposits in CESEE countries, as a percentage of total foreign currency deposits, at current exchange rates	84.2	83.8	**0.4**	112.7	110.1	EUR billions	**2.4**
	(2014)	*(2013)*		*(2014)*	*(2013)*		
Invoicing of goods exported from the euro area to non-euro area countries, at current exchange rates	67.3	67.5	**-0.2**	…	…		…
	(2014)	*(2013)*		…	…		…
Invoicing of goods imported to the euro area from non-euro area countries, at current exchange rates	48.8	48.6	**0.2**	…	…		…
	(2014)	*(2013)*		…	…		…
Foreign holdings of euro area debt denominated in euro (as a percentage of total euro-denominated debt)	21.4	19.8	**1.6**	16,818	16,839	EUR billions	**-0.1**
	(Q3 2014)	*(Q3 2013)*		*(Q3 2014)*	*(Q3 2013)*		
Cumulative net shipments of euro banknotes to destinations outside the euro area (not seasonally adjusted)	…	…	…	175.3	143.2	EUR billions	**22.4**
	…	…	…	*(Dec. 2014)*	*(Dec. 2013)*		

Sources: BIS, Dealogic, IMF, national sources and ECB calculations.

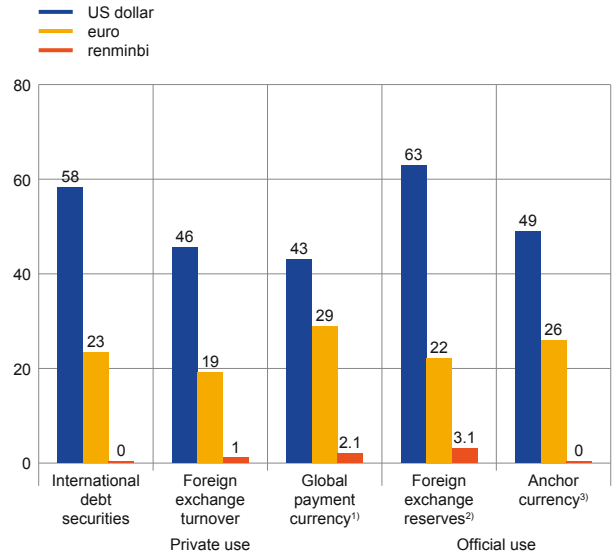
Divergences in monetary policy cycles across major economic areas – and the associated heightened exchange rate volatility – further led to a marked increase in foreign exchange turnover during the review period, although the currency composition of foreign exchange transactions remained broadly stable.

One of the most visible effects of the euro's exchange rate depreciation over the review period, however, was the decline in the nominal share of the euro in globally disclosed foreign exchange reserve holdings. Adjusting for exchange rate changes, the share of the euro indeed remained broadly stable in 2014, which suggests that

Chart 1

A comparison of selected international currencies

(percentage of total unless otherwise noted)



Sources: BIS, IMF, national sources and ECB calculations.
Notes: Data as at end-2014 or latest available.
1) According to Swift.
2) According to IMF COFER. The estimate for the renminbi refers to the other currency component and hence represents an upper bound.
3) Number of countries with pegged or managed exchange rates against respective anchor currency, according to the IMF's de facto exchange rate regime classification.

valuation changes were the overarching determinant of the decline. These developments also highlight that global foreign exchange reserve managers, on average, did not actively shift their portfolios away from the euro in 2014, in line with reported habit persistence in the management patterns of official reserve holders. Taking a longer perspective, the share of the US dollar and the euro both declined from late 2007 – by around 5 and 1 percentage points respectively – to 63% and 22% (at constant exchange rates). The share of non-traditional reserve currencies, including the Chinese renminbi, almost trebled over the same period, which points to somewhat greater diversification in global foreign exchange reserve holdings (see Chart 1).

As regards other indicators of the international use of the euro, net monthly shipments of euro banknotes to destinations outside the euro area were exceptionally strong in 2014 – almost trebling compared with 2013 – which partly reflected stronger demand for euro banknotes in the wake of heightened geopolitical uncertainty in the EU's neighbouring regions. The volume of euro-denominated loans in central, eastern and south-eastern Europe declined, in contrast, in line with measures taken by authorities in the region to curb foreign currency lending. At the same time, the share of the euro in foreign deposits in the region increased somewhat, thereby suggesting that it continued to be perceived as a safe store of value. Finally, the share of the euro as an invoicing or settlement currency for extra-euro area trade remained broadly stable in the review period, in both the goods and the services sector. At the same time, it recovered markedly in a number of countries that had experienced some reversals in the use of the euro as an invoicing or settlement currency in the wake of the euro area sovereign debt crisis. That said, the share of the euro in global payments, as measured by SWIFT, declined, to 29%, again reflecting, to a large extent, valuation effects arising from the depreciation of the euro vis-à-vis the US dollar.

Main findings of the special features

The implications of the recent movements in the euro's exchange rate for its role as an international invoicing currency are explored in the first special feature article. This article aims to analyse the impact of currency denomination choice in international transactions on the transmission of exchange rate movements to import prices. It relates differences in country-specific degrees of long-run exchange rate pass-through to the relative use of the euro as an international invoicing or settlement currency. The article finds a causal – and economically large – link between invoicing currency choice and exchange rate pass-through. It presents estimates that suggest

that an increase in the share of the euro as an invoicing currency for extra-euro area imports of 10 percentage points lowers the degree of exchange rate pass-through to import prices by close to 7 percentage points.

The second special feature article analyses how the roles of different national currencies as international reserves were affected by the shift from fixed to flexible exchange rates in the wake of the collapse of the Bretton Woods system. It provides evidence on the extent of the changes to the currency composition of global foreign exchange reserves since 1947 and examines whether there was a shift in the determinants of the currency composition of international reserves in the early 1970s. The article shows that inertia and policy credibility effects on reserve currency choice have become stronger post-Bretton Woods, while network effects appear to have weakened. It also shows that policy interventions designed to discourage the international use of a currency have been more effective than interventions to encourage its use. These findings are relevant for the prospects of international reserve currencies that are already established, such as the US dollar and the euro, as well as for the prospects of other currencies seeking to acquire international reserve status, such as the renminbi.

Box 1

Benefits and costs of international currency status

Balancing the benefits and costs arising from currency internationalisation may be seen from the perspective of both the issuing economy and the global economy.[1]

Consider the issuing economy first. One benefit is seigniorage, i.e. interest-free loans to the issuing central bank from non-residents who hold banknotes and non-remunerated deposits denominated in the international currency.[2] Another benefit is a reduction in transaction and hedging costs for domestic firms and households in their international trade transactions for goods and services, insofar as they can pay or receive payments in their own currency. The "exorbitant privilege" – to cite former French President Giscard d'Estaing – is yet another benefit. International currency issuers can issue debt to non-resident investors at low interest rates, to the extent that it is perceived as safe and liquid, and invest the proceeds in higher-yielding foreign assets.[3] A related benefit is the opportunity to mitigate the effects of "original sin" – i.e. the inability to issue international debt in domestic currency – and thereby currency mismatches on the external balance sheet and related financial stability risks (although this phenomenon has arguably declined in emerging market economies in recent years). A final benefit is partial insulation from external disturbances, in particular exchange rate volatility. Exchange rate pass-through to import

1 See, for example, Goldberg (2013) and Bénassy-Quéré (forthcoming) for more details.

2 Seigniorage depends on the interest rate level and can be expected to be limited when policy interest rates are close to the zero lower bound. The stock of euro banknotes circulating outside the euro area stood at €175 billion at the end of 2014, hence seigniorage reached about €90 million (or less than 0.1% of euro area GDP) with the interest rate on main refinancing operations being 5 basis points.

3 Gourinchas et al. (2010) estimate that the United States earned a positive return differential on its external balance sheet of about 2% per year in real terms over the period 1952-2009. The magnitude of this differential remains subject to controversy in the literature, however. Moreover, it can be discussed whether this "privilege" also holds for countries with a less dominant currency status relative to the US dollar. Some argue that the benefits of seigniorage and exorbitant privilege are essentially the same, except that the former refers to official issuers while the latter also refers to private issuers of an international currency.

and domestic prices declines significantly, even at distant horizons, if a significant share of imports of goods and services is invoiced in the domestic currency (see Special Feature A).[4]

Currency internationalisation may also create costs for the issuing economy, however. It may make monetary developments difficult to interpret, with shifts in non-resident demand for euro money, including banknotes and deposits, having a direct impact on money aggregates.[5] It may complicate the conduct of monetary policy, if money demand and capital flows become unstable as a result of external shocks. Another potential cost is the "exorbitant" duty of international currency issuers, i.e. the flipside of their "exorbitant privilege". International currency issuers provide insurance to the rest of the world in times of global stress which gives rise to potentially large financial transfers between economies.[6] International currency issuance may also create additional responsibilities and challenges, which the global financial crisis has made more apparent. For instance, central banks in major advanced economies have been called upon by emerging markets to establish a structured network of currency swap agreements to mitigate the risks of international currency liquidity shortage, which may arguably conflict with domestic monetary policy objectives.

Finally, currency internationalisation creates benefits and costs for the global economy. On the one hand, it has been argued that a move towards a more multipolar currency system – i.e. a system where the US dollar, the euro and the Chinese renminbi would all play consequential roles – could increase its stability and put greater discipline on the domestic economic policies of reserve currency issuers. Sceptics have stressed that a move towards multipolarity could increase instability, instead (see Farhi et al., 2011, for a review of the debate). In the presence of alternative reserve currencies, rebalancing and precipitous capital flows could be triggered even by minor changes in fundamentals on account of asymmetric information and herding behaviour among investors. It is therefore essential that any transition towards a multipolar international monetary system occurs in a gradual manner so that disruptions and excessive volatility can be avoided.

The ECB takes a neutral view of the international role of the euro, which is a market-based phenomenon. It should be emphasised that the ECB, by ensuring price and financial stability in the euro area, as well as financial integration within the euro area, indirectly contributes to enhancing the international role of the euro.

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4 For instance, Gopinath, Itskhoki and Rigobon (2010) find large differences in the extent of exchange rate pass-through to US import prices between US dollar-priced goods (25%) and non-US dollar-priced goods (95%). In the long run, whether domestic consumers are shielded from exchange rate movements depends on the degree of market competition and, for instance, on the incentives for exporting firms to absorb exchange rate movements through adjustments in markups.

5 At 1.5% of M3 at the end of 2013, for instance, demand for euro banknotes by non-euro area residents remained modest, however. Holdings by euro area residents of euro-denominated deposits with financial institutions established abroad may similarly be relevant for monetary policy assessments, to the extent that they are held for transaction purposes.

6 As argued by Gourinchas et al. (2010), this is epitomised, for example, by the fact that the decline in the value of US external asset holdings was more sizeable than the decline in the value of foreigners' holdings in the United States in the period 2007-09 (the net foreign position of the United States worsened by 19% of GDP).

3 The euro exchange rate and euro area capital flows

3.1 Developments in the exchange rate of the euro

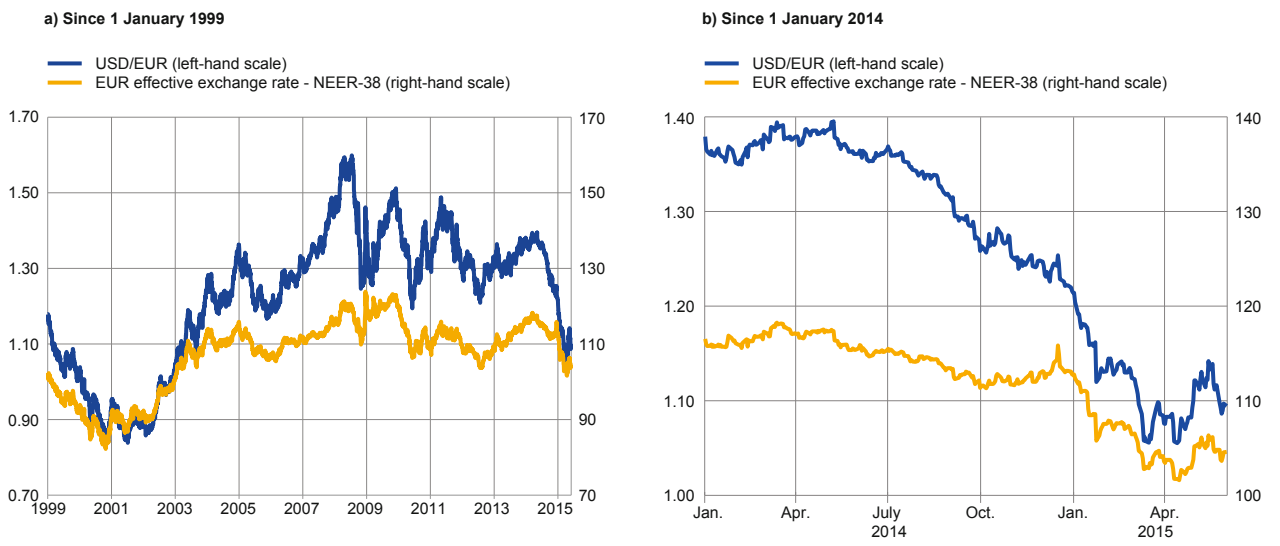
Following a period of sustained appreciation which lasted until early May 2014, the euro exchange rate depreciated markedly in effective terms, most notably vis-à-vis the US dollar. This weakening took place against the background of differences in economic recovery paths across major economies and divergences in monetary policy cycles, which include the contrast between additional unconventional monetary policy measures taken by the ECB and the Federal Reserve signalling its willingness to embark on steps towards monetary policy normalisation.

In early May 2014 the euro had reached peaks similar to those observed in the winter of 2010/11, both in nominal effective terms and in bilateral terms vis-à-vis the US dollar (see Chart 2). Thereafter, between early May 2014 and end-May 2015, the euro depreciated by 23% vis-à-vis the US dollar and by 12% in nominal effective terms (against a basket of currencies of 38 major trading partners of the euro area). The euro's depreciation vis-à-vis the US dollar was particularly noticeable over this period, partly reflecting the Federal Reserve's steps towards monetary policy normalisation. By contrast, the euro's effective exchange rate remained broadly stable until the end of 2014. From the beginning of 2015, the euro depreciated on a broader basis, however, in the wake of rising expectations first, and the ECB's decision thereafter, to undertake large-scale asset purchases under the expanded asset purchase programme with the aim of maintaining price stability in the euro area.

Chart 2

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

(US dollar per euro; index, daily)



Source: ECB.
Notes: The NEER-38 is the nominal effective exchange rate of the euro against 38 major 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 2015.

Table 2

Contributions to the euro's effective exchange rate movements from early May 2014

(30 April 2014 to 31 May 2015)

	Change (percentage)	Trade weight (percentage)	Contribution (percentage point)
Russian rouble	14.9	3.5	0.5
Other European	0.1	17.6	0.0
EUR-linked	0.0	2.7	0.0
Advanced oil exporters	-4.4	3.3	-0.1
Japanese yen	-4.4	5.8	-0.3
Swiss franc	-16.4	5.2	-0.9
Advanced Asia (ex-JP)	-17.4	5.8	-1.0
Other EMEs	-7.5	14.0	-1.0
Pound sterling	-13.4	12.0	-1.6
US dollar	-23.1	13.6	-3.2
Dollar-linked (ex-US)	-24.0	16.5	-4.0
NEER-38	-11.5	100.0	-11.5

Source: EBC.
Notes: column 'percentage change' presents the change via-a-vis the currencies of the respective country group, trade weighted by country; column 'trade weight' presents the aggregate trade weight of the particular country group; column 'contribution' presents the contribution of the country group in the overall effective exchange rate change. 'EUR-linked' includes Bulgaria, Denmark and Iceland; 'Other EU' includes Croatia, Czech Republic, Hungary, Poland, Romania and Sweden; 'Advanced oil exporters' includes Australia, Canada, New Zealand and Norway; 'Other EME's' includes Algeria, Argentina, Brazil, Indonesia, India, Israel, Morocco, Mexico, Malaysia, the Philippines, South Africa, Thailand and Turkey; 'Advanced Asia (ex-JP)' includes Korea, Singapore and Taiwan; 'Dollar-linked' includes China and Hong Kong.

A breakdown of the euro's effective depreciation since May 2014 into major (groups of) currencies suggests that approximately two-thirds of the euro's depreciation can be ascribed to a weakening vis-à-vis the US dollar (with a contribution of -3.2 percentage points) and to currencies linked to the US dollar, such as the Chinese renminbi (-4.0 percentage points) (see Table 2). With respect to the remaining third, the euro depreciated notably against the currencies of other advanced economies, such as the pound sterling (with a contribution of -1.6 percentage point) and advanced Asian currencies that also have traditionally strong links to the US dollar (with a contribution of -1.0 percentage point). The euro also depreciated against the Swiss franc (with a contribution of -0.9 percentage points) after the Swiss National Bank abandoned its exchange rate ceiling of 1.20 CHF/EUR in January 2015. Moreover, the euro weakened, albeit to a lesser extent, against the Japanese yen (with a contribution of -0.3 percentage point) and the currencies of major emerging market economies (with a contribution of -1.0 percentage point), excluding Russia. The euro's depreciation vis-a-vis the currencies of advanced oil exporters (by -4.4%) had only a small contribution to the overall decline of the euro's effective exchange rate (-0.1 percentage points). Finally the euro appreciated strongly vis-à-vis the Russian rouble (+15% or a contribution of 0.5 percentage point), in particular after the Central Bank of Russia decided to abandon its dual currency basket and to let the rouble float freely in November 2014.

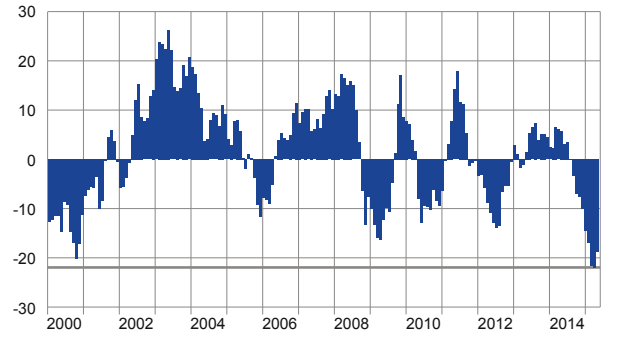
The developments among major currencies reflect differences in economic recovery paths across major economies and divergences in monetary policy cycles. On the one hand, they reflect the additional conventional and unconventional monetary policy measures taken by the ECB during the review period in an environment of slowing economic recovery and muted inflation. On the other hand, the Federal Reserve took steps that signalled its willingness to embark on monetary policy normalisation by continuing to taper and eventually ceasing its domestic asset purchases and by preparing markets for an increase in the target range of the federal funds rate in an environment of firmer domestic economy recovery. At the same time, the euro weakened, albeit to a lesser extent, against the British pound as the Bank of England kept the level of interest rates and the stock of its asset purchase facility constant. Finally, the euro depreciated moderately vis-à-vis the Japanese yen as the Bank of Japan took further monetary easing measures in late October 2014 to achieve its medium-term inflation target and increased the amount of unsterilised government bond purchases under its extended Qualitative and Quantitative Monetary Easing programme.

From a longer-term perspective, the euro's depreciation vis-à-vis the US dollar over the 12-month period from May 2014 to April 2015 (-23%) has been the largest since the inception of the single currency in 1999 (see Chart 3).

Chart 3

12-month overlapping changes in the USD/EUR exchange rate

(observations since 1999; percentages)

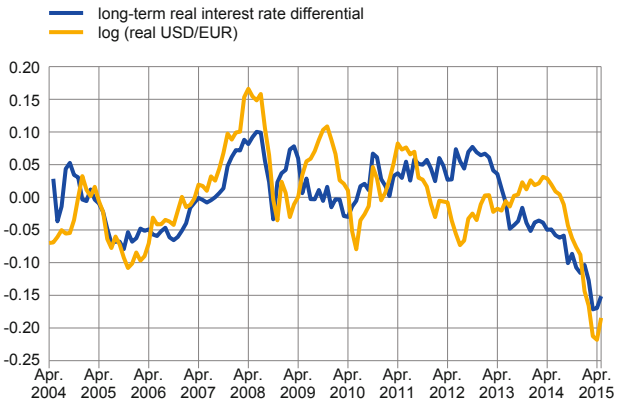


Source: ECB.

Chart 4

The real exchange rate of the USD/EUR and its UIP benchmark

(percentage deviation from sample average)



Sources: Bloomberg, ECB.
Notes: The decomposition of the real bilateral exchange rate (q) is based on the forward solution of the risk-adjusted UIP condition: $q_t - \bar{q} = -R_t - \Lambda_t$ where q_t is the log real exchange rate, R_t is the long-term cumulated expected real interest rate differential and Λ_t the long-term cumulated expected risk premium (see Engel and West, 2010). Expectations of long-term real rate differentials are approximated by the de-meaned series of 15-year long-term zero coupon bond yields minus inflation expectations derived from index-linked zero coupon bonds, assuming that the expectation hypothesis of interest rates holds: $R_t \approx N(y_t^{US,t+N} - E_t \pi^{US,t+N}) - N(y_t^{*,t+N} - E_t \pi^{*,t+N})$.

In order to provide quantitative estimates of the determinants of these developments in the USD/EUR exchange rate, one can resort to a simplified model of uncovered interest rate parity (UIP) where the level of the (real) bilateral exchange rate depends not only on the current relative stance of monetary policy but on expectations about the entire future path of short-term interest rates. Specifically, assuming that the real exchange rate of two economies converges to a long-run equilibrium (such as purchasing power parity), the current level of the real bilateral exchange rate should correspond to the infinite sum of future expected short-term interest rate differentials.[7] To the extent that these expectations are contained in the yields of real long-term zero coupon bonds,[8] developments in long-term real interest rate differentials between the United States and the euro area provide a benchmark real exchange rate that is informative about market expectations of future (conventional) monetary policies in the two economies. Deviations between the real exchange rate and its model implied equilibrium can be ascribed to factors not captured by movements in the real interest rate differential, such as changing relative risk perceptions. The comparison of the real USD/EUR exchange rate with its UIP benchmark suggests that the euro's depreciation over the recent period can be explained by a marked widening of the spread between long-term real interest rates in the euro area and the United States that has been ongoing since late 2012 (see Chart 4). This widening might suggest that market participants expect a continuation of divergent economic recovery paths and monetary policy stances over the medium term. In a nutshell, although the euro's depreciation vis-à-vis the US dollar over the review period was historically large, the bulk of it can be rationalised by a simple model of interest rate parity that gauges expectations about future paths of relative real interest rates.

3.2 Foreign demand for euro area assets

The pattern of foreign demand for euro area financial instruments has also been consistent with diverging monetary policy cycles. Following marked portfolio inflows in the first half of 2014, foreign investors kept their exposures to euro area securities

7 See Engel and West (2010) and Swanson and Williams (2014).

8 This requires credit risk-free bonds (such as government bonds issued in the United States and Germany). Furthermore, this reasoning abstracts from possible time variation in the differential of term premia across two economies. For an application of this approximation, see Neely (2014).

broadly stable in the remainder of 2014. Across asset classes, foreign and euro area investors shifted part of their portfolios away from euro area fixed income assets towards higher-yielding (foreign and domestic) assets, consistent with the impact of globally diverging monetary policies on relative asset prices, in particular, the effect of divergences in interest rates between the euro area and other economic regions.

In the first half of 2014 foreign investors invested significantly in all segments of the euro area securities market (including €170 billion in equities and €155 billion in bonds, see Chart 5a). In the second half of 2014, by contrast, foreign investors reduced their exposures to euro area fixed income assets of both short-term and long-term maturities (by €74 billion). However, foreigners increased their exposure to euro area equities by the same amount (€75 billion). This trend of foreign net sales of euro area fixed income assets and foreign net purchases of euro area equities was also confirmed by data for the first quarter of 2015.

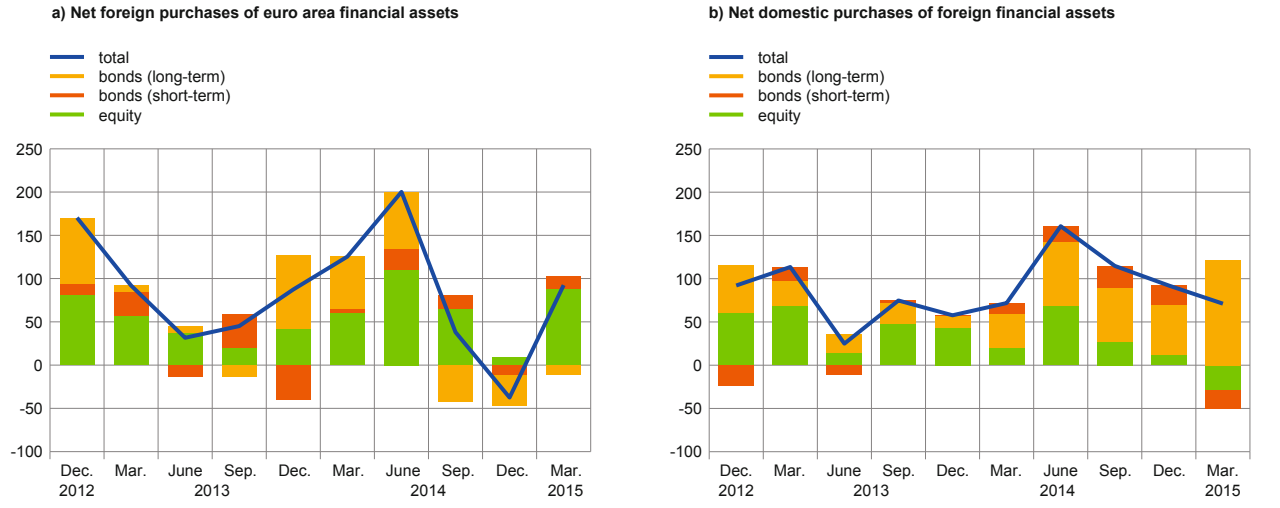
This investment pattern is consistent with divergences in monetary policy cycles between the euro area and other major economies, particularly reflecting differences in the expected outlook for inflation and growth. It has been argued that actual and expected standard and non-standard measures taken by the ECB during the review period contributed to increasing euro area equity valuations as well as to narrow euro area bond yield differentials across various maturity and risk segments in the second half of 2014 and early 2015.[9]

The investment pattern of euro area residents vis-à-vis foreign financial markets is also broadly consistent with this interpretation (see Chart 5b). Net purchases by euro area investors of foreign fixed income securities have trebled over the review period (over €315 billion in the four quarter up until March 2015, compared with

Chart 5

Euro area international portfolio investments

(in EUR billion, quarterly flows)



Source: ECB.
Notes: The observations plotted in Chart 5a correspond to portfolio investment liabilities in the balance of payments of the euro area; those in Chart 5b correspond to portfolio investment assets in the balance of payments of the euro area. The latest observation is for March 2015.

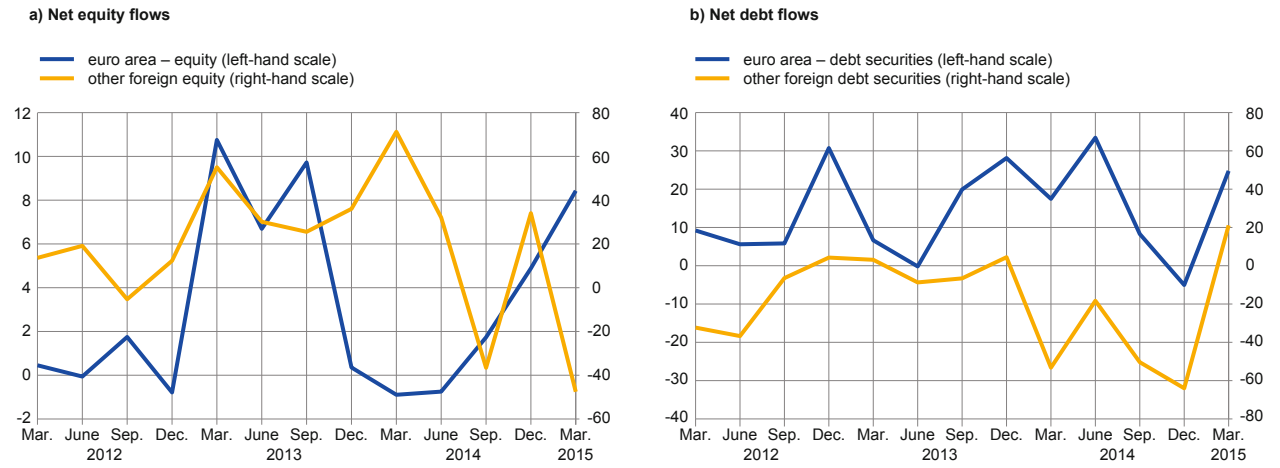
[9] See, for instance, Georgiadis and Gräb (2015).

some €100 billion in the previous four quarters), while euro area investor demand for foreign equities has declined markedly (€79 billion, compared with €125 billion), in particular in the first quarter of 2015 when euro area investors sold foreign equity instruments worth around €30 billion. This pattern suggests that euro area investors have sought relatively higher yields in foreign fixed income assets while they tended to remain exposed to increasing domestic equity market valuations. At the same time, parts of these cross-border investments may have played a part in absorbing the increasing supply of euro-denominated bonds issued by foreign entities (see also Section 4.2.1).

Chart 6

US residents' purchases of euro area securities

(quarterly data in USD billions)

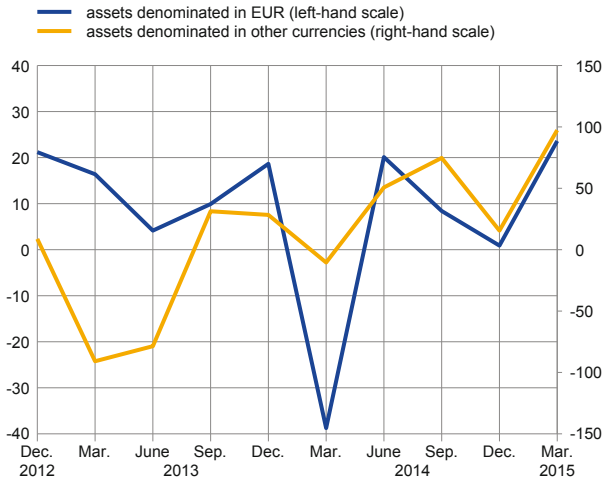


Source: US Treasury International Capital System (TICS).
Note: The latest observation is for March 2015.

Chart 7

Currency composition of Japanese foreign asset purchases

(quarterly flows in JPY 100 billions)



Source: Japanese Ministry of Finance.
Note: The latest observation is for March 2015.

Finally, data available on bilateral portfolio investment flows from other major advanced economies point to similar developments. US resident net purchases of euro area equities recovered noticeably since the second half of 2014, outpacing US purchases of other foreign (i.e. non-US) equities (Chart 6a). Conversely, US resident net purchases of euro area debt securities abated markedly in the fourth quarter of 2014 as US residents increased their fixed income investments into other economic regions (Chart 6b). Data published by Japanese authorities further suggest that Japanese net purchases of euro-denominated securities declined in the second half of 2014. Japanese net purchases of foreign assets denominated in other foreign currencies increased markedly, by contrast (Chart 7). Consistent with aggregate foreign investment flows into the euro area (Chart 5a), Japanese purchases of euro denominated assets only picked up during the first quarter of 2015.

Box 2

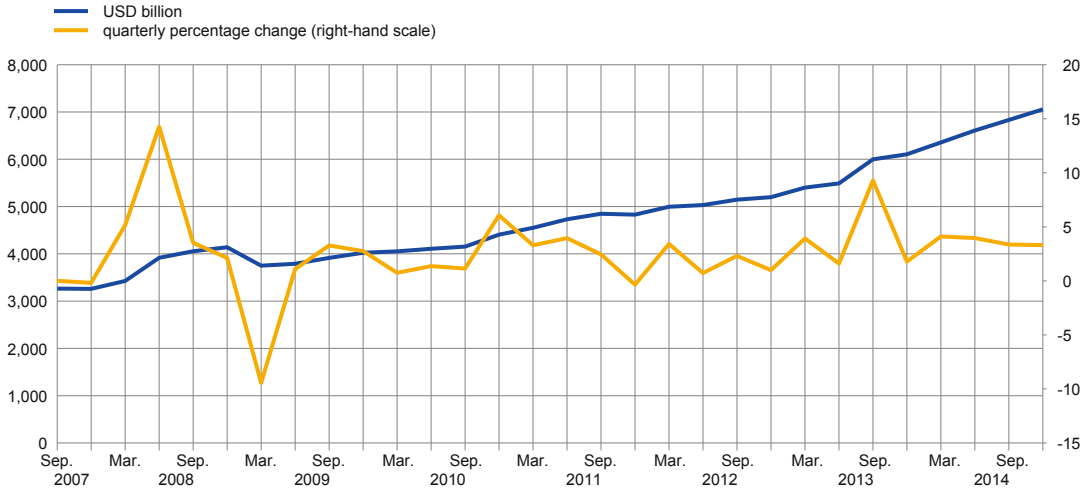
Recent developments in the portfolio allocation of sovereign wealth funds

Evidence on the geographical pattern of asset allocations suggests that sovereign wealth funds have diversified away from advanced economies and into emerging markets since the start of the financial crisis, in line with the diversification pattern observed in official foreign exchange reserve holdings.

Chart A

SWF assets under management

(in USD billions; quarterly percentage change)



Source: Sovereign Wealth Fund Institute.

The size of sovereign wealth fund (SWF) assets under management globally has continued to grow strongly over the past few years.[10] SWFs typically serve multiple purposes including, in particular, future generation savings funds and stabilisation funds to reduce the volatility of government revenues. Their holdings amounted to about USD 7 trillion in 2014, compared to around USD 11.7 trillion in traditional official foreign exchange reserve holdings (see Chart A). Part of the continued growth in SWF holdings can be explained by the fact that emerging market reserves have reached levels beyond those required to serve as a buffer against external vulnerabilities. However, some slowdown in the rate of expansion was observed against the background of declining commodity prices, notably oil.

Limited information is generally available on the asset allocation of most SWFs, and in particular on the currency composition of their holdings. However, in a few cases evidence is available, in particular, on the geographic location of investment. This may give some indications as to their currency of denomination and on the potential impact on global exchange rates of investment

[10] According to the IMF, SWFs are "special purpose investment funds or arrangements that are owned by the general government. Created by the general government for macroeconomic purposes, SWFs hold, manage or administer assets to achieve financial objectives, and employ a set of investment strategies which include investing in foreign financial assets. The SWFs are commonly established out of balance of payments surpluses, official foreign currency operations, the proceeds of privatisations, fiscal surpluses, and/or receipts resulting from commodity exports" (Santiago Principles, 2008). A key feature of SWFs is that they do not have any fixed liabilities, meaning that there is no requirement to pay out cash in their domestic currencies, so that investment positions can remain in place for many decades.

Table A

Ten largest SWFs and typical asset allocation shares by investment strategy

SWF	Assets USD billions	Origin	Investment strategy
Government Pension Fund – Global	893	Oil	Yield seeking/passive
Abu Dhabi Investment Authority	773	Oil	Yield seeking/passive
SAMA Foreign Holdings	757.2	Oil	Conservative/passive
China Investment Corporation	652.7	Non-commodity	Yield seeking/passive
SAFE Investment Company	567.9	Non-commodity	Strategic/active
Kuwait Investment Authority	548	Oil	Yield seeking/passive
Hong Kong Monetary Authority Investment Portfolio	400	Non-commodity	Conservative/passive
Government of Singapore Investment Corporation	320	Non-commodity	Yield seeking/passive
Qatar Investment Authority	256	Oil	Strategic/active
National Social Security Fund	240	Non-commodity	Conservative/passive

Sources: Sovereign Wealth Fund Institute and IMF (2010).

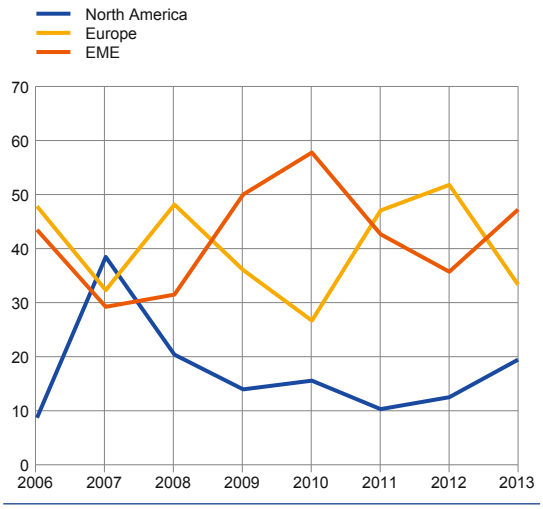
allocation changes. The ten largest SWFs are shown in Table A; these account for over three-quarters of the assets managed by all SWFs globally.[11]

There is anecdotal evidence that the global financial crisis – and its aftermath of subdued growth and highly accommodative monetary policies in advanced economies – led to diversification by several of the large SWFs away from advanced economies and into emerging markets. For instance, it is reported that the Abu Dhabi Investment Authority diversified away from traditionally "safe" equities in the United States and Europe towards emerging markets and to infrastructure and real estate. For example, in the period from 2008 until 2011, its exposures to emerging market equities increased from 8-12% to 10-20%. On the other hand, its exposures to developed market equities declined from 45-55% to 35-45%.

Chart B

SWF direct investments

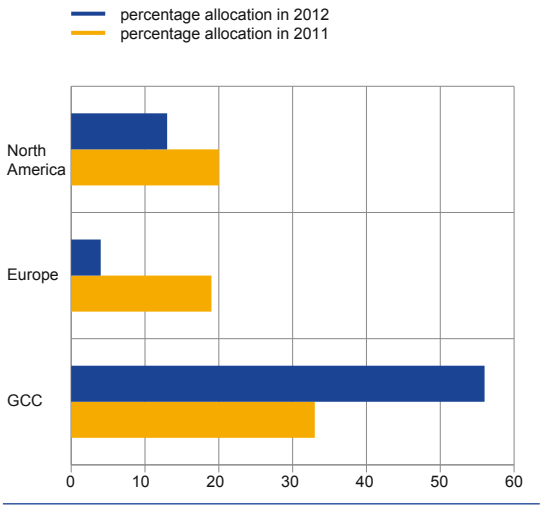
(percentage of total)



Source: Monitor-FEEM SWF Transaction Database.
Note: Direct SWF equity and real estate deals.

Chart C

Holdings of SWFs from GCC countries



Source: Invesco.

[11] SWF asset allocation strategies vary across funds and are dependent upon their specific objectives. For example, a higher weight is attached to fixed income and cash if SWFs focus on fiscal stabilisation. On the other hand, national saving funds and pension reserve funds may incur more risk in their strategies, with a higher weight on equities.

In addition, according to the Sovereign Wealth Fund Institute, over the period from December 2012 to December 2013, Norway's Government Pension Fund reduced its exposures to Europe from 48% to 45%, while its exposures to emerging markets increased from 13% to 14%.[12] Diversification away from Europe towards emerging economies and, to a lesser extent, to North America can also be observed in relation to SWF direct investment flows since 2012 (see Chart B). Finally, there is evidence that SWFs from the Gulf Cooperation Council (GCC) countries, including the Abu Dhabi Investment Authority, Saudi Arabian Monetary Agency Foreign Holdings, the Kuwait Investment Authority, and the Qatar Investment Authority, which account for about one-third of total SWF assets under management, reduced their European and US exposures between 2011 and 2012 (see Chart C).

[12] Anecdotal evidence and data-based evidence further suggest that the major SWFs tend to change their investment strategies by geographic target region, as opposed to by asset class, following a global economic shock or change in global risk aversion.

4 Recent developments in the international use of the euro

4.1 The euro in global foreign exchange reserves and exchange rate anchoring

The euro's depreciation against the US dollar was the overarching driver of the decline in the nominal share of the euro in global foreign exchange reserves in 2014. At constant exchange rates, the share of the euro and the US dollar, as well as the share of non-traditional reserve currencies, were broadly stable in 2014. This is consistent with the view that global foreign exchange reserve managers did not actively rebalance their portfolios by shifting away from the euro in 2014, in line with reported habit persistence in the management patterns of official reserve holders. Taking a longer perspective, from the start of the financial crisis in late 2007, the share of the US dollar and the euro have declined by around 5 and 1 percentage points, to about 63% and 22% at constant exchange rates. The share of non-traditional reserve currencies has almost trebled over the same period, pointing to somewhat greater diversification in global foreign exchange reserve holdings.

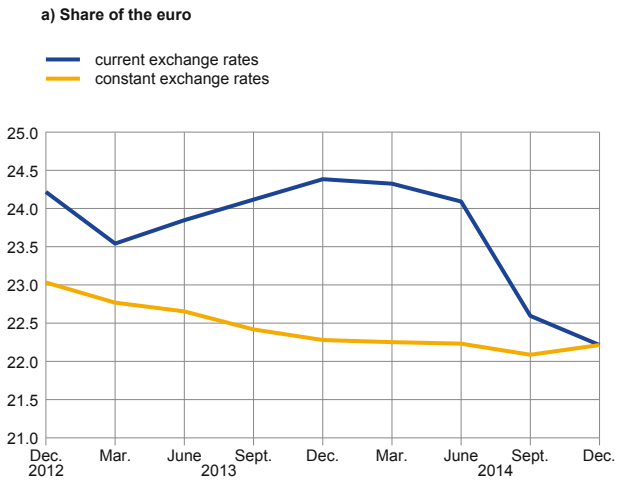
Global foreign exchange reserve holdings remained broadly stable during the review period, at about USD 11.6 trillion. IMF data, which cover the currency composition of about half of global foreign exchange reserves, suggest that the shares of the major reserve currencies changed slightly throughout 2014. In particular, the share of the US dollar increased by 1.8 percentage points, to 62.9% of global foreign exchange reserves, while the share of the euro declined by 2.2 percentage points, to 22.2%.

Given recent exchange rate movements among major currencies, valuation changes were, unsurprisingly, the overarching determinant of these developments. For instance, they accounted for about 96% of the decline in the share of the

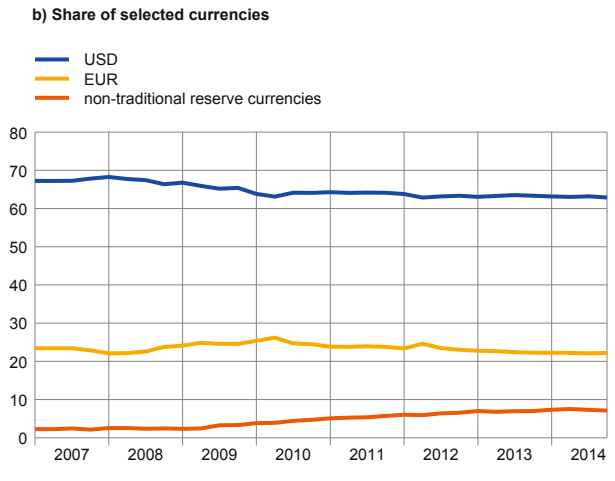
Chart 8

Currency composition of global foreign exchange reserves

(percentages; at current and constant end-2014 exchange rates)



(percentages; at constant end-2014 exchange rates)



Sources: IMF and ECB calculations.
Notes: "Non-traditional reserve currencies" includes holdings in all non-SDR currencies. The latest observation is for the final quarter of 2014.

euro (see Chart 8a). Therefore, at constant exchange rates, the share of the euro was broadly stable in 2014. This finding is consistent with the view that global foreign exchange reserve managers did not actively rebalance their portfolios by shifting away from the euro in 2014, in line with reported habit persistence in the management patterns of official reserve holders, which are believed to rebalance their portfolios with relatively long lags and infrequently.

Another determinant, albeit quantitatively less important, might have been a side effect of non-standard monetary policy measures. Official reserve managers might have taken note of negative interest rates at the short end of the yield curve – as well as at the medium to long end for some sovereign bond issues – and sought to rebalance their holdings into currencies with positive long-term yields.

Table 3

Survey evidence on reserve diversification into non-traditional currencies

(percentage of respondents considering "investing now" in selected currencies)

	YES	NO
Chinese renminbi	24	76
Canadian dollar	14	86
Australian dollar	8	92
Brazilian real	0	100
Indian rupee	0	100
Russian rouble	0	100
Could equities or ETFs be part of your reserves?		
	YES	NO
Equities	28	72
Exchange-traded funds	29	71
Yes = already or within the next 5 years		

Source: HSBC Reserve Management Trends 2014.
Note: The data are based on an anonymous survey of 69 official reserve managers (comprising 38% from emerging market economies, 28% from less-developed economies, 26% from advanced economies and 9% from transition economies) conducted in April 2014.

Taking a longer perspective, from the start of the financial crisis in late 2007, the share of the US dollar and the euro have declined by around 5 and 1 percentage points, respectively. This may also reflect the growing importance of non-traditional reserve currencies, such as the Australian dollar, the Canadian dollar and the Chinese renminbi, which has almost trebled, to about 7%, even though the rise was halted in 2014 (see Chart 8b, and Box 3). These developments, which point to somewhat greater diversification in global foreign exchange reserve holdings, are consistent with survey evidence indicating that, by April 2014, a significant share of official reserve managers were considering investing in the Chinese renminbi (24%) and, to a lesser extent, in the Canadian dollar (14%) and Australian dollar (8%) (see Table 3). As noted in past issues of this report, this evidence might also point to signs of increasingly greater multipolarity in the international monetary system.

Box 3

Recent developments in non-traditional international reserve currencies

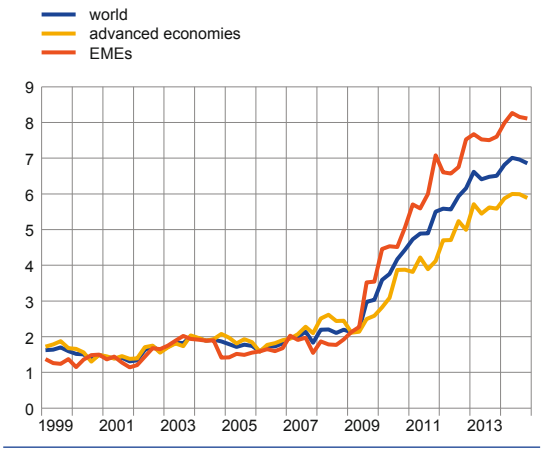
The rise in the share of non-traditional currencies in official global foreign exchange reserves has been temporarily halted in 2014. This is consistent with the view that the emergence of the Australian and Canadian dollar as reserve currencies may be constrained by a lack of deep and liquid capital markets. Within the non-traditional currencies the recent decline in the share of the Australian and Canadian dollar may reflect the gradual emergence of the Chinese renminbi, which, over the longer run, is very likely to be less constrained by the size and depth of its capital markets.

The rise in the share of non-traditional reserve currencies ("other currencies", i.e. other than the US dollar, euro, yen, pound sterling and Swiss franc) in identified global foreign exchange reserves observed since the start of the global financial crisis continued until mid-2014 (Chart A). Specifically, the share of non-traditional reserve currencies more than tripled from 2% in mid-2007 to 7% in mid-2014, and even rose from 1.9% to 8.3% in emerging market economies. However, this trend came to a halt after mid-2014.

Chart A

Share of "other currencies" in allocated foreign exchange reserves

(percentages; at current exchange rates)

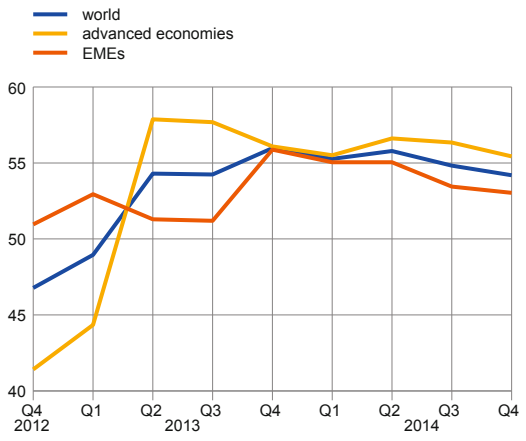


Sources: IMF and ECB calculations.
Note: The latest observation is for the final quarter of 2014.

Chart B

Share of Australian and Canadian dollars in "other currencies"

(percentages; at current exchange rates)



Sources: IMF and ECB calculations.
Note: The latest observation is for the final quarter of 2014.

Interestingly, while the shares of the Australian dollar and of the Canadian dollar rose substantially in the first years of the global financial crisis, they plateaued in mid-2013 and fell subsequently thereafter (Chart B).[13] These developments are consistent with the view that the emergence of the Australian and Canadian dollars as reserve currencies may be constrained by the fact that their securities markets are thinner and less liquid than those of the major reserve currencies.[14]

The recent decline in the share of the Australian dollar and the Canadian dollar in the non-traditional reserve currencies block is also consistent with the emergence of the Chinese renminbi as a reserve currency. Even though only limited data is publicly available on the amount of global foreign exchange reserves denominated in China's currency, a number of central banks and sovereign wealth funds are reported to have added renminbi-denominated assets to their holdings.[15] From a longer-term perspective the possible role of the Chinese renminbi as a reserve unit is less likely to be constrained by the size and depth of China's economy and of its domestic financial markets.

The emergence of the Chinese renminbi as an international reserve currency has lagged behind other dimensions of international currency use so far. The renminbi's role as an international invoicing and settlement currency for China's international trade has grown rapidly from essentially nought in 2009 to 25% at the end of 2014. According to SWIFT data, the share of the renminbi in global payments has risen from 0.8% in October 2013 to about 2% in January 2015, with the renminbi moving from 12th to 5th rank, ahead of the Australian dollar. Its use in financial

[13] Other currencies which have recently been considered as reserve currencies include the New Zealand dollar and the Norwegian krone (see RBS, 2013).

[14] See ECB (2013).

[15] These include the central banks of Austria, Australia, Brazil, Chile, France, Indonesia, Lithuania, Malaysia, South Korea, Nigeria, Pakistan, Thailand, South Africa, Switzerland, the United Kingdom and Venezuela. In addition, renminbi bonds are reportedly held by the Japanese Finance Ministry, the Kuwait Investment Authority and the World Bank/IBRD. Exact amounts are unknown but in most cases they remain relatively low.

transactions has grown significantly as well. For example, issuance of renminbi-denominated ("dim sum") bonds in Hong Kong has increased from almost zero to around CNY 600 billion in 2014. The quotas and approved amounts under the different cross-border investment schemes, including the link-up between the Shanghai and Hong Kong stock exchanges, which allow foreigners to invest in China's financial markets and vice versa, have grown continuously in recent years. The share of international debt securities denominated in renminbi has risen from essentially nought in 2003 to 0.4% in late 2014 according to BIS data. Similarly, the share of global foreign exchange market turnover involving the renminbi increased from 0.9% in 2010 to 2.2% in 2013 according to the latest BIS Triennial Central Bank Survey; this share is likely to grow further after the introduction of direct trading between the renminbi and the euro in late 2014 and the reduced volatility in the renminbi's exchange rate after the widening of the trading band of the renminbi that does not appear to be the result of interventions by the People's Bank of China.

These developments have coincided with measures by Chinese authorities to strengthen the renminbi's international role. The People's Bank of China has signed bilateral swap agreements with 30 central banks since 2008, including the ECB, and has appointed branches and subsidiaries of Chinese commercial banks as clearing banks in Frankfurt, Paris, London, Luxembourg, Singapore, Taipei and other locations in order to settle renminbi transactions between local banks and mainland China. New regulations and financial sector reforms in the Shanghai Free Trade Zone facilitate cross-border investment and financing using the renminbi.[16]

Of course, the renminbi's international role remains limited to date compared with that of the US dollar and the euro. Further internationalisation might depend on China's ability to rebalance the economy away from investment towards consumption to avoid a "middle-income trap".[17] Also, despite the growing use of the cross-border investment schemes, the capital account remains restricted, limiting the attractiveness of the renminbi for foreign investors. Similarly, while China's financial markets have become deeper, even relative to those in major reserve currencies, some observers stress that there is further scope to strengthen contract enforcement, corporate governance, the rule of law, prudential supervision and regulation.[18]

The international role of the renminbi can be expected to come into focus in the next quinquennial review of the method of valuation of the IMF's special drawing rights (SDR) later in 2015. Being part of the SDR currency basket is often viewed as implicit recognition of the suitability of a currency as an official reserve asset, with potential implications in terms of additional investments from central banks worldwide. Since 2000 a currency must meet two criteria to be included in the SDR basket.[19] First, it must be among those currencies issued by IMF members whose exports of goods and services during the five-year period ending 12 months before the effective date of the revision had the largest value. Second, it must have been determined by the IMF to be freely usable, i.e. it is widely used to make payments for international transactions and is widely traded in foreign exchange markets. At the last review of the method of valuation of the SDR in 2010, the renminbi did not qualify on account of the second criterion. In October 2011 the IMF

[16] www.pbc.gov.cn/publish/english/955/2014/20140107162646760579545/20140107162646760579545_.html

[17] See Eichengreen, Park and Shin (2013) and ECB (2014).

[18] See, for example, Eichengreen (2013).

[19] See IMF (2011).

Executive Board considered criteria for broadening the SDR basket, but no changes were made to the policy framework. If the renminbi were to be included in the SDR currency basket, all central banks holding SDR would immediately become holders of renminbi through their SDR assets. The importance of the renminbi as an international reserve currency would likely further increase, given the wish of some official reserve holders to hedge against foreign exchange rate risks, as well as the wish of others to shadow the SDR basket in their reserve holdings.

Considering the role of the euro as an anchor currency for exchange rate policy purposes – which is traditionally characterised by a high degree of stability on account of strong geographical and institutional underpinnings – several developments during the review period were noteworthy.[20] The Bank of Russia abandoned its dual currency basket (US dollar, euro) on 10 November 2014 to let the rouble float, while keeping open the option to intervene in the foreign exchange market in order to assuage financial stability concerns. On 15 January 2015 – shortly before the ECB's decision to launch its expanded asset purchase programme – the Swiss National Bank (SNB) discontinued the unilaterally set minimum exchange rate of 1.20 CHF/EUR introduced in September 2011. In explaining its decision, the SNB stressed that divergences between the monetary policies of the major currency areas had increased, with the euro and, in turn, the Swiss franc, depreciating against the US dollar.[21] In addition, the SNB stressed that enforcing and maintaining the minimum exchange rate floor was no longer justified, but that it would continue to take into account exchange rate developments in the formulation of monetary policy and would remain active in foreign exchange markets to influence monetary conditions. In the wake of the decisions by the SNB to discontinue its minimum exchange rate floor and by the ECB to launch the expanded asset purchase programme Danmarks Nationalbank intervened in the foreign exchange market in the face of significant capital inflows in order to keep the exchange rate of the krone with respect to the euro close to its central parity within ERM II.[22] Finally, Lithuania stopped participating in ERM II on 1 January 2015 to join the euro area (see also Chart 1 and Table A3 in the Statistical Annex for data on how many countries peg to the euro and the US dollar, respectively).

4.2 The euro in financial markets

4.2.1 The use of the euro in international debt markets

In an environment of historically low and declining interest rates in the euro area coupled with a depreciating euro exchange rate, the euro has been increasingly used as a funding currency by international borrowers. While the share of the euro

[20] With the exception of the countries participating in ERM II, the decision to use the euro as an anchor currency is a unilateral one and does not involve any commitment on the part of the ECB.

[21] See the press release by the Swiss National Bank entitled "Swiss National Bank discontinues minimum exchange rate and lowers interest rate to -0.75%" published on 15 January 2015.

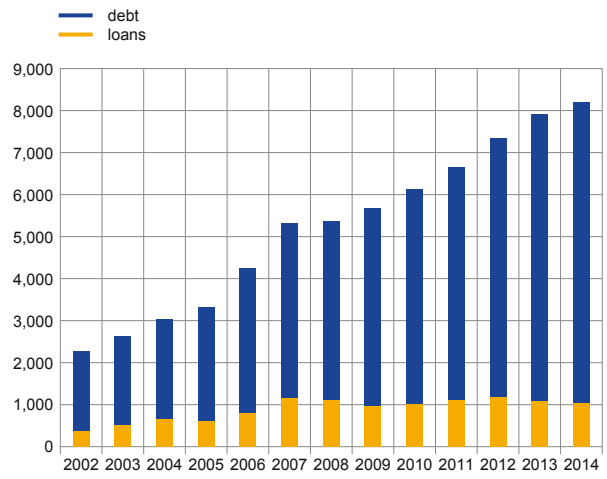
[22] See the press release by Danmarks Nationalbank entitled "Interest rate reduction" published on 5 February 2015.

in the outstanding amount of international debt securities increased only moderately in 2014, to about 23% (controlling for exchange rate valuation effects), the share of the euro in foreign currency-denominated issuance – which better reflects the most recent developments in international debt markets – increased to 29.2% in the first quarter of 2015, compared with 20% in the same quarter of 2014. The latter mainly reflects increased euro-denominated bond issuance by investment-grade corporations in advanced economies, primarily in the United States. International borrowers made use of relatively low funding costs in the euro area and sought to match their euro-denominated liabilities with their euro-denominated assets to hedge against exchange rate risk.

Chart 9

Outstanding amounts of international US dollar-denominated bonds and loans

(USD billions; at current exchange rates)



Sources: BIS and ECB calculations.
Note: The latest observation is for 2014.

Since the outbreak of the global financial crisis, low interest rates in the United States together with muted volatility in the exchange rate of the US dollar have led to a significant increase in US dollar-denominated borrowing (see Chart 9). However, as the market's expectations that monetary policy cycles on both sides of the Atlantic would start diverging have increased, international borrowers have increasingly relied on low-yielding euro-denominated funding.

Two distinct measures of international debt issuance may help to shed light on these developments. First, there is a refined BIS measure of the outstanding amount of international debt securities broken down by currency of denomination (i.e. a stock measure). Second, there is a measure that draws on data provided by Dealogic (a commercial provider) on foreign currency security issuance (i.e. a flow measure).

As in past editions, this report focuses on the "narrow" concept of outstanding international debt securities. This measure excludes intra-euro area and home-currency international debt securities from the BIS broad measure of international debt markets.[23] According to this "narrow" measure, the total outstanding amount of international debt securities increased by around USD 180 billion compared to the previous year, reaching USD 12.6 trillion. Euro-denominated debt issuance declined by around USD 180 billion to a total of USD 3 trillion, with a share of 23.4%. By comparison, at the end of 2013, the euro's share stood 1.9 percentage points higher at 25.3% at current exchange rates. However, this decline largely reflects the depreciation of the euro's exchange rate in 2014. Controlling for exchange rate movements, the share of the euro increased by 0.2 percentage point (see Chart 10a).

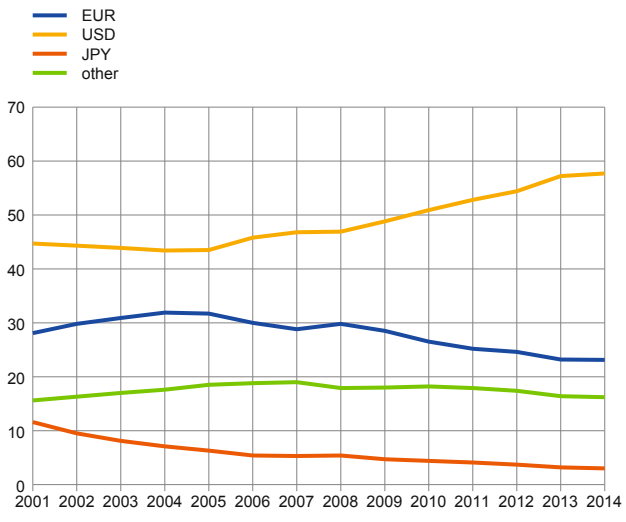
[23] The "BIS broad measure" includes all international bond issuance in foreign markets based on the residence principle, including home currency issuance in foreign markets (see also BIS Quarterly Review, December 2012). The "ECB broad measure" excludes all intra-euro area issuance from the BIS broad measure, for instance a bond issued by a German company in France. The "ECB narrow measure" focuses on the foreign currency principle and hence excludes all home currency issuance from the ECB broad measure, by resident principle. For instance any bond denominated in euro issued by a euro area resident (e.g. a German company) whether outside the euro area (e.g. in the US) or in a euro area member (e.g. in France).

Chart 10

Currency composition of international debt securities

(percentages; at constant end-2014 exchange rates)

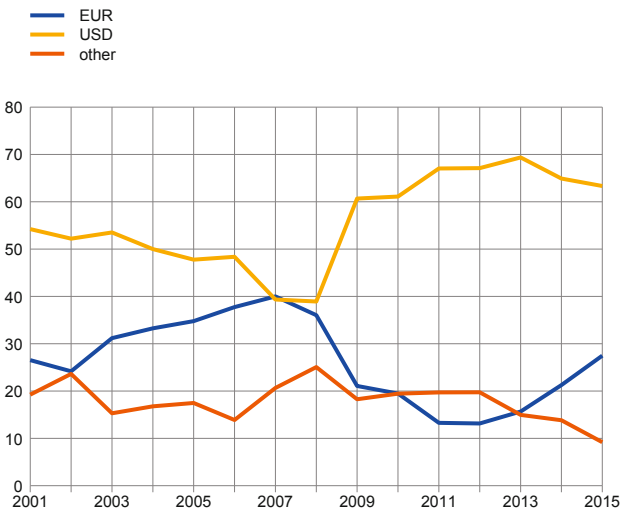
a) Outstanding amounts



Sources: BIS and ECB calculations.
Note: The latest observation is for 2014.

(percentages; at current exchange rates)

b) Debt issuance



Sources: Dealogic and ECB calculations.
Note: The latest observation is for 2015 based on data up to May 2015.

Since the average maturity of debt securities issues exceeds eight years,[24] currency shares in outstanding amounts of international debt securities cannot properly reflect recent developments in debt security issuance. Data on foreign currency-denominated debt issuance from Dealogic can help to shed light on whether borrowers increasingly relied on euro-denominated debt issuance in 2014 and early 2015.[25] It suggests that the share of the euro in foreign currency-denominated debt issuance increased to almost 30% in the first quarter of 2015, compared with 20% in the same quarter of 2014 (see Chart 10b). This significant increase came in tandem with a decline in the share of the US dollar by almost 10 percentage points over the same period.

At the disaggregated level, the share of the euro in foreign currency-denominated debt issuance increased sharply in advanced economies, but remained below 8% in emerging market economies (see also Box 4). Euro-denominated bond issuance increased in particular in the US economy, which accounted for more than a third of euro-denominated international bond issuance in early 2015. In the first quarter of 2015 US borrowers issued USD 26 billion in euro bonds, compared to a total of USD 28 billion for the whole of 2014. The bulk of this debt (around 85%) has been issued by US investment-grade corporations.

The dominant factor explaining the increasing use of the euro as a funding currency for advanced economy borrowers has been the attractive all-in cost of funding.[26] In particular, the expectations and implementation of the ECB's expanded asset

[24] This estimate refers to the average maturity of newly issued debt instruments since 2010.

[25] The measure is comparable to the aforementioned "narrow" measure of outstanding amounts of debt securities insofar as it excludes intra-euro area and home-currency issuance.

[26] See Thomson Reuters (2015).

purchase programme drove down euro area credit spreads over and above the level of the unfavourable cross-currency basis spread. This implied that despite elevated costs of swapping the euro proceeds back into US dollars – reflecting a heightened USD/EUR cross-currency basis swap[27] – euro borrowing was attractive overall. Moreover, some borrowers, in particular multinational enterprises with euro-denominated revenues, may have resorted to euro-denominated borrowing to match existing euro-denominated assets in order to hedge against exchange rate risks.

Box 4

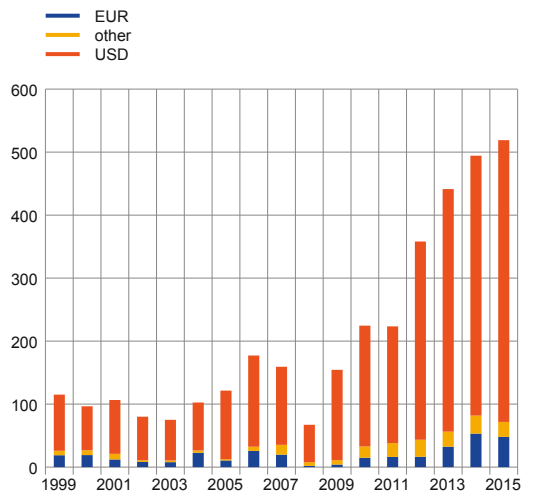
Foreign currency debt issuance in emerging market economies

Emerging market borrowers have, in recent years, increasingly relied on foreign currency, more specifically on US dollar-denominated, funding. This has raised concerns about risks arising from currency mismatches in the wake of the recent US dollar appreciation. Aggregate data suggest, however, that the net foreign currency asset position of many emerging market economies has turned into positive territory in recent years, and that these economies may hence benefit from US dollar appreciation at the aggregate level. This notwithstanding, aggregate exposures may hide significant disparities at the sectoral level, on which detailed and harmonised data are not available.

Chart A

Foreign currency debt issuance in emerging market economies

(USD billions; at current exchange rates)



Sources: Dealogic and ECB calculations.
Note: The latest observation is for 2015 based on data up to May 2015. Volumes for 2015 are annualised.

Over the past couple of years, sovereigns and corporates in emerging market economies have issued record levels of foreign currency-denominated debt securities. In 2014 total new issuance of foreign currency bonds amounted to USD 494 billion, more than twice as much as in 2011. Preliminary (annualised) data for early 2015 suggest that this trend has continued (see Chart A). This significant increase in foreign currency borrowing has been largely attributed to the low interest rate environment prevailing in many advanced economies, which has encouraged a search for higher-yielding investments and substantial capital flows into emerging market economies.

The increasing reliance on US dollar-denominated debt has recently become a cause for concern on account of the significant and broad-based US dollar appreciation in the wake of mounting market expectations of a normalisation of the stance of US monetary policy. While borrowers in advanced economies reacted to the diverging interest rate and exchange rate environment by increasingly relying on euro-denominated debt issuance, borrowers in emerging market economies continued to rely

[27] The US dollar basis swap, which measures deviations from covered interest rate parity, increased markedly in late 2014/early 2015.

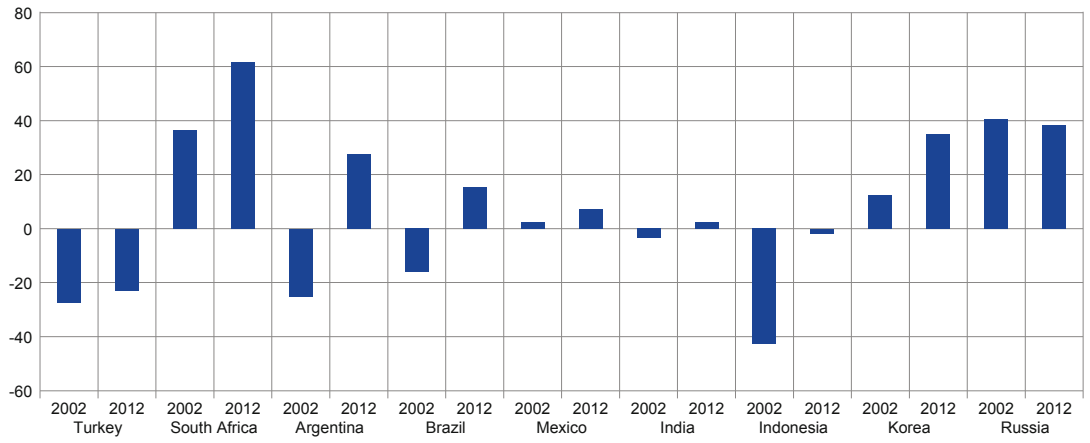
predominantly on US dollar-denominated funding. As a result, one concern is that a sustained US dollar appreciation may markedly raise the cost of debt service in local currency terms.[28]

Aggregate data suggest, however, that the net foreign currency asset position of many emerging market economies has turned positive over recent years, and that these economies may hence benefit from US dollar appreciation at the aggregate level. Over the past decade net foreign currency exposures, i.e. currency mismatches, declined markedly across all major emerging market economies (see Chart B). This partly reflects the fact that various emerging market economies markedly reduced their gross foreign currency liability positions (see Chart C),

Chart B

Currency mismatches - net foreign currency asset position

(as a percentage of GDP)

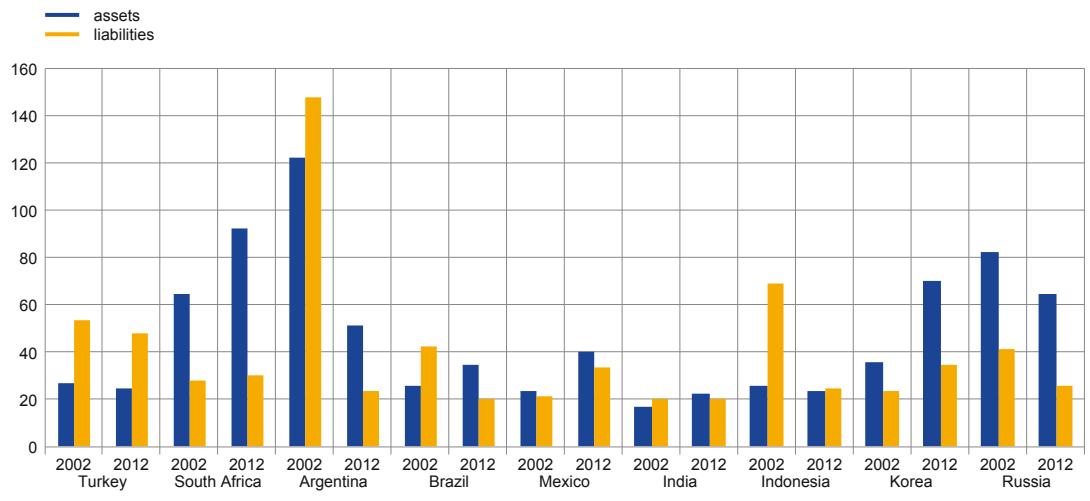


Sources: Bénétrix, Lane and Shambaugh (2014) and ECB calculations.

Chart C

Currency mismatches – gross foreign currency asset and liability positions

(as a percentage of GDP)



Sources: Bénétrix, Lane and Shambaugh (2014) and ECB calculations.

[28] See Chui, Fender and Sushko, 2014.

not least on account of increased debt issuance in domestic currency. In fact, it has been discussed as to whether this represented a new trend towards redemption from original sin, i.e. the tendency of emerging markets to have no alternative but to issue debt in foreign currency in international capital markets. This notwithstanding, aggregate exposures may hide significant disparities at the sectoral level (households, companies, public sector), on which detailed and harmonised data are not available. Some sectors may hence be exposed to severe currency mismatches, which pose financial stability risks. Moreover, not all emerging market economies fit the general trend observed.

The recent rise in the use of the euro as a funding currency has so far been confined to debt security markets. The share of the euro in foreign currency-denominated loans, by contrast, remained unchanged, perhaps also reflecting – on the supply side – the ongoing deleveraging process of euro area banks and efforts to reduce exposures to international loans denominated in euro (see Table A9 in the Statistical Annex). As deleveraging is gradually completed, however, international borrowers may be increasingly able to switch to euro-denominated loans over the next few years.

4.2.2 The use of the euro in foreign exchange markets

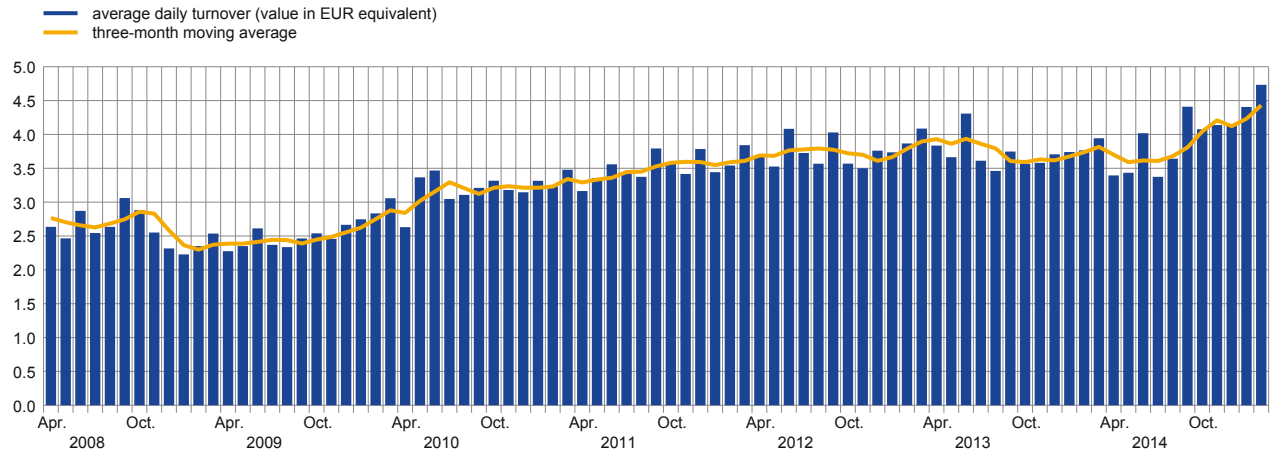
Foreign exchange transactions increased markedly in the second half of 2014 and early 2015, partly reflecting rising market volatility in global foreign exchange markets. At the same time, the currency composition of total foreign exchange settlements has remained broadly stable.

Data on foreign exchange settlements in the CLS cash settlement system suggest that foreign exchange transactions in spot and derivative markets have increased markedly in the second half of 2014 and early 2015 (see Chart 11). Increased

Chart 11

Total daily settlement volume in the CLS system

(monthly data in EUR billions per day)



Source: CLS.
Notes: The latest observation is for February 2015.

Chart 12

Global foreign exchange volatility

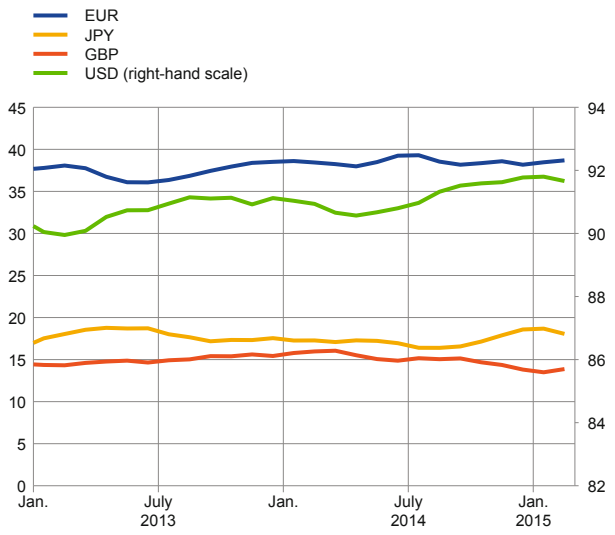
(index)

Source: Bloomberg, JP Morgan Chase & Co.
Note: The latest observation is for 31 May 2015.

Chart 13

Share of major currencies in foreign exchange settlement

(percentage share)



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 February 2015.

settlement volumes in the CLS system may partly reflect heightened market volatility in global foreign exchange markets, following a period of very low volatility. JP Morgan's global foreign exchange volatility index has risen to 10.4% in the first quarter of 2015, compared with a record low of 5.3% in July 2014 and an average of 10.3% over the past 15 years (see Chart 12). 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 composition of total foreign exchange settlements, the shares of the four major currencies used in foreign exchange settlements have remained broadly stable in 2014 (see Chart 13). 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 euro remained the second most used currency in foreign exchange settlements in the CLS, being a counterpart in 38.5% of all transactions, compared with 37.4% in 2013. By comparison, the Japanese yen and the British pound were the counterpart in around 17% and 15% of all transactions.

4.3 The euro in international trade

4.3.1 The use of the euro in international trade invoicing

The share of the euro as an invoicing currency for extra-euro area exports and imports has remained broadly stable in 2014, both in the goods and service sector. At the same time, data suggests that in 2014 the use of the euro as an invoicing

currency recovered considerably in a number of countries that had experienced some reversals in the use of the euro during the sovereign debt crisis.

The use of the euro in international trade invoicing for extra-euro area trade has shown a general tendency to rise over the past decade, with some evidence of stabilisation in 2014. More than two-thirds (67.3%) of all extra-euro area exports of goods were invoiced in euro in 2014, compared with 67.5% in 2013 (see Table A11 in the Statistical Annex). In terms of extra-euro area imports of goods, the settlement or invoicing was done in euro in almost half of all transactions. At 48.8% this share increased marginally compared with the previous year, when it stood at 48.6%. With regard to the exports of services, the euro's share in international trade remained unchanged at 64.4%, while the euro's share in imports of services increased marginally to 53.1%.

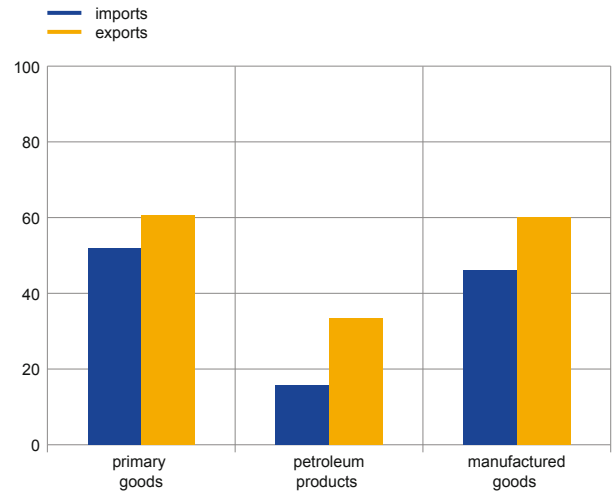
Taking a medium-term perspective, the euro's share in the euro area's exports of goods was significantly higher in 2014 than it was in the years before the global financial crisis. By contrast, the euro's share in the imports of goods has hovered around 50% in recent years.

Aggregate changes for the euro area hide some important developments at the country level. While in Estonia the use of the euro as invoicing currency for goods has been increasing continuously since 2010, a number of countries experienced some reversals in the use of the euro during the sovereign debt crisis, possibly also as a result of a decline in their trade with European trading partners. Recent data suggests that in 2014 there was a recovery in the use of the euro as an invoicing currency for both extra-euro area exports of goods and imports of goods in Greece and Portugal. More generally, the growing presence of the Chinese renminbi in the international monetary system has continued in 2014. This has clearly had an offsetting impact on the use of the euro for invoicing in those countries that have the strongest trading linkages with Asia. By contrast, the euro area member countries of central Europe, which mostly trade with CESEE countries, record the largest use of the euro as the invoicing currency.

Chart 14

Share of the euro in extra-EU trade of euro area countries

(Cross-country average; as a percentage; 2014)



Source: Eurostat.
Note: Petroleum products refers to petroleum, petroleum products and related materials.

The share of the euro as an invoicing/settlement currency in the external trade of most non-euro area EU Member States continues to be either slightly or well above 50%, with the exception of Sweden. In the case of the export of goods, the use of the euro has increased sizably in both Lithuania and Romania. In terms of imports of goods, the largest rise was apparent in the case of Bulgaria (see Table A12 in the Statistical Annex).

Further insights on the currency composition of euro area countries' extra-EU trade can be drawn from available sectoral data for 2014 broken down by main product groups (see Chart 14). The euro is used as

the invoicing currency for about 60% of transactions in the case of primary and manufactured products for exported goods and somewhat less for imported goods. The euro's share is markedly lower for petroleum, petroleum products and related materials, at 33% for exports and only 16% for imports. This reflects the dominant role traditionally played by the US dollar in the global oil markets (see also Box 5).

Box 5

International invoicing practices in commodities markets – recent and historical evidence regarding the US dollar and the oil market

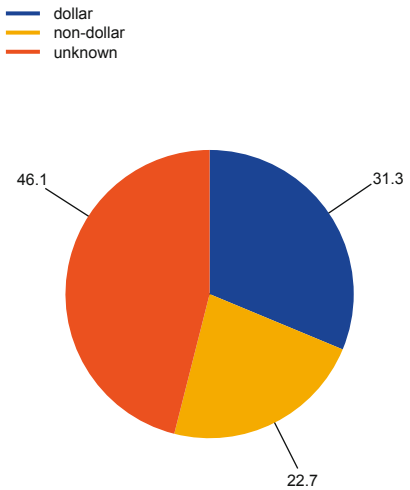
Recent developments have illustrated the potential for changes – albeit still limited ones – in global oil invoicing patterns, with a greater use of multiple currencies, consistent with both theoretical models and historical evidence, which suggest that there is room for more than one currency of settlement or invoicing in the global oil market.

Conventional wisdom has it that network effects are strong in markets for homogenous goods, leading to the dominance of one settlement or invoicing currency in such markets.[29] The dominance of the US dollar in the global oil market is said to epitomise this phenomenon.[30] From a monetary policy perspective, this is relevant for establishing the degree of exchange rate pass-through of oil and commodity price shocks and for inflation forecasting, for example.

Chart A

Currency denomination of global oil imports after the Second World War

(percentages)



Source: Eichengreen, Chițu and Mehl, forthcoming.
Note: Oil imports are recorded in quantity terms.

Both theoretical models and historical evidence suggest that there is room for more than one currency of settlement or invoicing in the global oil market, however. Models of the adoption of technology standards, in which increasing returns, lock-in and installed-base effects exist but are not insurmountable, give rise to equilibria where different technologies share the installed base of users (see, for example, Farrell and Saloner, 1986; David and Greenstein, 1990). Such mixed equilibria emerge from calibrated models of international currency status, notwithstanding the existence of network effects (see, for example, Portes and Rey, 1998). Moreover, historical evidence suggests that multiple currencies of settlement coexisted in the global oil market between

[29] As with all facets of international currency status (see, for example, Krugman, 1980), network effects are believed to lead to one currency of settlement or invoicing in international oil markets. Moreover, because oil is relatively homogenous (compared with, for example, manufactured goods, for which the name of the producer is an important guide to quality and other characteristics; see Rauch, 1999), there is substantial convenience in quoting prices in just one currency to facilitate comparisons (McKinnon, 1979).

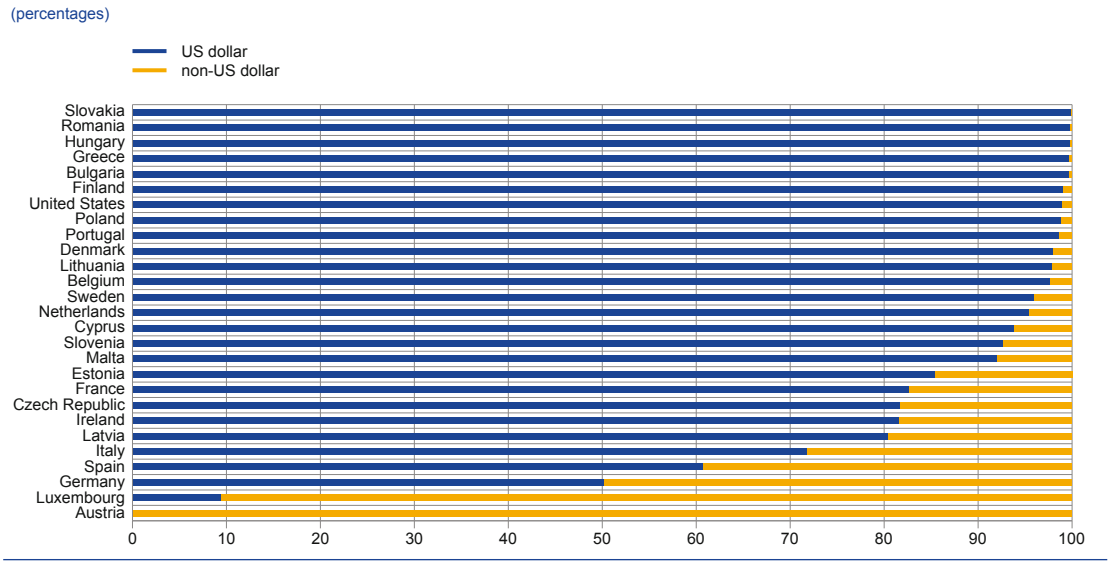
[30] For instance, the US dollar is used as the unit of account for virtually all benchmark oil prices, such as West Texas Intermediate, Brent or Dubai crude. NYMEX, the world's largest oil futures market, provides quotes exclusively in US dollars.

the late 1930s and the early 1950s.[31] In the immediate aftermath of the Second World War, for instance, the US dollar was the main currency of payment of global oil imports, with an estimated share of 31%. The share of non-US dollar currencies was also large, at 23% (see Chart A). Although there is no information on currency denomination for the residual 46%, it is likely that at least some of these imports were paid for in currencies other than the US dollar.

A major constraint facing empirical work on currency choice in international trade transactions has been the lack of detailed data. In a seminal study Friberg and Wilander (2008) note that investigators have mainly relied on snippets of aggregate data, surveys of selected firms and casual empiricism ("for instance noting that oil is traded in US dollars", as they put it). Admittedly, the limited evidence available is consistent with the conventional view that the US dollar plays a dominant role. For instance, the US dollar was used for more than 75% of (extra-EU) oil imports for euro area countries in 2012 (see Chart B)[32].

Chart B

Extra-EU oil imports by Member State in 2012, shares by invoicing currency



Sources: Eurostat and ECB staff calculations.
Note: Oil imports include petroleum, petroleum products and related materials.

Recent developments have illustrated the potential for changes – admittedly still limited ones – in global oil invoicing patterns, consistent with the greater use of multiple currencies. In response to sanctions imposed after the onset of the Ukrainian crisis in 2014, one Russian oil company announced that it had signed agreements with its European and Asian customers on the possibility of switching away from the US dollar towards the euro or the Chinese renminbi for invoicing.[33]

31 More fragmentary evidence suggests that this was even the case in the 1920s and up to the 1970s (see Eichengreen, Chițu and Mehl, forthcoming).

32 In other countries, the corresponding shares were, for example, 85% for Canada (2002-2009 average), 99% for Japan (1990-2000 average), 99% for Australia (2011-2012 average) and more than 90% for Morocco (2010). Estimates for these countries were collected by ECB staff during an informal survey of central banks and other official institutions conducted in 2013 (no comparable data were available for the US and most emerging market economies).

33 In July 2014 Gazprom Neft, the oil arm of government-owned Gazprom, announced that it had signed agreements with "nine out of ten" of its customers on the "possibility" of switching to the euro or the Chinese renminbi for invoicing (Tass Russian News Agency, 2014).

China has paid for part of its oil imports from Iran in its currency since 2012. Last year it discussed the possibility of using the rouble or the renminbi to pay for its imports of Russian oil and gas. These examples are, of course, very specific. But they also illustrate that network effects may not be necessarily insurmountable even for a good as homogeneous as oil.

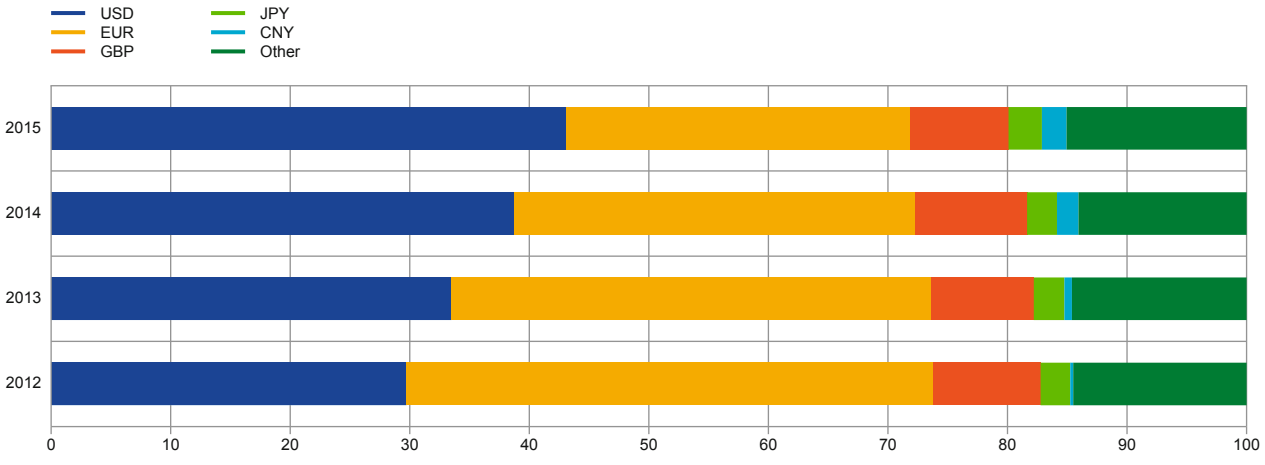
4.3.2 The use of the euro as a global payment currency

The euro's share as a global payment currency has continued to decline in 2014 relative to 2013, partly reflecting the depreciation of the euro vis-à-vis the US dollar. In trade finance activities, the US dollar remains the main currency of denomination, accounting for around 80% of transactions. At the same time, there is evidence of the renminbi's rapidly growing role – mainly but not exclusively a regional one – in trade finance.

According to Swift data, in early 2015 the US dollar was the most commonly used payment currency in the world, accounting for 43% of all transactions (see Chart 15). In 2014 it overtook the euro in value terms, which experienced a decline in its usage for the third year. While part of this development may be ascribed to divergent business cycles across the Atlantic, the depreciation of the euro vis-à-vis the US dollar also played a role through valuation effects. The British pound and the Japanese yen still rank in third and fourth position, as confirmed by their broadly unchanged share in global payments. Reflecting its expanding role in Asia and internationally, the renminbi's usage has instead grown from being a negligible fraction of all transactions to about 2%. While this share is still small from a global perspective, the currency has shown considerable dynamism in an increasing number of emerging economies (see also Box 3 on the rise of non-traditional international currencies).

Chart 15
Share of world payment currencies

(percentages, at current exchange rates)



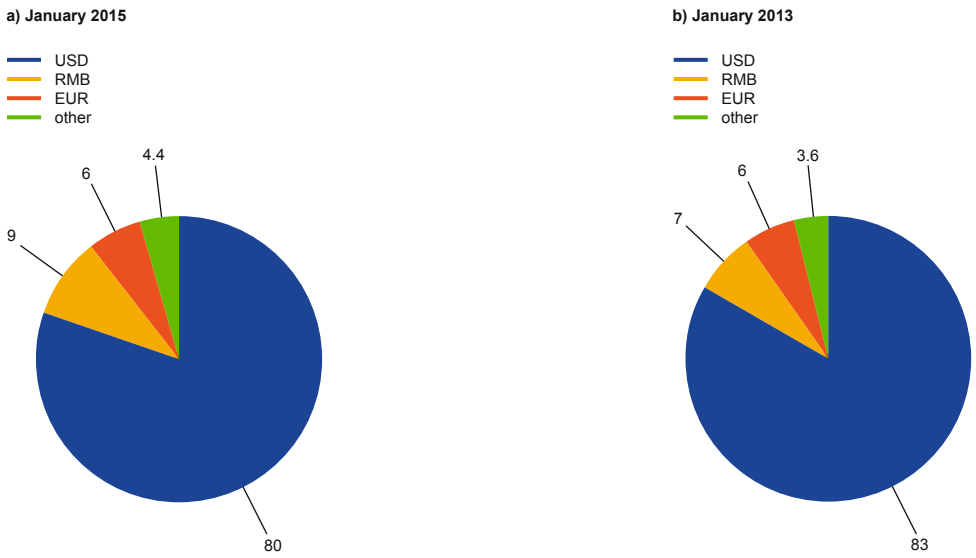
Source: SWIFT.
Notes: Inbound plus outbound traffic. Based on value. Data for each year refers to end January.

According to Swift data, global trade finance uses only a very limited number of vehicle currencies. Considering both letters of credit and cash against documents as payment methods, the market is still strongly dominated by the US dollar (Chart 16), which has remained the currency of denomination for every four out of five transactions.

Chart 16

Major currencies in trade finance activities

(percentages; at current exchange rates)



Source: Swift.
Notes: Letters of credit and collections. Inbound plus outbound traffic. Based on value.

There is evidence of the renminbi's rapidly growing role – mainly but not exclusively a regional one – in trade finance, on account of the transactions carried out in China but also in financial centres such as Hong Kong or Singapore. From a global perspective the renminbi and the euro ranked in second and third place respectively in 2015, accounting for 9% and 6% of all trade finance-related transactions. According to Swift data, all other currencies play a more marginal role, having been employed for just over 4% of all trade finance-related transactions.

4.4 The euro as a parallel currency

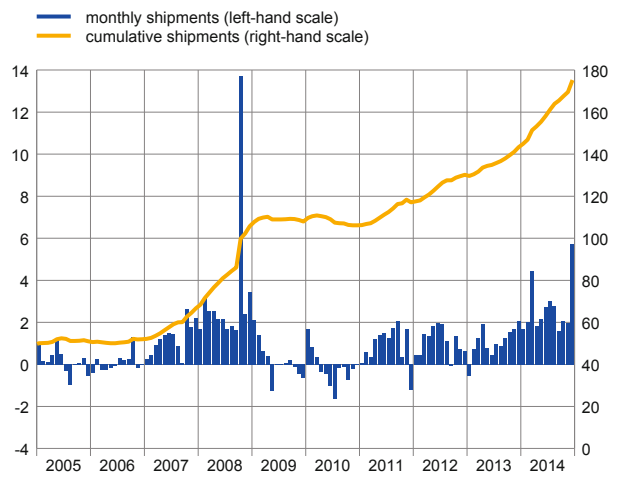
4.4.1 Currency substitution – the use of euro banknotes outside the euro area

Net shipments of euro banknotes to destinations outside the euro area suggest that foreign demand for euro banknotes was very strong in 2014, and almost trebled in volume compared with 2013, partly reflecting increased demand for banknotes in the wake of heightened political uncertainty abroad.

Chart 17

Net shipments of euro banknotes to destinations outside the euro area

(EUR billions; adjusted for seasonal effects)

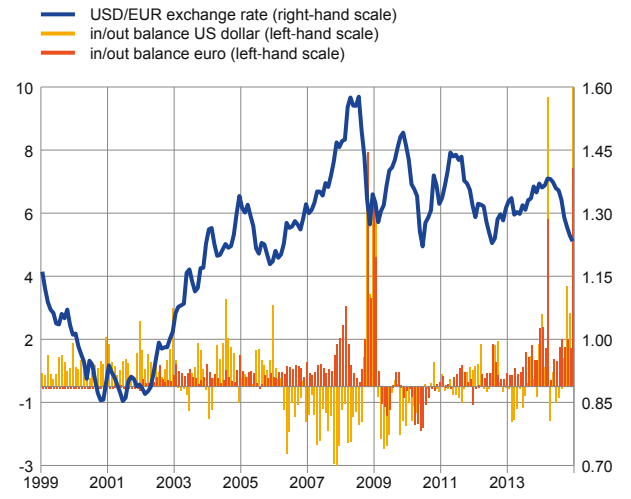


Source: Eurosystem.
Notes: Net shipments are the sum of euro banknotes sent to destinations outside the euro area minus euro banknotes received from outside the euro area. The latest observation refers to December 2014.

Chart 18

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

(USD billions)



Sources: Bank of Russia, ECB.
Note: The latest observation refers to December 2014.

The use of euro banknotes outside the euro area cannot be estimated with great precision. One estimate of the amount of euro banknotes circulating abroad (and reported regularly in this report) is based on cumulated net shipments of euro banknotes by euro area monetary financial institutions (MFIs) to destinations outside the euro area. On this basis, around €175 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 2014 (see Chart 17). This accounted for around 18% of the total stock of the euro currency in circulation in the same month in the euro area. This estimate is a lower bound, given that euro banknotes leave and re-enter the euro area through several other channels. Anecdotal evidence suggests that the outflows of euro banknotes via non-MFI channels (for example, via tourism or workers' remittances) are larger than inflows for most countries. Actual net flows of banknotes circulating outside the euro area can hence be expected to be significantly higher than the estimate based on net shipments.

Foreign demand for euro banknotes continued to grow for the fourth consecutive year at double-digit rates in the review period (by 22% in annual terms in December 2014), at a pace clearly faster than that of recent years and that of domestic demand. At €2.7 billion, the average value of monthly net shipments of euro banknotes abroad almost trebled in 2014 compared with its value in the previous three years. This reflected both high (but stable) gross flows back into the euro area of euro banknotes from non-euro area residents and higher gross flows of banknotes out of the euro area. In this respect, a strengthening of the net shipments abroad was visible in December 2014 after the intensification of the Ukrainian crisis and in the wake of developments in Greece, suggesting that part of the additional demand by non-euro area residents was driven by heightened uncertainty and flight to safety.

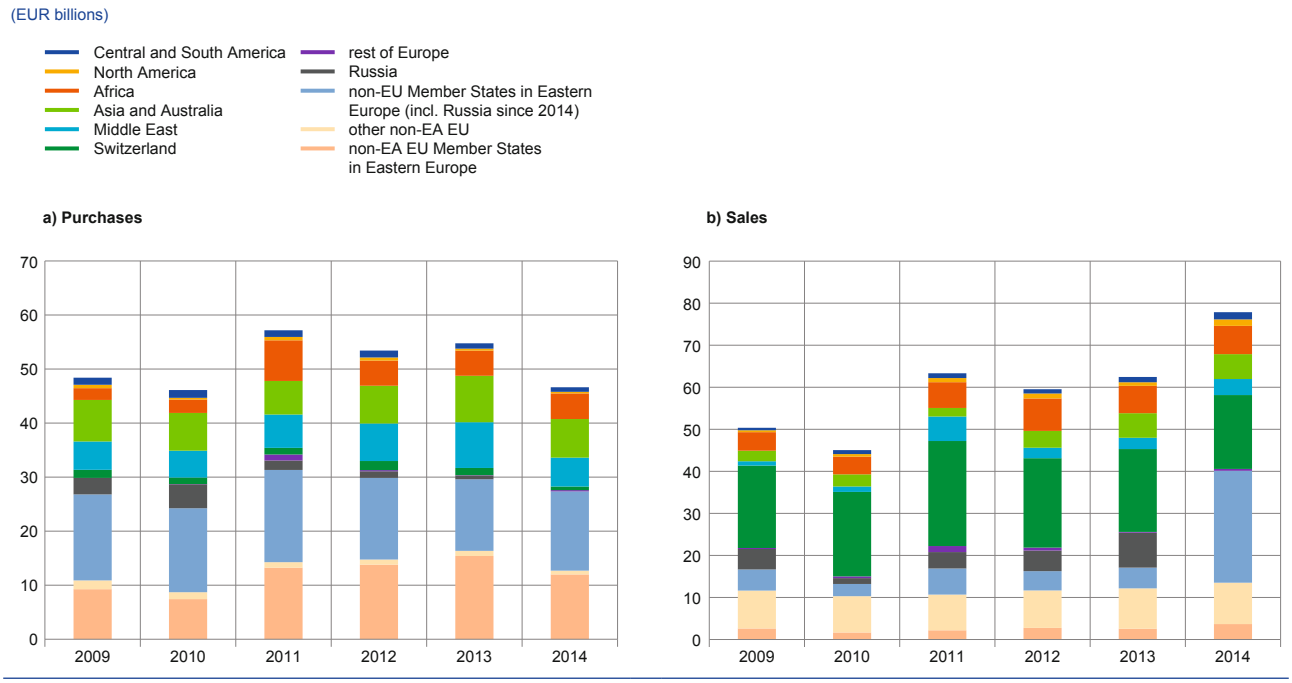
Further evidence can be derived from statistics provided by the monetary authorities of non-euro area countries. For example, the Central Bank of Russia publishes data on foreign currency brought into and taken out of the Russian Federation by authorised banks. These statistics show that in 2014 the net shipment of euro banknotes to Russia increased for the fourth consecutive year (see Chart 18). The data thus suggest that Russian residents might have steadily increased their euro banknote holdings in the last four years, in particular in 2014. At the same time, net

holdings of US dollar banknotes brought into the Russian Federation by authorised banks also increased markedly in 2014, with an increase of almost the same size as that of euro banknotes, which coincided with the strengthening of the US dollar vis-à-vis the euro after August 2014. The increase was especially sizeable in the first quarter of 2014 as well as in the last quarter of 2014, which might be a result of high demand for foreign currency associated with developments in Ukraine as well as in the rouble's exchange rate.

Data collected from 11 international banknote wholesale banks and one bureau de change also show that exports (sales) of euro banknotes to regions outside the euro area increased significantly, by 25%, in 2014 compared with 2013. At the same time, imports (purchases) of euro banknotes declined by 15% compared with 2013. Euro banknotes continued to be used mainly in European regions, in particular in Eastern Europe, which accounted for 60% of total euro banknote imports and 75% of total euro banknote exports. In more detail, euro banknotes have mainly been purchased from Turkey and mainly been sold to Russia (see Chart 19). Compared with 2013, sales to Eastern Europe doubled to almost €27 billion, meaning that this region has contributed significantly to the overall increase in euro banknote exports in 2014. Sales to the Rest of Europe region, dominated by Switzerland, have remained at a high level, accounting for a quarter of all exports (€18 billion). Outside Europe, euro banknotes have mainly been demanded in Asia and in sub-Saharan Africa and to a lesser extent in the Middle East. As in previous years, euro banknotes have hardly been used in the Americas accounting for only 2% of all imports and 4% of all exports.

Chart 19

Regional breakdown of euro banknote purchases from and sales to locations outside the euro area



Source: ECB (based on data from wholesale banks).
Notes: These data exclude trades 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 (for instance where a wholesale bank purchases a euro banknote from a client in Asia and sells it to a client in Russia).

4.4.2 Asset and liability substitution

Investors in most CESEE countries slightly increased their shares of euro savings in foreign currency deposits in 2014, suggesting that the euro continued to be perceived as a preferable store of value. The volume of euro-denominated loans in CESEE countries declined, in contrast, in line with measures taken by authorities in the region to curb foreign currency lending. The euro's share in foreign currency loans remained, in turn, broadly stable.

Investors in central, eastern and south-eastern Europe (CESEE) use the euro widely for domestic financial transactions ("unofficial euroisation"), while the euro has legal tender status only in Montenegro and Kosovo.[34]

The euroisation of liabilities on banks' balance sheets remains substantial in some non-euro area EU Member States[35] and in most EU candidate and potential candidate countries[36] from the CESEE region. The use of the euro is most widespread in the Western Balkans, where it is largely a legacy of previous periods of macroeconomic instability. The share of deposits denominated in euro ranges from 39.5% in Bosnia and Herzegovina to 70.1% in Serbia (see Table A14 in the Statistical Annex). Among non-euro area EU Member States, Croatia, with about 61% of total deposits denominated in euro, is at the upper end of the range. The Czech Republic and Poland, with shares of about 7% and 6% in 2014, respectively, are at the lower end.

Overall, the euro remained the predominant currency of denomination for foreign currency deposits in several CESEE countries, and continued to be perceived as a preferable store of value relative to local currencies, particularly in countries that have been through prolonged periods of economic turbulence. The euro's share in total foreign currency deposits remained broadly unchanged compared with 2013 (see Chart 20).[37]

On the asset side of banks' balance sheets, the use of the euro continues to be pronounced, broadly in line with developments on the liability side, also reflecting trade patterns and geographic proximity to the euro area. The share of total loans that are denominated in euro varies across countries but in general remains high, in particular in countries with a currency board arrangement or tightly managed exchange rates vis-à-vis the euro. In 2014 it ranged from 72.1% in Lithuania to 10.2% in the Czech Republic and Turkey (see Table A13 in the Statistical Annex). In the case of some non-euro area EU Member States, notably in Hungary and Poland, the bulk of outstanding foreign currency loans (mortgages in particular) is denominated in Swiss francs.

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[34] On account of their unilateral euroisation regimes, Kosovo (in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence) and Montenegro were excluded from the analysis in this section.

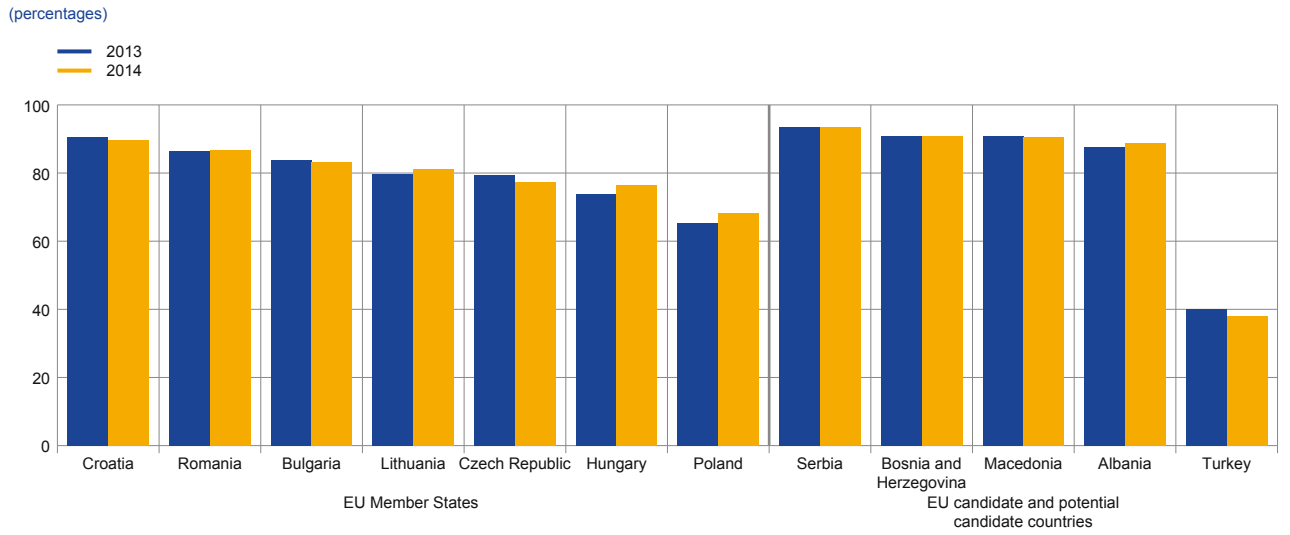
[35] Bulgaria, the Czech Republic, Croatia, Lithuania, Hungary, Poland and Romania. As the report analyses developments in 2014, Lithuania – which joined the euro area on 1 January 2015 – is also covered.

[36] Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Serbia and Turkey. Iceland is not included in the analysis.

[37] Currency shares are reported at current exchange rates and are not adjusted for valuation effects related to exchange rate changes.

Chart 20

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



Sources: ECB Balance Sheet Items (BSI), Haver Analytics, national central banks and ECB staff calculations.
Notes: Definitions of deposits may vary across countries. Deposits from the non-MFI private sector (i.e. households and non-financial corporations) except in the case of Bosnia and Herzegovina (total economy). Outstanding amounts as of December each year. Data may be subject to revisions as compared with previous issues of this report owing to methodological changes. Foreign currency-denominated deposits in the case of Albania only refer to time deposits since the currency breakdown is not available for demand deposits. Foreign currency-indexed deposits are included.

Loans denominated in foreign currencies can entail macroeconomic costs and pose risks to financial stability, especially when lending is extended to unhedged borrowers. Against this background, many CESEE countries have undertaken measures to discourage such loans, frequently in line with the ESRB Recommendation on lending in foreign currencies (see also Box 6).[38] In addition, the Hungarian government decided to embark on a strategy that went beyond the ESRB Recommendation and legislated the conversion of households' loans denominated in foreign currencies to Hungarian forint. While this conversion has immediate effects in reducing currency mismatches for mostly un-hedged borrowers, certain features may have added to the significant strains already faced by the banking sector in the country.[39] As the extension of new loans denominated in euro and other foreign currencies generally declined across the CESEE region since 2009, outstanding stocks are expected to gradually decrease over time.

Box 6

Unofficial euroisation in CESEE: an overview of recent literature

In most CESEE countries a significant share of household loans was issued in foreign currencies before the global financial crisis. Some countries took measures to reduce foreign currency lending prior to the crisis; others acted when the crisis broke out, for instance by implementing the recommendations issued by the European Systemic Risk Board.

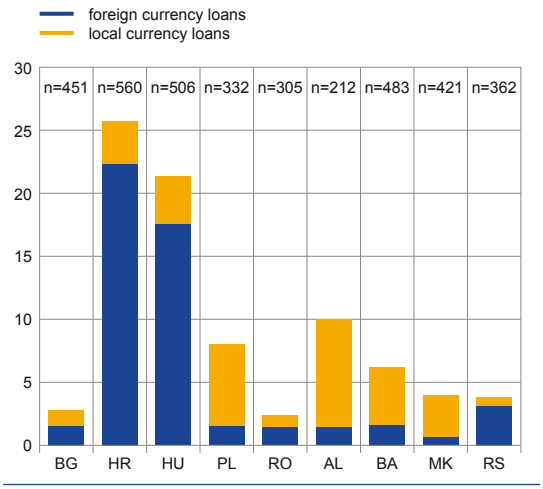
[38] Recommendation ESRB/2011/01. In November 2013 the ESRB published a follow-up report assessing the implementation of the recommendation (ESRB 04/11/2013) and concluded that among EU countries Bulgaria was only partially compliant with the implementation of the recommendation, while all other countries from the CESEE region were either fully, or largely compliant.

[39] The measure was implemented in February 2015. For further details see the ECB Opinion on the conversion of foreign exchange loans in Hungary (CON/2014/87). See https://www.ecb.europa.eu/ecb/legal/pdf/en_con_2014_87_f_sign.pdf

Chart A

Respondents not offered a choice of loan currency by banks

(percentage of respondents with a loan)

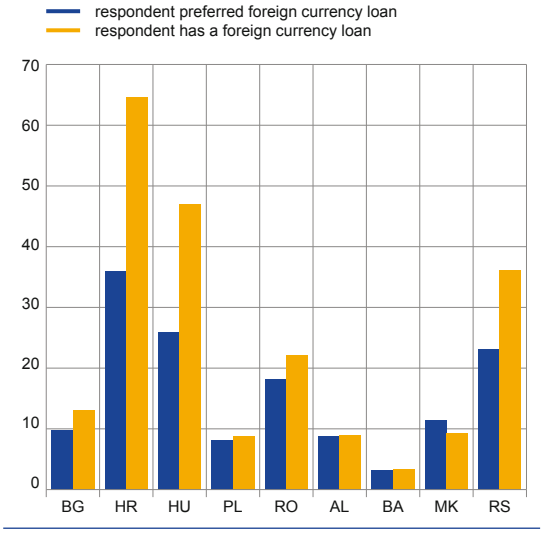


Source: OeNB Euro Survey, 2012-13.
Notes: "n" refers to the number of respondents that have taken out a loan. For details, see Beckmann et al. (2015).

Chart B

Foreign currency preferences and actual loan currency

(percentage of respondents with a loan)



Source: OeNB Euro Survey, 2012-13.

According to the OeNB Euro Survey data, households' intentions to take loans over the next twelve months have decreased since the outbreak of the global financial crisis. Over the same period, the demand for foreign currency loans has also declined.

Using microdata from the OeNB Euro Survey for nine CESEE countries, Beckmann et al. (2015) investigate how currency choice relates to loan characteristics, borrowers' preferences and bank ownership (domestic vs foreign). They find that both supply and demand factors play an important role and that most borrowers have the possibility of choosing the currency of denomination of their loans (see Chart A). Foreign currency loan demand by households is driven by interest rate differentials, trust in the relative stability of the local currency, and exchange rate volatility (Fidrmuc et al., 2013). A majority of borrowers are aware of exchange rate risk, which exerts a strong impact on currency choice (Beckmann and Stix, 2015).

On average, 23% of borrowers requested foreign currency loans. However, the actual incidence of foreign currency loans (31%) is higher than suggested by demand (see Chart B). This suggests that banks play a role in developments in foreign currency lending. In particular, they are more likely to lend in foreign currency if loans are large in size and have a long-term maturity (Beckmann et al., 2015). This is in line with the findings of Brown et al. (2014) that foreign currency lending is at least partially driven by banks' eagerness to match the currency structure of assets with that of liabilities.[40]

In general, both demand and supply-side drivers of foreign currency loans are found to be interlinked with the extent of euroisation.[41] The use of euro cash and household preference for foreign currency deposits are partly driven by trust in the relative stability of the domestic currency,

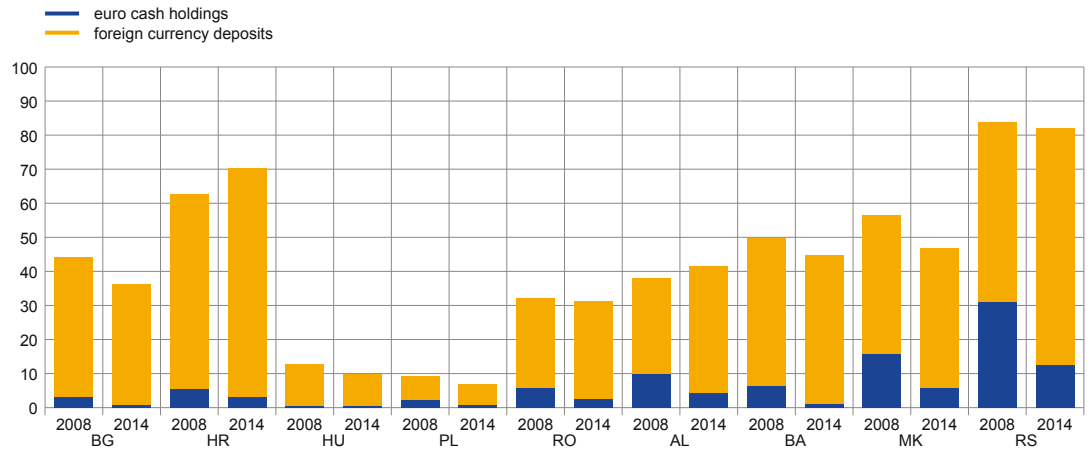
[40] However, Beckmann et al. (2015) show that on average foreign-owned banks did not issue more foreign currency loans – either consumption loans or mortgages – than domestically-owned banks, despite some exceptions.

[41] Ize and Levy-Yeyati (2003), Beckmann and Stix (2015), Jeanne (2005), Fidrmuc et al. (2013).

Chart C

Euroisation index: extent of asset substitution in CESEE countries

(percentages)



Sources: National central banks, OeNB Euro Survey.
Notes: Euroisation index = (euro cash + foreign currency deposits) / (total cash + total deposits). All entries are per capita figures referring to the population aged 14 years or over. Entries for both domestic and foreign currency deposits are averages of selected monthly figures for the household sector including non-profit institutions serving households provided by NCB monetary statistics. Domestic currency cash per capita is derived from M0 circulating outside MFIs. Euro cash holdings per capita have been projected on the basis of OeNB Euro Survey data, for details see Scheiber and Stix (2009).

which is related to the stability of policies and institutions, in turn.[42] Brown and Stix (2015) conclude that monetary policy stability fosters a reversal of euroisation, although it may not be sufficient.[43] Chart C compares the degree of euroisation with reference to both household cash holdings in euro and foreign currency deposits between 2008 and 2014 (asset substitution). While the euro cash component declined in all countries, foreign currency deposits remained rather stable or even increased (in particular in Albania, Croatia and Serbia). Some progress in reducing overall euroisation has been achieved in Bulgaria, Bosnia and Herzegovina and FYR Macedonia. Brown and Stix (2015) question the effectiveness of supply-side interventions (for instance bank regulation) or demand-side interventions (for instance the development of a local currency capital market) in contributing to a reversal in foreign currency household savings, however.

[42] See Stix (2013), Brown and Stix (2015).

[43] Dealing with the hysteresis of deposit euroisation across the CESEE region is difficult since the holding of foreign currency deposits (i) has become a “habit” in CESEE countries and (ii) is still strongly influenced by households’ experiences of financial crises in the 1990s.

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Special features

A The role of currency invoicing for the international transmission of exchange rate movements[44]

Empirical studies typically find that the transmission of exchange rate movements to import prices differs sizeably depending on the currency chosen to invoice import transactions, and that it is lower the higher the share of local currency that is used to invoice imports. This finding may have implications for monetary policy in the euro area, given the large variations in the relative use of the euro as an invoicing currency for extra-euro area imports across euro area members, which ranges from around 20% in Greece to more than 70% in Estonia.

Against this background, this special feature aims to relate differences in country-specific degrees of long-run exchange rate pass-through to the relative use of the euro as an invoicing currency. In order to control for possible endogeneity of invoicing currency choice, it assumes that importing firms partly choose an invoicing currency mainly to hedge against exchange rate risk. In line with this reasoning, the special feature presents estimates of exchange rate pass-through where invoicing currency choice is instrumented by measures of aggregate costs and metrics of demand for foreign exchange hedging, which suggest the existence of a causal – and economically large – link between invoicing currency choice and exchange rate pass-through. According to the estimates, an increase in the share of the euro as an invoicing currency for extra-euro area imports by 10 percentage points lowers the degree of exchange rate pass-through by close to 7 percentage points. These findings also support the hypothesis that importing firms use invoicing currency choice as a hedge against foreign exchange rate risk.

1 Introduction

The large movements in the euro exchange rate over the past few years coupled with concerns about falling inflation in the euro area have reignited discussions on the extent of pass-through of exchange rate movements into domestic prices. Between July 2012 and May 2014 the euro exchange rate appreciated by around 15%, both in nominal effective terms against its major 38 trading partners, as well as in bilateral terms against the US dollar. This substantial and broad-based strengthening of the euro exchange rate halted in mid-2014 and reversed as expectations of diverging trends in the stance of monetary policy between the euro area and its major trading partners mounted, with the euro depreciating by more than 20% against the US dollar. It has been observed that this depreciation can be expected to contribute to the reduction of the risks of an excessively long period of excessively low inflation in the euro area.

[44] Prepared by J. Gräb and R. Lafarguette.

This expectation embodies two important assumptions. First, that the pass-through of exchange rate movements into euro area import prices is at least partial over the short run and that it rises over the long run, i.e. if and when foreign exporters adjust their markups and prices to exchange rate shocks. Second, it takes for granted that the degree of exchange rate pass-through is of broadly comparable magnitude across euro area countries.

Increasingly, however, empirical and theoretical evidence is suggesting that pass-through has been steadily declining over the past few decades, that it is far from being complete over the long run and that it can differ substantially across countries. In the case of the United States, for instance, it has been estimated that aggregate import pass-through stands at around 20% in the short run and that it remains as low as 30% over a two-year horizon (Gopinath et al., 2010). In the case of the euro area, in turn, it has been shown that pass-through rates differ substantially across member states (Campa and Mínguez, 2006).

While the finding that there is limited aggregate exchange rate pass-through to US import prices has been largely ascribed to the dominant role of the US dollar for the invoicing and settlement of US imports (90%), the role of invoicing currency choice has so far not been properly considered in explaining differences in the extent of exchange rate pass-through across several countries. This is the gap that this special feature aims to fill by relating cross-country heterogeneity in the degree of exchange rate pass-through within the euro area to cross-country differences in the share of local currency invoicing of extra-euro area imports.[45] In order to control for the possible endogeneity of currency invoicing, it is assumed here that importing firms use invoicing currency choice to hedge against exchange rate risk, in line with the observation that it is a low-cost, transparent and easy way to hedge. Specifically, the special feature builds on two key determinants of currency invoicing strategies: the cost of and demand for hedging against foreign exchange risk. The cost of hedging through financial markets is measured by financial market development. Aggregate demand for foreign exchange hedging is represented by the degree of dependence on intra-euro area exports. By using this approach, the special feature uncovers a causal – and economically large – link between currency invoicing and exchange rate pass-through. According to the estimates, an increase in the share of extra-euro area imports invoiced in euro by 10 percentage points lowers the degree of pass-through by almost 7 percentage points. Moreover, these estimates strongly support the hypothesis that importing firms aim to hedge against exchange-rate risk through their choice of invoicing currency.

The special feature is structured as follows. Section 2 reviews the existing literature. In Section 3 country-specific estimates of exchange rate pass-through are discussed. Section 4 relates these estimates to the relative use of the euro as an invoicing currency in extra-euro area imports using instrumental variable techniques. Section 5 concludes.

[45] This special feature is based on Gräb and Lafarguette (2015).

2 Literature review

The literature on the pass-through of exchange rate changes to import prices can be broadly divided into two main strands. A first strand of literature has investigated the degree of exchange rate pass-through (ERPT), and typically finds that pass-through into import prices is partial, that it varies markedly across countries and that it has tended to decline over recent decades (Goldberg and Knetter, 1997; Taylor, 2000; Campa and Goldberg, 2005; 2010; Marazzi et al., 2005; Campa and Gonzalez Mínguez, 2006; Goldberg and Hellerstein, 2008; Goldberg and Campa, 2008; Burstein and Gopinath, 2013; Gagnon et al., 2014). This literature has typically focused on macro-level data and has aimed to establish a link between macroeconomic variables, such as exchange rate volatility or the stability of monetary policy and ERPT. In particular, Campa and Goldberg (2005) have been among the first to provide cross-country and time-series evidence about the level of EPRT across OECD economies, finding marked heterogeneity in long-run ERPT, with the United States having the lowest sensitivity among OECD economies. Marazzi et al. (2005) confirm the limited sensitivity of US import prices to exchange rate movements. They document a sustained decline in aggregate ERPT from above 0.5 in the 1980s to around 0.2 in the early 2000s. Campa and Mínguez (2006) investigate differences in ERPT within the euro area, finding that ERPT differs across euro area countries over the short run and the long run and they link these variations to differences in the degree of openness across individual euro area countries. In particular, countries such as Italy, France and Spain, which tend to be less open, exhibit a lower ERPT. [46]

A second, more recent strand of literature has focused on the role of currency invoicing and firm characteristics for the degree of ERPT (Gopinath and Rigobon, 2008; Gopinath and Itskohki, 2010; Gopinath et al., 2010; Berman et al., 2012; Fabling and Sanderson, 2014; Devereux et al., 2014). Using micro-level data on currency and import prices, this literature finds strong evidence that import prices are sticky, in whichever currency they are priced, and that ERPT differs markedly across invoicing currency and firm performance. In the case of the United States, Gopinath and Rigobon (2008) illustrate the stickiness of border prices by showing that the median price duration in the currency of pricing is close to one year for US imports. Moreover, they show that there has been a trend decline in the probability of price adjustments for imports. By looking into the role of currency invoicing further, Gopinath et al. (2010) find evidence of large differences in ERPT, even conditional on import price changes, across US dollar and non-US dollar imports over the short run and, importantly, also the long run. Aggregate ERPT is markedly different for goods invoiced in the currency of the importer (around 25%) and goods invoiced in the currency of the producer/exporter (around 95%), both over the short run and even after two years. Devereux et al. (2014) confirm the finding that ERPT is higher for imports invoiced in foreign currency and lower for imports invoiced in local

[46] This special feature article focuses on the impact of exchange rate movements to import prices and does not deal with the transmission of import price changes to consumer price indexes. Goldberg and Campa (2008), for instance, test the sensitivity of consumer prices, rather than import prices, to exchange rate movements. They show that the dominant channel for CPI sensitivity is through the costs arising from imported intermediate inputs for production rather than through price changes of imported costs that are directly consumed.

currency. In addition, Devereux et al. show that ERPT for imports invoiced in vehicle currencies is somewhere between the two extremes. Finally, they find evidence of a U-shaped relationship between a firm's market share and ERPT. Using French firm-level data, Berman et al. (2012) find that high-performance firms react more strongly to exchange rate movements by increasing their markups by more and their export volumes by less, suggesting that high-performance exporters pass on a smaller proportion of exchange rate fluctuations to their customers. Using firm-level data for New Zealand, Fabling and Sanderson (2014) confirm the finding of Gopinath et al. and Devereux et al. that short-run and long-run ERPT differ markedly across invoicing currencies, and that ERPT for vehicle currencies is somewhere between these two extremes.

In the following, this special feature seeks to link the two strands of the literature by relating cross-country differences in ERPT to the relative use of local currency for invoicing extra-euro area imports.

3 ERPT to import prices: evidence for the euro area

In order to estimate country-specific degrees of long-run ERPT for euro area countries, we follow the literature and use a standard log-linear regression model (see, for instance, Campa and Goldberg, 2005, Gopinath et al. 2010):

$$\Delta p_{it} = \alpha + \sum_{j=0}^{4} \beta_{ij} \Delta e_{t-j} + \sum_{j=0}^{4} \gamma_{ij} \Delta Cost_{t-j} + \delta_{ij} \Delta IP_{it} + \varepsilon_{it}, \qquad (1)$$

where Δp_{it} is the quarterly log change in import price unit values of euro area economy i, Δe is the quarterly change of the broad measure of the euro nominal effective exchange rate (NEER-38), $\Delta Cost$ is a quarterly effective measure of inflation in production costs of the euro area's major trading partners[47] and ΔIP is the quarterly log change in industrial production (excluding construction) of euro area economy i. The estimation sample has a quarterly frequency, spans the time period Q1 2000 to Q4 2014 and covers 17 euro area countries.[48]

Table 4
Estimated elasticities of long-run ERPT to import prices

	Long-run elasticity
Austria	-0.29
Belgium	-0.50
Cyprus	-0.64
Germany	-0.48
Spain	-0.52
Estonia	-0.40
Finland	-0.61
France	-0.45
Greece	-0.59
Ireland	-0.75
Italia	-0.60
Luxembourg	-0.57
Malta	-0.57
Netherlands	-0.68
Portugal	-0.37
Slovakia	-0.38
Slovania	-0.29
Euro area	-0.51

Note: Cumulated ERPT over four quarters.

The results for the estimated degrees of long-run ERPT are reported in Table 4. For the euro area aggregate we find that a one per cent nominal effective appreciation of the euro has on average resulted in a 0.51% decline in aggregate import prices over the estimation period. However, this finding

[47] This measure is derived by taking a trade-weighted average of the export unit value cost indices of 38 of the euro area's major trading partners.

[48] Latvia is excluded from the sample on account of data restrictions. For euro area member states that joined the euro area at a later stage (after Q1 2000) the regression starts at the time of accession.

masks substantial heterogeneity in ERPT across euro area economies, ranging from 0.29% in Austria to 0.75% in Ireland.[49]

4 Understanding differences in ERPT across euro area economies

What explains the marked variation in estimated ERPT across euro area economies? As stressed by Devereux and Engel (2001) this is of particular relevance in the euro area since firms choose currencies with low exchange rate variability and stable monetary policies for international transactions, factors that are common across countries in a monetary union.

4.1 Standard determinants of ERPT

The existing literature that aims to explain cross-country differences in ERPT has so far focused on a combination of macroeconomic and microeconomic structural determinants (see, for instance, Devereux and Engel, 2001; Campa and Goldberg, 2005; Campa and Mínguez, 2006; Bussière et al, 2014). We follow this literature and relate our estimated ERPT to a set of macro and micro variables:

$$\beta_i = \alpha + \gamma_1 \text{Openness}_{it} + \gamma_2 \text{HICP}_{it} + \gamma_3 \text{LowTech}_{it} + \varepsilon_{it}, \qquad (2)$$

where Openness of euro area economy i is measured as the share of imports to GDP, HICP is the logarithm of annualised HICP inflation, and LowTech is the share of agricultural and raw material imports in total imports, a proxy for the degree of product differentiation (assuming that low-technology imports are subject to less product differentiation; see, for instance, Berman et al., 2012). The estimation sample has an annual frequency, spans the time period 2000-2013, and covers the 15 euro area countries for which data on currency invoicing is available.

We start with a regression specification that is restricted to the standard macroeconomic determinants of ERPT: the level of inflation and the degree of openness. The results are reported in column (1) of Table 5. The R-squared is 3%, which suggests that these standard macroeconomic determinants explain only a small share of the cross-country heterogeneity in ERPT. Countries with a higher degree of openness are found

Table 5
Determinants of long-run ERPT

	(1) OLS	(2) OLS	(3) OLS	(4) (IV-2SLS)
Openness	0.06***	0.04***	0.07***	0.07***
	(6.98)	(3.17)	(10.80)	(10.32)
Inflation	-0.02***	-0.01	0.01	0.00
	(-3.16)	(-1.41)	(1.29)	(1.17)
Agricultural Imports (percentage of Imports)		-9.35***	-2.68***	-2.92***
		(-12.22)	(-5.62)	(-5.91)
Local currency share			-0.71***	-0.68***
			(-29.07)	(-18.56)
Constant	0.49***	0.65***	0.85***	0.84***
	(55.48)	(51.27)	(77.61)	(58.43)
Observations	777	777	777	777
R-squared	0.03	0.27	0.68	0.68
Hansen-J (p-value)				0.11
K-P-Test (p-value)				0.00
First-stage- F-Stat				308.55

Source: Gräb and Lafarguette (2015).
Notes: Robust standard errors, t-statistics reported in parentheses. Significance levels: *p<0.1 ** p<0.05 *** p<0.01.

[49] A possible limitation of single equation ERPT regressions conducted in this section is that these may not cover the endogeneity among the different regressors, such as the exchange rate and the proxy for foreign inflation. Some studies have hence included a measure of domestic costs as an extra determinant in single equation models of ERPT to account for domestic substitutes that act as an additional determinant in the equation.

to be those with higher ERPT, which is consistent with previous findings in the literature, such as those of Campa and Mínguez (2006).[50]

Next, we add the share of agricultural and raw material imports to total imports to equation (2). The results are reported in column (2) of Table 5 and suggest that economies which import more low-technology products tend to have lower pass-through. This may reflect the fact that exporters of less differentiated products tend to have lower market power and hence react to depreciation by increasing their markup rather than their export volume, which translates into a lower ERPT.[51] Moreover, the R-squared increases from 3% to 27%, suggesting that the import structure of an economy is an important determinant of cross-country differences in ERPT.

4.2 The role of invoicing currency choice

A determinant that has not been considered in existing studies that analyse cross-country differences in ERPT is the role of local currency invoicing. Evidence for one country, namely the United States, suggests that the fraction of imports invoiced in local currency (i.e. the US dollar) may have significant predictive power for measures of aggregate ERPT to import prices, even at long horizons (see Gopinath et al, 2010 and Fabling and Sanderson, 2014). To what extent do these conclusions extend to other economies?

To address this question, we draw on a unique country-level dataset on the share of local currency import invoicing collected for this year's International Role of the Euro report. Table 6 reports the share of the euro as an invoicing currency (or settlement

Table 6

The euro's share as an invoicing or settlement currency in extra-euro area imports

(percentages)

	Austria	Belgium	France	Germany	Italy	Luxembourg	Netherlands	Greece	Ireland	Portugal	Spain	Cyprus	Slovakia	Estonia	Slovenia
2000		44	43			44	37			44	44				77
2001		47	43		41	47	41	26		51	50				79
2002		54	41	48	44	32	48	35		55	56				83
2003		58	44	55	45	42	45	39		58	61				82
2004		56	46	55	41	50	41	40		58	61	12			79
2005	63	51	46	55	39	44	37	33	43	54	56	12	82		77
2006	63	58	45	56	43	39	37	32	43	53	55	12	82		64
2007	63	56	45	57	44	38	37	34	43	52	57	2	82		73
2008	63	56	44	41	48	39	37	37	36	54	59	10	82		75
2009	56	58	44	35	50	55	41	38	35	57	62	13	78	47	70
2010	55	53	44	49	47	55	33	31	23	51	60	12	77	45	62
2011	56	56	47	49	44	49	35	33	21	46	52		69	61	64
2012	55	57	44	57	46	44	37	24	33	40	52		68	66	54
2013			54					23		36	48		67	72	59

Notes: Data taken from this report (see Table A11). Missing values replaced based on imputation methods.
Finland and Malta do not report data.

[50] The results reported in column (1) also suggest that members which tend to have higher domestic HICP inflation, show lower rates of pass-through. This result is different from what the earlier literature has typically found, namely a significant positive relation between rates (and volatility) of inflation and rates of pass-through; see, for instance, Campa and Goldberg (2005) and Bussière et al. (2014). However, the sign of the coefficient turns into positive (and statistically significant) territory when controlling for product differentiation and currency invoicing, see columns (3) and (4).

[51] Note, that based on French firm-level data, Berman et al., (2012) find the opposite, namely that high-productivity firms react to depreciation by increasing their markup significantly more and their export volume less, which translates into lower pass-through.

currency when this is unavailable) for extra-euro area imports. Cross-country variation in the use of the euro is substantial. Invoicing shares range from just over 20% in Greece to more than 70% in Estonia.[52]

Plotting the relative use of the euro as an invoicing currency for extra-euro area imports against the estimated degree of pass-through, Chart 21 shows that the correlation coefficient is strikingly large. Member states with a higher share of extra-euro area imports invoiced in euro typically have a substantially lower degree of ERPT. In order to control for other factors that affect the choice of invoicing currency we now modify equation (2) to:

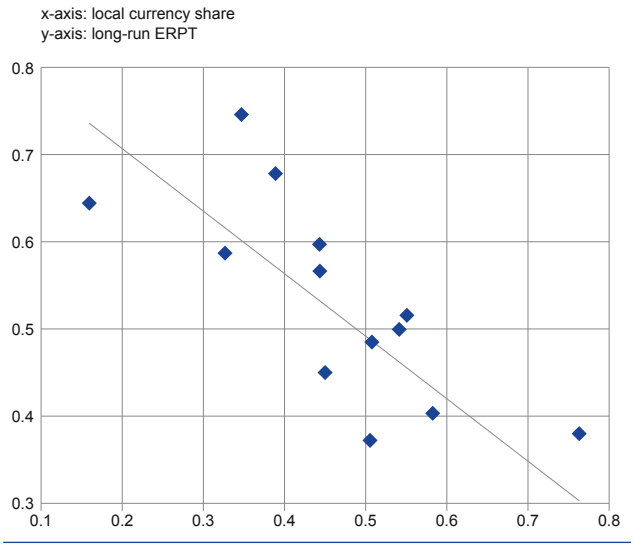
$$\beta_i = \alpha + \gamma_1 Openness_{it} + \gamma_2 HICP_{it} + \gamma_3 LowTech_{it} + \gamma_4 LCI_{it} + \varepsilon_{it} \qquad (3),$$

where LCI is the share of local currency invoicing of extra-euro area imports in euro area economy i. The estimation results are reported in column (3) of Table 5. The share of local currency invoicing is highly correlated with long-run ERPT and highly statistically significant when controlling for standard determinants of ERPT heterogeneity. Moreover, the R-squared increases markedly, by more than 30 percentage points.

This result is intuitive and not necessarily surprising from a theoretical perspective since there is evidence that invoicing currency choice is an endogenous decision. In other words, the invoicing strategies of exporters may well reflect different preferences for ERPT. Exporters are more likely to choose local currency pricing if they stand ready – or are able – to absorb more exchange rate movements through adjustments to their markups, which translates into lower ERPT (see, for instance Berman et al., 2013 and Gopinath et al., 2010). From a macroeconomic perspective, this suggests that aggregate invoicing shares are the simple reflection of cross-country differences in ERPT preferences.

Chart 21

Relation between estimates long-run ERPT and share of local currency invoicing



Source: Gräb and Lafarguette (2015).
Notes: The figure depicts a simple OLS regression of the estimated long-run ERPT on the share of local currency invoicing. The local currency share is averaged over time.

In order to address possible concerns about endogeneity and identify the causal impact of currency invoicing on ERPT we adopt an instrumental variable approach. Instruments should be relevant and valid, i.e. the variation in the instruments must have sufficient power to explain the variation in ERPT and the instruments must be exogenous, i.e. uncorrelated with the error term.

To find appropriate instruments we assume that importing firms partly use invoicing currency strategies to hedge against exchange rate risk. According to Levi (2005), firms have six main options for hedging against risk, which include using the forward, futures, options and money markets, as well as choosing adequate supply sources or invoicing currencies. The first four of

[52] Estonia's high local-currency share in the invoicing of imports in 2013 is largely explained by Estonia's high share of imports from Latvia and Lithuania. Both countries were at the time expected to join the euro area and thus predominantly used the euro as invoicing currency for trades with Estonia.

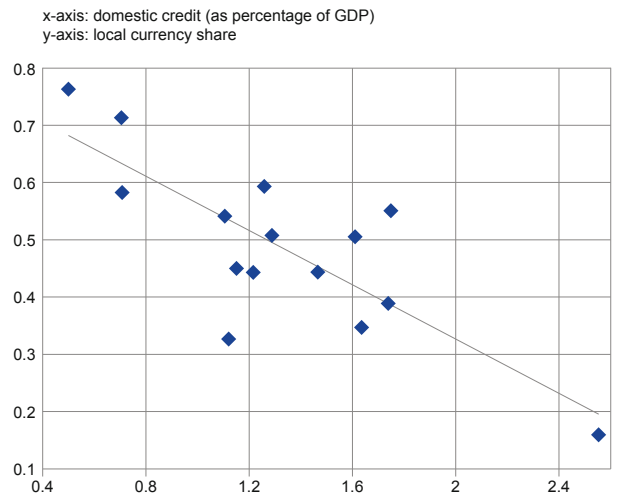
these options are based on using financial instruments, which may be costly or even simply inexistent for some illiquid currency pairs. Supply sourcing might not be possible for some firms in some sectors which rely on highly differentiated goods. The choice of invoicing currency is, conversely, a low-cost, transparent and easy way to hedge for firms. A firm can reduce its overall exposure to foreign exchange risk by matching the currency of its cost structure with that of its revenue sources. Using invoicing currency choice as a hedge depends on firm-level micro factors, such as bargaining power with suppliers/customers, the degree of product differentiation and exposure to international trade, as well as on macro factors, in particular relative hedging costs through financial instruments, exchange rate volatility and invoicing practices in the industry at large.

At the aggregate level, it is possible to use proxies for these factors in the form of different macro indicators. We hence rely on two measures. First, we use the ratio of domestic credit provided by the financial sector to GDP (a standard measure of an economy's financial market development), as a proxy for hedging costs through financial instruments. This variable captures the extent to which invoicing currency choice may be used as a hedge against foreign exchange risk if adequate financial instruments are either too costly or simply inexistent. Second, we make use of the degree of intra-euro area export linkages, measured as the share of intra-euro area exports in total exports, as an indicator of firms' need for foreign exchange hedging. Since balancing costs and revenues in the same currency is a cost-efficient way to hedge against exchange rate risk, euro area economies which predominantly rely on intra-euro area exports, and whose revenues are hence mainly denominated in euro, can be expected to be more likely to invoice extra-euro area imports in euro.

Chart 22 and Chart 23 show the strong correlation between cross-country differences in long-run ERPT and domestic credit to GDP, as well as intra-euro area export

Chart 22

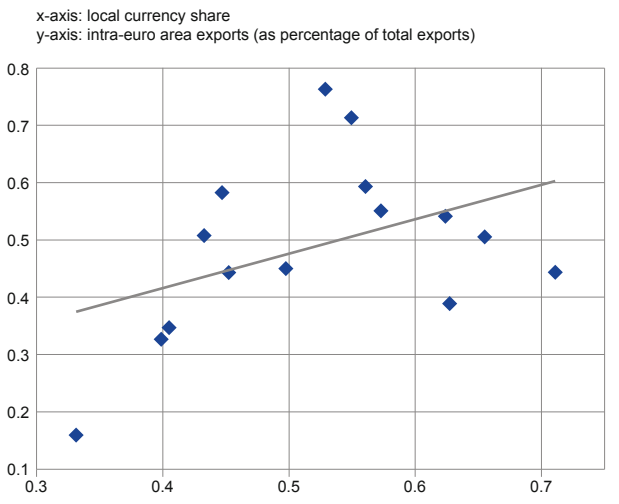
Share of local currency invoicing vs domestic credit to GDP



Source: Gräb and Lafarguette (2015).
Notes: The figure shows a simple OLS regression of the estimated share of local currency invoicing on the ratio of domestic credit to GDP (share of intra-euro area exports in total exports). All variables are averaged over time.

Chart 23

Share of local currency invoicing vs degree of intra-euro area export linkages



Source: Gräb and Lafarguette (2015).
Notes: The figure shows a simple OLS regression of the estimated share of local currency invoicing on the ratio of domestic credit to GDP (share of intra-euro area exports in total exports). All variables are averaged over time.

linkages, respectively. Countries with less developed capital markets tend to invoice a larger share of their extra-euro area imports in euro. Similarly, euro area economies invoice a larger share of their extra euro area imports in euro if they export mainly to other euro area countries.

Two-stage least square regression estimates are reported in column (4) of Table 2. The specification test statistics (the J-test for over-identifying restrictions and the Kleibergen-Paap test for under-identifying restrictions) suggest that the instruments are both valid and relevant. Comparing the first-stage F statistics with the Stock-Yogo statistics suggests that the hypothesis suggesting that the endogenous regressor is weakly identified can be rejected. The estimates suggest a causal – and economically significant – link between invoicing currency choice and ERPT. Specifically, the IV estimates in column (4) point to an elasticity of around 0.7, suggesting that an increase in the share of the euro as an invoicing currency (as a percentage of total imports) by 10 percentage points would lead to a decline in ERPT to import prices of some 7 percentage points.

5 Conclusion

This special feature has related the use of the euro as an invoicing currency for extra-euro area imports to differences in long-run ERPT across euro area member countries. It has uncovered strong evidence that euro area countries which predominantly rely on intra-euro area exports and which have limited access to alternative and lower-cost financial instruments are more likely to invoice extra-euro area imports in euro. This pattern, in turn, tends to reduce the degree of exchange rate pass-through. Overall, these findings suggest that importing firms partly choose invoicing currencies as hedges against foreign exchange rate risk.

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B Stability or upheaval? The currency composition of international reserves in the long run[53]

This special feature analyses how the roles of different national currencies as international reserves were affected by the shift from fixed to flexible exchange rates in the wake of the collapse of the Bretton Woods system. It provides evidence on the changes to the currency composition of global foreign exchange reserves since 1947 and examines whether there was a shift in the determinants of the currency composition of international reserves in the early 1970s. The special feature shows that inertia and the effects of policy credibility on international reserve currency choice have become stronger post-Bretton Woods, while network effects appear to have weakened. It also suggests that, historically, policy interventions designed to discourage the international use of a currency have been more effective than interventions to encourage its use. These findings could be relevant for the prospects of international reserve currencies that are already established, such as the US dollar and the euro, as well as for the prospects of other units seeking to acquire international reserve status, such as the renminbi.

1 Introduction

The demand for international reserves and their currency composition have long figured as important elements in the literature on international currency status. Previous studies on this subject have built on a limited evidentiary base, however. Data on the currency composition of international reserves is made available to the public by a small number of central banks. The IMF gathers such data from its members, but publishes only global aggregates and breakdowns between advanced and emerging economies. Earlier studies, such as Chinn and Frankel (2007, 2008), have assembled these aggregated data from the IMF's website and publications starting in the early 1970s. This conveniently coincides with the end of the Bretton Woods system, which is sometimes thought to have occasioned a shift in the demand for international reserves.

These studies have yielded strong conclusions. They find that the demand for a currency as an international reserve is strongly increasing in line with issuing country size, that persistence effects are strong and that to some extent the credibility of policies is also important. But the generality of these findings leaves many questions open. They are derived from analysis of a limited period, i.e. from the breakdown of the Bretton Woods system in the early 1970s to the eve of the introduction of the euro in 1999. Whether patterns in this period carry over to other periods has not been systematically studied. Whether the determinants of the composition of reserves were altered in fundamental ways by the shift from fixed to flexible exchange rates has not been systematically examined either.

But as Frenkel (1978) observed in the wake of the transition to floating, the absence of a legal obligation to peg the exchange rate, together with the absence of the

[53] Prepared by A. Mehl.

associated need for international reserves denominated in the US dollar – the anchor currency under the Bretton Woods system – could have fundamentally altered the demand for and composition of reserves. In theory, flexible exchange rates could have enabled countries to economise on reserves, specifically on dollar reserves that were the principal vehicle for foreign exchange market intervention at that point.

So far it has not been possible to test the validity of this "upheaval hypothesis". The data used by previous researchers did not provide information on the currency composition of reserves for the pre-floating exchange rate era (i.e. from the late 1940s to the early 1970s). And the sample of observations available to earlier researchers investigating structural instability in the demand for reserves in the 1970s and 1980s was just too small to draw definitive conclusions.

2 New data on the currency composition of international reserves in the long run

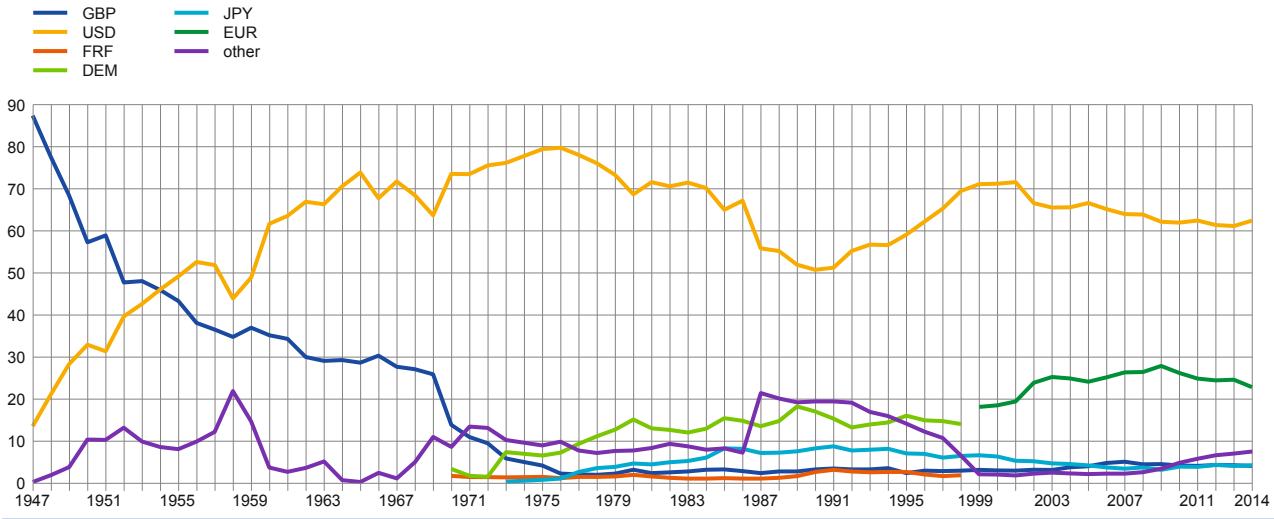
In a recent study, Eichengreen, Chiţu and Mehl (2014) extend the database on the currency composition of global foreign reserves backward and forward in time. They use an array of primary and secondary sources, including a volume published by the IMF (Horsefield, 1969) to gather data for the late 1940s and the 1950s; the Fund's annual reports to gather data from the 1960s to the 1990s; and the COFER database, which provides data for the period 1999-2014.

The new series spans two-thirds of a century from 1947 to 2014. Chart 24 shows the evolution of currency composition of global foreign reserves in this period. A striking feature is the dominance of sterling in the aftermath of the Second World War, when

Chart 24

Currency composition of globally disclosed foreign exchange reserves

(at market exchange rates and in percentages)



Source: Eichengreen, Chiţu and Mehl (2014).
Notes: "Other" units include the ecu, Dutch guilder, Swiss franc, Australian dollar and Canadian dollar, as well as errors and omissions (including unidentified US dollar and sterling reserves prior to 1971).

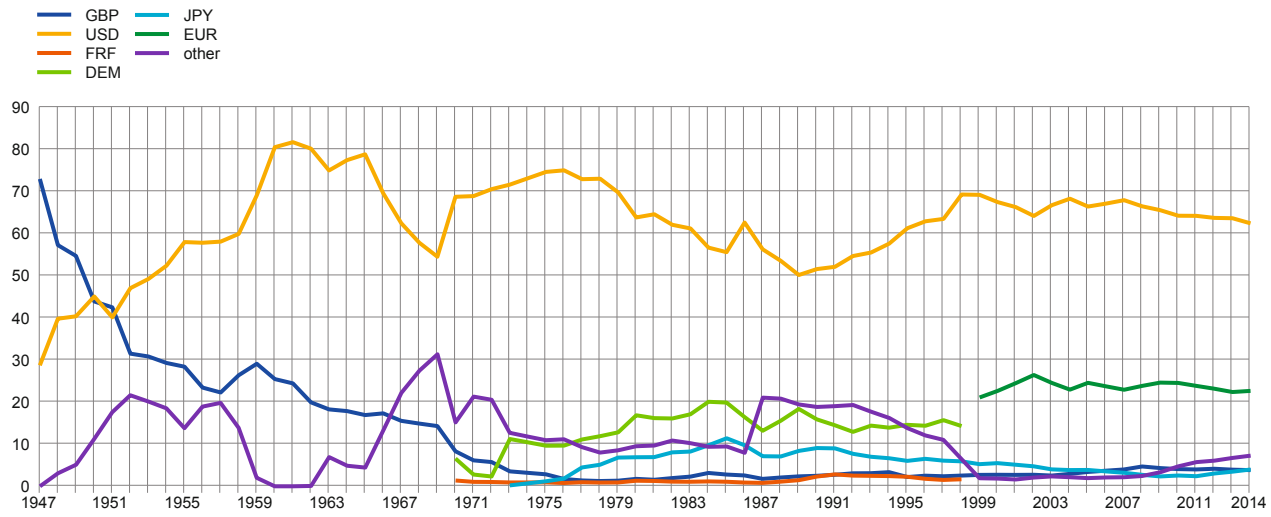
it accounted for more than 80% of foreign exchange reserves.[54] However, the US dollar quickly overtook sterling in the early 1950s, accounting for more than 50% of global foreign exchange reserves. Its rise continues through the mid-1970s, while sterling's share continues to decline, reaching the low single digits at around the same time. Starting in the 1970s the ascent of the Deutsche Mark and, subsequently, the euro as international reserve units is clearly visible, with the share of the euro increasing until the start of the euro area sovereign debt crisis. The rise and fall of the Japanese yen is visible from Chart 24, too, with its share in global foreign exchange reserves peaking in the early 1990s, i.e. until the point at which Japan's "bubble economy" burst.

Valuation effects arising from exchange rate movements may produce changes in the value of foreign reserves held in different currencies without any sales or purchases by official reserve holders. The early empirical literature on the currency composition of foreign reserves ignored this bias. More recent studies have computed currency shares at constant exchange rates and shown that such valuation effects can be important. In line with this, Chart 25 shows the currency composition of global foreign reserves between 1947 and 2014 at constant exchange rates (using 2014 as the base year). While levels and low frequency movements in currency shares remain broadly unchanged, there are differences in terms of short-run dynamics, for instance at the time of major exchange rate realignments (in 1971, for example) or phases of marked US dollar appreciation (in 1985, for example) or depreciation (in 2002-2007, for example).

Chart 25

Currency composition of globally disclosed foreign exchange reserves

(at constant 2014 exchange rates and in percentages)



Source: Eichengreen, Chiţu and Mehl (2014).
Notes: "Other" units include the ecu, Dutch guilder, Swiss franc, Australian dollar and Canadian dollar, as well as errors and omissions (including unidentified US dollar and sterling reserves prior to 1971).

[54] For a detailed discussion of the specificities of the aftermath of World War II see Eichengreen, Chiţu and Mehl (2014).

3 Determinants of the currency composition of international reserves in the long run

The new series enables us to examine whether the standard econometric specification fit to data for the fourth quarter of the 20th century also fits this longer time span. It moreover enables us to investigate possible structural breaks in the determinants of the demand for foreign reserves held in different units around the end of the Bretton Woods system.

A basic specification (see, for example, Eichengreen, 1998; Chinn and Frankel, 2007, 2008; and Li and Liu, 2008) relates foreign currency holdings to a lagged dependent variable, issuing country size and exchange rate appreciation. The lagged dependent variable aims to capture persistence or inertia effects of the sort discussed in Triffin (1960), Krugman (1980, 1984), Matsuyama, Kiyotaki and Matsui (1993) and Rey (2001). Relative size aims to capture network effects, which can be motivated by theoretical models of random matching games that see the emergence of international currencies as the solution to a "double coincidence of wants" problem, as discussed in Matsuyama, Kiyotaki and Matsui (1993), for example.[55] The credibility term is motivated by the idea that exchange rate appreciation can make holding a currency attractive and encourage its international use, as in Devereux and Shi (2013); exchange rate depreciation, in contrast, can be expected to have the opposite effect.[56]

To test for shifts around the time of the collapse of the Bretton Woods system, these variables are interacted with a post-1973 dummy. Both changes in the overall relationship and in the sign and size of the individual coefficients can then be investigated with standard Chow tests.

It is worth stressing here that persistence and network effects are different concepts. Persistence is linked in particular to a first-mover advantage. Examples include habit formation or the absence of low-cost alternatives to the dominant unit for providing reserves on the scale demanded. Conversely, network effects may increase the attractiveness of a particular standard (in this case, a reserve currency standard) at a specific point in time without preventing market participants from shifting to another standard at another point in time, to the extent that lock-in effects are weak and agents can coordinate their actions.[57] The success with which open standards for personal electronics have been developed in recent years, weakening lock-in and facilitating shifts between operating systems, illustrates the point.

Table 7 reports the regression results when the share of identified foreign exchange reserves held in a particular currency – purged of exchange rate valuation effects – is used as the dependent variable. Column 1 reports the results obtained with

[55] In this model, the incentive of an agent to accept a country's currency depends on how often they trade with a citizen of that country. In the estimates, relative size is measured as the share of the GDP of a reserve currency issuing country in global GDP, taking data from Maddison (2010).

[56] We represent credibility effects by using the average rate of currency appreciation vis-à-vis the SDR basket over the preceding five years, in the same way as Chinn and Frankel (2007).

[57] See the discussions in, for example, David (1986, 1990) and West (2007) for more details.

Table 7

Baseline estimates

	(1) Full sample	(2) Pre-1973	(3) Post-1973	(4) Full sample
Inertia	0.927***	0.758***	0.954***	0.886***
	(0.021)	(0.037)	(0.009)	(0.024)
Network effects	0.216***	0.815***	0.115***	0.426***
	(0.066)	(0.113)	(0.024)	(0.080)
Credibility	0.051**	-0.599***	0.043*	-0.382***
	(0.022)	(0.033)	(0.024)	(0.092)
Post-73 dummy				2.921***
				(0.943)
Inertia × post-73 dummy				0.045**
				(0.023)
Network effects × post-73 dummy				-0.242***
				(0.075)
Credibility × post-73 dummy				0.428***
				(0.116)
Constant	-0.010	-5.725***	0.302	-2.739**
	(0.295)	(0.460)	(0.317)	(1.095)
Currency effects	YES	YES	YES	YES
Time effects	YES	YES	YES	YES
Observations	271	42	229	271
No. of groups	8	4	8	8
R^2 (overall)	0.993	0.988	0.995	0.993

Source: Eichengreen, Chițu and Mehl (2014).
Notes: The table reports random effects estimates of a standard reserve demand equation where reserve currency shares purged of exchange rate valuation effects are regressed on their standard determinants over selected sample periods, namely: the full sample period (in column 1); 1947-1972 (in column 2), 1973-2013 (in column 3) and the full sample period allowing for a structural break in the estimated coefficients (in column 4). The standard errors reported in parentheses are robust to heteroskedasticity and clustered heterogeneity; *** p<0.01, ** p<0.05, * p<0.1.

the three explanatory variables over the full sample period. Column 2 reports the results when the sample is restricted to the pre-1973 period. Column 3 reports the results when the sample is restricted to the post-1973 period. Column 4 includes interaction terms with a post-1973 dummy variable as a way of testing for post-1973 structural shifts.

The baseline results are consistent with what previous research has found on data for shorter periods, albeit with some differences. Evidence of persistence is strong; a coefficient of 0.9 on the lagged dependent variable indicates a half-life of roughly seven years (in other words, half of the effect a given shock has on currency shares dissipates after seven years). This suggests that, in order to adequately understand the evolution of currency shares, it is important to consider medium-term evolutions, as we do here. But this point estimate also indicates that the share of a currency in global reserves can be halved in less than a decade, which is what happened to sterling between the mid-1960s and early 1970s. The coefficient on size is important throughout, consistent with the emphasis of previous studies on network effects. The full sample estimates reported in column 1 suggest that the short-run (one-year) effect of an increase in a reserve currency issuing country's share of global output of 10 percentage points corresponds to an increase in the share of its currency in global reserves of roughly two percentage points in the short run and almost 30 percentage points in the long run. The effects of policy credibility as measured by the trend

rate of appreciation of the exchange rate are more mixed, as in previous studies. In Table 7 policy credibility turns positive after 1973, as expected, but not before.[58]

There are significant differences between sub-periods which lend support to the "upheaval hypothesis", namely that the collapse of the Bretton Woods system occasioned a fundamental change in the determinants of the composition of reserves. The coefficient capturing network effects is much smaller in the second period, i.e. after the breakdown of Bretton Woods, than in the first.[59] This evidence suggests a weakening of network effects is consistent with the so-called "new view" of the international monetary system in which, owing to the weakness of network increasing returns, there is more space today for multiple reserve currencies to coexist (see, for example, Eichengreen, 2014). At the same time, there is evidence of an increase in persistence. The coefficient on this variable is larger after 1973 than before, and the difference is statistically significant at the 5% level of confidence.

These results are intuitive. That inertia is stronger post-Bretton Woods is reflected by the fact that the post-1973 period has not seen a shift from one currency to another, comparable to the shift from sterling to the US dollar that occurred between 1947 and 1973. Before 1973 serious doubts about the prospects for sterling as a reserve currency caused reserve managers to question their habits and move away from the currency. By contrast, reserve managers seem not to have questioned the status of the US dollar, which has supported inertia in global reserve allocation patterns. The result that network effects are less strong is similarly intuitive. Financial and transactions technologies have continued to advance. Currency swap markets have developed. Hedging instruments have become more widespread. Information on foreign exchange markets has become more freely available. All this has allowed official reserve holders and other market participants to conduct their transactions – and hold reserves against associated contingencies – in currencies other than the dominant one(s) without incurring costs as large as before, thereby weakening network effects.

4 The role of policies

The long time span covered by the new series also enables us to consider the roles not just of market forces but also of policies that governments and central banks have pursued at various times since the Second World War to encourage or discourage the international use of their currencies. As these policies have not been systematically studied previously, Eichengreen, Chiţu and Mehl (2014) also assembled new data on these policies and examined their importance.

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[58] From a statistical perspective, the negative coefficient on the credibility-related exchange rate term for the period before 1973 reflects the fact that sterling depreciated on two occasions in this period when the share of sterling reserves was relatively high, and that the Deutsche Mark appreciated in the early 1970s when the share of Deutsche Mark reserves was low. However, when one fills in values of zero for the missing observations before 1973 (i.e. when the IMF presumably saw no need to report reserves held in currencies other than the US dollar or sterling), the credibility measure for the pre-1973 period turns positive, as is consistent with the theory, though it is insignificantly different from zero. Hence the safest interpretation would appear to be that policy credibility had weaker effects before 1973 than after.

[59] The change in magnitudes is statistically significant at the 1% confidence level according to a Chow test.

They distinguish four categories of measures related to: (a) financial openness, (b) official positions and verbal interventions on internationalisation, (c) reform and regulation of the exchange rate system, and (d) other miscellaneous measures. Financial openness is measured with the two de jure indices developed by Quinn and Toyoda (2008) which capture, on the one hand, how compliant a country is with its IMF obligations relating to current account transactions and, on the other hand, the extent of restrictions to capital outflows and inflows by residents and non-residents.[60] The three remaining categories of measures are coded as dummy variables, with a further distinction being made between measures designed to encourage international currency use and those designed to discourage it. This gives a total of six dummy variables capturing six categories of potential policy effects.[61]

Table 8

Estimates with policy measures

	(1) Full sample	(2) Pre-1973	(3) Post-1973	(4) Full sample	(5) Pre-1973	(6) Post-1973
Inertia	0.917***	0.789***	0.940***	0.916***	0.801***	0.952***
	(0.010)	(0.078)	(0.018)	(0.015)	(0.087)	(0.016)
Network effects	0.260***	0.914***	0.183***	0.276***	0.756***	0.154***
	(0.038)	(0.159)	(0.046)	(0.049)	(0.221)	(0.045)
Credibility	0.006	-0.223	0.014	0.038***	-0.369	0.031*
	(0.018)	(0.525)	(0.014)	(0.013)	(0.371)	(0.017)
IMF art. VIII compliance	0.036***	-0.068	0.030*			
	(0.007)	(0.065)	(0.016)			
Capital flow restrictions				0.023***	-0.012	0.008
				(0.004)	(0.039)	(0.007)
Official position *(supportive)*	-0.368	0.000	-0.592	-0.294	0.000	-0.559
	(1.222)	(0.000)	(1.160)	(1.217)	(0.000)	(1.159)
Official position *(restrictive)*	-3.044***	-3.424	-2.112***	-3.298***	-4.637	-2.164***
	(0.885)	(3.693)	(0.592)	(0.860)	(4.414)	(0.561)
Exchange rate regime *(supportive)*	-0.073	0.000	0.487	-0.060	0.000	0.564
	(0.827)	(0.000)	(0.818)	(0.871)	(0.000)	(0.844)
Exchange rate regime *(restrictive)*	-2.053**	-2.597	-2.588***	-2.058**	-2.194	-2.644***
	(0.936)	(4.922)	(0.536)	(0.924)	(4.795)	(0.510)
Other measures *(supportive)*	-0.098	-1.794**	0.839	-0.180	-1.874*	0.694
	(0.384)	(0.844)	(0.600)	(0.368)	(1.025)	(0.630)
Other measures *(restrictive)*	-5.755***	-10.644**	-3.969***	-5.769***	-10.006**	-3.880***
	(0.824)	(4.337)	(0.425)	(0.847)	(4.121)	(0.422)
Constant	-3.705***	0.000	-2.928*	-2.603***	-2.583	-0.781
	(0.630)	(0.000)	(1.578)	(0.247)	(2.945)	(0.690)
Country effects	YES	YES	YES	YES	YES	YES
Time effects	YES	YES	YES	YES	YES	YES
Observations	271	42	229	271	42	229
No. of groups	8	4	8	8	4	8
R^2 (overall)	0.994	0.991	0.996	0.994	0.991	0.996

Source: Eichengreen, Chițu and Mehl (2014).
Notes: The table reports random effects estimates of a standard reserve demand equation where reserve currency shares purged of exchange rate valuation effects are regressed on their standard determinants over selected sample periods, namely: the full sample period (in column 1); 1947-1972 (in column 2), 1973-2013 (in column 3) controlling for financial openness and policy measures that aim to support or restrict international currency use. Estimates in columns (1) to (3) use Quinn and Toyoda (2008)'s de jure index of compliance with IMF obligations relating to current account transactions as a metric of capital openness while those in columns (4) to (6) use their index of restrictions to capital flows. The standard errors reported in parentheses are robust to heteroskedasticity and clustered heterogeneity; *** p<0.01, ** p<0.05, * p<0.1.

[60] The indices run from 0 (financial autarky) to 100 (complete financial openness).

[61] Other measures include currency swap agreements, other multilateral financing arrangements (such as the Gold Pool) and other measures pertaining the global financial architecture (such as the introduction of the SDR or plans for a substitution account).

The results, reported in Table 8, confirm that policies matter, but not all policies and not all in the same way. In particular, it would appear that it is easier to discourage than to promote reserve currency use. Policies that aim to support currency use are often unsuccessful, with a few notable exceptions. There is some evidence that financial openness helped to strengthen the importance of a particular unit as a reserve currency. For instance, the estimates of column 4 suggest that a one-standard-deviation increase in a country's financial openness (i.e. about 21 index points) is associated with an increase in the share of its currency in global reserves of roughly half a percentage point in the short run and almost 6 percentage points in the long run. But other supportive policies were less obviously important. Their effect is typically found to be insignificant.

In contrast, policies that aim to discourage currency use have often had significant effects. This is the case of unsupportive official positions, of unsupportive exchange rate regime measures (i.e. devaluing/debasing one's currency, for instance the repeated devaluations of sterling between 1947 and 1976 or those of the US dollar in the early 1970s), and of other unsupportive measures that may have dented confidence in a unit as a store of value (for instance the collapse of the Gold Pool or discussions about an IMF substitution account in the case of the US dollar). The estimates in column 4 suggest that devaluations are typically associated with a decline in the share of a country's currency in global reserves of roughly two percentage points in the short run and almost 24 percentage points in the long run.[62]

The earlier findings on structural changes in the coefficients of network effects are not altered by adding the policy variables. Hence this is further evidence in favour of the "upheaval" hypothesis, which suggests that the determinants of the demand for and composition of international reserves changed significantly around the time of the collapse of the Bretton Woods system.

5 Concluding remarks

This special feature has shown evidence suggestive of a shift in the determinants of currency shares of global foreign reserves around the time of the breakdown of the Bretton Woods system. It has shown that the effects of inertia and the credibility of policies on reserve currency choice have become stronger post-Bretton Woods, while those associated with network effects have become weaker.

From a policy perspective, the stronger effects of inertia may be seen as acting in favour of the leading reserve currency, namely the US dollar, a fact further underscored by the resilience of its share in global reserves since the global financial crisis. In contrast, the fact that network effects have become weaker may be seen as suggesting that the leading currency's first-mover advantage, and continued dominance, should not be taken for granted, other things being equal.

Moreover, the special feature has presented evidence suggesting that, historically, it has been easier to discourage than to encourage the use of a currency as an

[62] As previously mentioned, these estimates are obtained with currency shares already purged of exchange rate valuation effects.

international reserve unit.[63] These results suggest that the policy toolkit to encourage reserve currency status and overcome inertia effects has been dominated in the past by two instruments: macroeconomic stability and financial openness. The policy toolkit available for discouraging international currency use has additional instruments, including official statements and exchange rate regime-related measures, which appear to have had larger and more powerful effects.

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[63] The historical analysis presented here is backward looking and may not capture the evolving nature, and therefore the potential impact, of such policy interventions designed to encourage the international use of a currency.

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Statistical annex

A.1 The euro in global foreign exchange reserves and exchange rate anchoring

Table A1

Global holdings of foreign exchange reserves

	All countries							Advanced economies							Emerging and developing economies						
	Total holdings of foreign reserves[1]	EUR	USD	JPY	GBP	Other[2]	CAD+ AUD	Total holdings of foreign reserves[1]	EUR	USD	JPY	GBP	Other[2]	CAD+ AUD	Total holdings of foreign reserves[1]	EUR	USD	JPY	GBP	Other[2]	CAD+ AUD
Outstanding amounts (in USD billions, at current exchange rates)																					
2001	2,049	301	1,122	79	42	21	.	1,248	213	792	68	30	15	.	802	88	330	11	12	5	.
2002	2,408	425	1,194	89	52	28	.	1,444	297	850	69	36	20	.	963	127	345	19	16	9	.
2003	3,025	556	1,455	98	64	45	.	1,768	359	1,045	81	36	32	.	1,257	197	410	18	27	13	.
2004	3,748	655	1,739	114	93	50	.	2,072	417	1,228	91	48	38	.	1,676	238	511	23	44	12	.
2005	4,320	679	1,891	113	107	50	.	2,081	387	1,261	86	50	34	.	2,239	292	630	26	57	16	.
2006	5,253	827	2,158	115	150	60	.	2,257	440	1,350	84	65	38	.	2,996	387	807	31	85	22	.
2007	6,704	1,076	2,631	131	199	76	.	2,438	522	1,424	85	76	45	.	4,267	554	1,208	46	123	30	.
2008	7,346	1,104	2,685	146	178	93	.	2,496	511	1,476	94	59	54	.	4,850	592	1,209	52	118	39	.
2009	8,165	1,270	2,848	133	195	139	.	2,785	616	1,582	95	68	63	.	5,380	653	1,266	38	127	76	.
2010	9,265	1,343	3,193	189	203	229	.	3,099	647	1,762	121	68	105	.	6,166	696	1,431	68	135	124	.
2011	10,206	1,394	3,525	204	217	308	.	3,404	672	2,004	132	77	124	.	6,801	722	1,521	72	140	184	.
2012	10,952	1,474	3,731	49	246	197	175	3,698	797	2,049	165	100	96	68	7,255	677	1,682	84	146	01	108
2013	11,674	1,521	3,806	45	249	179	209	3,817	839	2,104	161	104	74	01	7,856	682	1,701	84	146	05	108
2014 Q1	11,855	1,520	3,798	45	241	190	235	3,881	847	2,133	159	100	90	13	7,974	672	1,665	87	142	00	123
Q2	11,990	1,521	3,833	54	245	196	247	3,925	849	2,146	170	104	91	19	8,064	672	1,687	84	141	05	128
Q3	11,766	1,397	3,857	45	238	194	236	3,848	781	2,155	159	102	89	15	7,918	617	1,703	85	136	05	121
Q4	11,601	1,352	3,826	41	231	191	226	3,856	781	2,172	157	102	90	12	7,744	571	1,655	84	130	01	114
Currency shares in foreign exchange reserves with disclosed currency composition (at constant exchange rates)																					
2001	.	24.4	66.2	5.1	2.7	1.2	.	.	24.2	65.2	6.2	2.7	1.3	.	.	25.0	68.5	2.5	2.8	1.1	.
2002	.	26.4	64.1	4.7	2.7	1.5	.	.	26.0	64.0	5.2	2.6	1.5	.	.	27.5	64.2	3.6	3.0	1.6	.
2003	.	24.5	66.6	4.0	2.5	2.0	.	.	22.5	68.3	4.7	2.1	2.1	.	.	29.1	62.7	2.4	3.6	2.0	.
2004	.	22.9	68.2	3.8	2.9	1.9	.	.	21.1	69.8	4.4	2.2	2.2	.	.	26.8	64.6	2.5	4.5	1.5	.
2005	.	24.5	66.3	3.9	3.4	1.7	.	.	21.8	69.0	4.6	2.5	1.8	.	.	29.3	61.5	2.5	5.0	1.6	.
2006	.	23.7	67.0	3.6	3.7	1.9	.	.	21.0	69.8	4.3	2.7	1.9	.	.	27.7	62.8	2.4	5.3	1.7	.
2007	.	22.9	67.8	3.2	4.0	1.9	.	.	21.1	69.7	3.9	2.9	2.2	.	.	24.9	65.8	2.3	5.2	1.7	.
2008	.	23.8	66.4	2.7	4.7	2.3	.	.	21.1	69.8	3.4	3.0	2.5	.	.	26.7	62.6	2.1	6.5	2.0	.
2009	.	24.6	65.4	2.4	4.3	3.2	.	.	22.5	68.6	3.2	2.8	2.7	.	.	26.9	61.9	1.4	6.0	3.7	.
2010	.	24.5	64.1	2.6	4.1	4.6	.	.	22.5	67.5	3.1	2.6	4.0	.	.	26.7	60.4	2.0	5.7	5.2	.
2011	.	23.8	64.1	2.4	4.0	5.6	.	.	21.6	68.5	2.9	2.6	4.2	.	.	26.3	59.2	1.8	5.5	7.2	.
2012	.	23.2	63.7	3.1	4.0	3.4	2.5	.	23.2	64.9	3.8	3.0	3.0	1.8	.	23.1	62.3	2.2	5.2	3.7	3.3
2013	.	22.4	63.7	3.6	3.9	3.0	3.2	.	22.7	64.6	4.3	3.0	2.3	2.8	.	22.1	62.6	2.7	5.1	3.8	3.6
2014 Q1	.	22.3	63.3	3.5	3.8	3.2	3.6	.	22.5	64.4	4.1	2.8	2.7	3.1	.	22.1	62.1	2.8	4.9	3.7	4.2
Q2	.	22.3	63.3	3.6	3.7	3.2	3.7	.	22.5	64.1	4.3	2.8	2.7	3.2	.	22.1	62.3	2.6	4.8	3.9	4.3
Q3	.	22.1	63.3	3.7	3.8	3.2	3.7	.	22.4	64.1	4.3	2.9	2.7	3.3	.	21.8	62.3	2.9	4.8	3.9	4.2
Q4	.	22.2	62.9	4.0	3.8	3.1	3.7	.	22.8	63.4	4.6	3.0	2.6	3.3	.	21.5	62.2	3.2	4.9	3.8	4.3
Currency shares in foreign exchange reserves with disclosed currency composition (at current exchange rates)																					
2001	.	19.2	71.5	5.0	2.7	1.3	.	.	19.0	70.5	6.1	2.7	1.4	.	.	19.6	73.9	2.4	2.8	1.1	.
2002	.	23.7	66.5	4.9	2.9	1.6	.	.	23.3	66.4	5.4	2.8	1.6	.	.	24.6	66.7	3.8	3.2	1.6	.
2003	.	25.0	65.4	4.4	2.9	2.0	.	.	23.1	67.1	5.2	2.3	2.0	.	.	29.6	61.5	2.7	4.1	1.9	.
2004	.	24.7	65.5	4.3	3.5	1.9	.	.	22.9	67.3	5.0	2.7	2.1	.	.	28.7	61.6	2.8	5.3	1.4	.
2005	.	23.9	66.5	4.0	3.7	1.7	.	.	21.2	69.2	4.7	2.7	1.8	.	.	28.6	61.7	2.6	5.6	1.6	.
2006	.	25.0	65.1	3.5	4.5	1.8	.	.	22.2	68.1	4.2	3.3	1.9	.	.	29.0	60.5	2.3	6.4	1.7	.
2007	.	26.1	63.9	3.2	4.8	1.8	.	.	24.2	66.0	4.0	3.5	2.1	.	.	28.2	61.5	2.3	6.3	1.5	.
2008	.	26.2	63.8	3.5	4.2	2.2	.	.	23.3	67.2	4.3	2.7	2.5	.	.	29.4	60.1	2.6	5.9	1.9	.
2009	.	27.7	62.0	2.9	4.2	3.0	.	.	25.4	65.1	3.9	2.8	2.6	.	.	30.2	58.6	1.8	5.9	3.5	.
2010	.	26.0	61.8	3.7	3.9	4.4	.	.	23.9	65.1	4.5	2.5	3.9	.	.	28.3	58.3	2.8	5.5	5.0	.
2011	.	24.7	62.4	3.6	3.8	5.5	.	.	22.3	66.5	4.4	2.5	4.1	.	.	27.3	57.6	2.7	5.3	7.0	.
2012	.	24.2	61.3	4.1	4.0	3.2	2.9	.	24.3	62.4	5.0	3.0	2.9	2.1	.	24.2	60.0	3.0	5.2	3.6	3.8
2013	.	24.4	61.2	3.9	4.0	2.9	3.4	.	24.8	62.1	4.7	3.1	2.2	3.0	.	24.1	60.1	3.0	5.2	3.7	3.8
2014 Q1	.	24.3	60.8	3.9	3.9	3.0	3.8	.	24.5	61.8	4.6	2.9	2.6	3.3	.	24.1	59.6	3.1	5.1	3.6	4.4
Q2	.	24.1	60.7	4.0	3.9	3.1	3.9	.	24.3	61.5	4.9	3.0	2.6	3.4	.	23.8	59.8	3.0	5.0	3.7	4.5
Q3	.	22.6	62.4	4.0	3.8	3.1	3.8	.	22.9	63.1	4.7	3.0	2.6	3.4	.	22.3	61.4	3.1	4.9	3.8	4.4
Q4	.	22.2	62.9	4.0	3.8	3.1	3.7	.	22.8	63.4	4.6	3.0	2.6	3.3	.	21.5	62.2	3.2	4.9	3.8	4.3

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.

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)

	2009	2010	2011	2012	2013	2014
Non-euro area EU Member States						
Bulgaria	99.1	99.6	99.9	99.9	100.0	93.2
Croatia	71.7	73.7	75.9	80.3	68.7	79.8
Czech Republic	61.3	57.4	60.1	58.7	69.7	52.5
Poland	36.7	35.0	30.4	30.9	30.7	33.1
Romania	65.2	67.2	77.8	73.0	65.9	75.0
Sweden	48.1	50.0	37.0	37.1	37.0	33.9
United Kingdom	65.5	59.9	59.1	60.4	43.0	45.7
Other industrial countries						
Canada	43.8	40.0	37.0	54.1	47.2	38.4
Russia	33.2	43.1	42.1	40.4	41.1	43.3
Norway	47.2	36.4	36.1	35.9	36.5	28.0
Switzerland	58.1	54.9	50.5	50.1	47.8	46.3
United States	59.0	54.2	53.5	57.0	62.8	62.9
Latin American countries						
Chile	36.5	35.2	31.5	19.8	18.8	19.5
Peru	18.5	16.8	43.2	30.0	30.0	26.0

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 refer to currency composition as published in the annual report of the central bank. 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. Data for Chile refer to the combined currency shares in the liquidity and the investment portfolio of the Central Bank. 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 2014.

Table A3

Countries with exchange rate regimes linked to the euro

(as at end-May 2014)

Region	Exchange rate regimes	Countries	Monetary policy framework
EU (non-euro area)	ERM II	Denmark	Exchange rate anchor
	Euro-based currency boards	Bulgaria	Exchange rate anchor
	Managed floating regime with the euro as reference currency and an inflation target	Croatia, Czech Republic, Romania	Inflation targeting framework
	Pro memoria: Free-floating regime with an inflation target	Hungary, Poland, Sweden, United Kingdom	Inflation targeting framework
EU acceding, candidate and potential candidate countries	Unilateral euroisation (no separate legal tender)	Kosovo, Montenegro	Exchange rate anchor
	Euro-based currency boards	Bosnia and Herzegovina	Exchange rate anchor
	Stabilised arrangement with euro as a reference currency	Former Yugoslav Republic of Macedonia	Exchange rate anchor
	Pro memoria: Free-floating regime with an inflation target	Albania, Serbia, Turkey	Inflation targeting framework
Others	Euroisation	European microstates, some French overseas collectivities	Exchange rate anchor
	Pegs based on the euro	CFA franc zone, CFP franc zone, Cabo Verde, Comoros, São Tomé and Príncipe	Exchange rate anchor
	Crawling peg involving the euro	Botswana	Exchange rate anchor
	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%), Samoa, Singapore, Syria, Tunisia, Vanuatu	Other[1)]

Sources: National central banks, IMF and ECB.
1) No nominal anchor; different indicators are taken into account to implement the monetary policy
Croatia: Managed floating regime with no preannounced path for the exchange rate.
Denmark: Participates in ERM II with a +/-2.25% fluctuation band.
Lithuania: On 1 January 2015, Lithuania joined the Eurozone by adopting the euro and has thus stopped participating in ERM II.
Bulgaria: Maintains a fixed exchange rate to the euro within the framework of a currency board arrangement.
Czech Republic: adopted an exchange rate ceiling of 27 CZK/EUR on 7 November 2013
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 15 January 2015, the Swiss National bank officially abondoned its exchange rate ceiling of 1.20 CHF/EUR, introduced on 6 September 2011.
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: On 10 November 2014, the Bank of Russia issued a statement abolishing the exchange rate policy mechanism based on US dollar-euro currency basket, introduced on February 2005.
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.

A.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)												
2001	3,545	817	1,790	425	513	5,769	1,430	3,047	456	836	6,340	2,001
2002	4,041	1,100	1,890	410	642	6,843	1,983	3,356	453	1,052	7,672	2,811
2003	4,930	1,551	2,118	438	824	8,467	2,926	3,674	500	1,368	9,673	4,131
2004	5,811	1,956	2,375	454	1,026	9,983	3,748	3,967	538	1,730	11,473	5,238
2005	6,131	1,912	2,696	397	1,126	10,491	3,850	4,256	474	1,910	11,905	5,265
2006	7,797	2,442	3,440	410	1,505	13,183	5,194	4,963	492	2,534	15,040	7,051
2007	9,624	3,108	4,163	506	1,847	16,016	6,651	5,668	602	3,095	18,409	9,043
2008	9,566	3,101	4,260	647	1,559	16,402	6,875	5,743	768	3,016	18,874	9,347
2009	10,305	3,265	4,703	591	1,746	18,311	7,843	6,215	699	3,555	20,896	10,427
2010	10,532	2,923	5,110	657	1,842	18,474	7,468	6,597	770	3,639	20,878	9,872
2011	10,888	2,807	5,525	664	1,892	18,652	7,328	6,904	763	3,658	21,001	9,677
2012	11,771	3,024	6,148	578	2,021	19,487	7,478	7,538	661	3,810	21,929	9,920
2013	12,426	3,140	6,816	431	2,040	20,255	7,708	8,188	498	3,862	22,769	10,222
2014 Q1	12,618	3,158	6,922	432	2,106	20,390	7,667	8,312	500	3,910	22,864	10,141
Q2	12,861	3,177	7,086	442	2,156	20,707	7,662	8,535	514	3,997	23,140	10,094
Q3	12,716	3,008	7,242	410	2,056	20,131	7,117	8,731	476	3,806	22,326	9,312
Q4	12,609	2,956	7,336	369	1,949	19,810	6,921	8,838	431	3,620	21,882	8,993
Percentages of outstanding amounts (at constant exchange rates, end of period)												
2001	100.0	28.1	44.7	11.6	15.6	100.0	30.4	47.0	7.7	14.9	100.0	37.9
2002	100.0	29.8	44.3	9.5	16.3	100.0	31.9	46.6	6.2	15.2	100.0	39.9
2003	100.0	30.9	43.9	8.1	17.0	100.0	34.1	44.6	5.4	15.9	100.0	42.2
2004	100.0	31.9	43.4	7.1	17.6	100.0	35.8	42.5	4.9	16.7	100.0	43.8
2005	100.0	31.7	43.5	6.3	18.5	100.0	37.5	40.3	4.4	17.7	100.0	45.1
2006	100.0	30.0	45.8	5.4	18.8	100.0	38.3	39.7	3.9	18.1	100.0	45.7
2007	100.0	28.8	46.8	5.3	19.0	100.0	38.0	39.2	3.9	18.9	100.0	45.4
2008	100.0	29.8	46.9	5.4	17.9	100.0	38.7	37.1	3.8	20.4	100.0	46.2
2009	100.0	28.5	48.8	4.7	18.0	100.0	39.2	36.9	3.2	20.7	100.0	46.2
2010	100.0	26.5	50.9	4.4	18.2	100.0	38.7	37.6	3.0	20.7	100.0	45.5
2011	100.0	25.2	52.8	4.1	17.9	100.0	38.4	38.5	2.8	20.4	100.0	45.1
2012	100.0	24.6	54.4	3.7	17.4	100.0	37.0	40.5	2.6	19.9	100.0	43.8
2013	100.0	23.2	57.2	3.2	16.4	100.0	35.5	42.9	2.3	19.4	100.0	42.2
2014 Q1	100.0	23.0	57.3	3.1	16.6	100.0	35.1	43.2	2.2	19.4	100.0	41.7
Q2	100.0	22.9	57.5	3.0	16.6	100.0	34.8	43.7	2.2	19.3	100.0	41.3
Q3	100.0	23.2	57.8	3.0	16.1	100.0	34.8	44.2	2.2	18.8	100.0	41.1
Q4	100.0	23.4	58.2	2.9	15.5	100.0	34.9	44.6	2.2	18.3	100.0	41.1
Percentages of outstanding amounts (at current exchange rates, end of period)												
2001	100.0	23.0	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	46.8	10.2	15.9	100.0	29.0	49.0	6.6	15.4	100.0	36.6
2003	100.0	31.5	43.0	8.9	16.7	100.0	34.6	43.4	5.9	16.2	100.0	42.7
2004	100.0	33.7	40.9	7.8	17.7	100.0	37.5	39.7	5.4	17.3	100.0	45.7
2005	100.0	31.2	44.0	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	41.9	35.0	4.7	18.4	100.0	49.5
2009	100.0	31.7	45.6	5.7	16.9	100.0	42.8	33.9	3.8	19.4	100.0	49.9
2010	100.0	27.8	48.5	6.2	17.5	100.0	40.4	35.7	4.2	19.7	100.0	47.3
2011	100.0	25.8	50.7	6.1	17.4	100.0	39.3	37.0	4.1	19.6	100.0	46.1
2012	100.0	25.7	52.2	4.9	17.2	100.0	38.4	38.7	3.4	19.6	100.0	45.2
2013	100.0	25.3	54.9	3.5	16.4	100.0	38.1	40.4	2.5	19.1	100.0	44.9
2014 Q1	100.0	25.0	54.9	3.4	16.7	100.0	37.6	40.8	2.5	19.2	100.0	44.4
Q2	100.0	24.7	55.1	3.4	16.8	100.0	37.0	41.2	2.5	19.3	100.0	43.6
Q3	100.0	23.7	57.0	3.2	16.2	100.0	35.4	43.4	2.4	18.9	100.0	41.7
Q4	100.0	23.4	58.2	2.9	15.5	100.0	34.9	44.6	2.2	18.3	100.0	41.1

Sources: BIS and ECB calculations.

Table A5

Outstanding international bonds and notes, by currency and by sector

	EUR				USD				JPY			
	Sovereigns	Other public entities	Financial institutions	International organisations	Sovereigns	Other public entities	Financial institutions	International organisations	Sovereigns	Other public entities	Financial institutions	International organisations
	(Outstanding amounts in USD billions, end of period)											
1999	101	21	332	128	412	82	640	118	98	24	300	40
2000	102	18	422	112	449	78	763	134	85	20	291	32
2001	99	17	515	101	454	79	822	155	68	14	277	27
2002	116	19	735	122	475	85	892	168	68	15	268	30
2003	148	24	1,090	150	486	97	1,064	180	68	17	295	35
2004	165	31	1,434	170	516	116	1,256	185	61	16	322	35
2005	156	26	1,441	149	519	143	1,534	189	44	14	289	32
2006	178	30	1,889	168	517	160	2,229	186	38	14	310	31
2007	197	32	2,456	190	516	186	2,871	198	35	18	399	35
2008	187	28	2,470	184	532	297	2,878	228	40	31	510	45
2009	216	24	2,535	243	620	399	3,045	281	37	37	454	44
2010	212	20	2,217	248	695	453	3,243	323	44	42	499	49
2011	197	18	2,046	338	760	503	3,434	356	46	40	506	51
2012	212	18	1,990	575	854	408	3,734	393	41	30	438	44
2013	227	22	1,942	668	899	514	4,070	432	34	26	321	31
2014 Q1	223	23	1,933	698	905	531	4,117	456	35	26	322	29
Q2	228	20	1,921	721	917	568	4,200	447	35	26	332	28
Q3	214	20	1,806	680	940	578	4,288	467	34	25	307	25
Q4	207	22	1,764	659	951	601	4,302	476	30	23	278	22
	(Percentages of outstanding amounts, end of period)											
1999	17.3	3.6	57.0	22.1	32.9	6.6	51.1	9.4	21.3	5.1	64.9	8.7
2000	15.5	2.8	64.5	17.1	31.5	5.5	53.6	9.4	19.8	4.7	68.0	7.5
2001	13.5	2.4	70.4	13.8	30.1	5.2	54.5	10.3	17.7	3.6	71.7	7.0
2002	11.7	2.0	74.1	12.3	29.3	5.2	55.0	10.4	17.8	3.9	70.4	8.0
2003	10.5	1.7	77.2	10.6	26.6	5.3	58.3	9.8	16.4	4.0	71.1	8.5
2004	9.2	1.7	79.7	9.4	24.9	5.6	60.6	8.9	14.0	3.7	74.2	8.1
2005	8.8	1.5	81.3	8.4	21.8	6.0	64.3	7.9	11.6	3.7	76.2	8.4
2006	7.9	1.3	83.4	7.4	16.7	5.2	72.1	6.0	9.8	3.5	78.9	7.9
2007	6.8	1.1	85.4	6.6	13.7	4.9	76.2	5.2	7.2	3.6	82.0	7.2
2008	6.5	1.0	86.1	6.4	11.6	4.6	62.8	5.0	5.7	3.6	72.2	6.4
2009	7.1	0.8	84.0	8.1	12.1	5.5	59.5	5.5	5.7	4.7	70.2	6.8
2010	7.9	0.7	82.2	9.2	12.4	5.7	57.8	5.8	6.1	4.9	69.6	6.8
2011	7.6	0.7	78.7	13.0	12.5	5.7	56.5	5.9	6.3	4.8	69.8	7.1
2012	7.6	0.7	71.2	20.6	15.8	7.6	69.3	7.3	7.4	5.5	79.2	7.9
2013	7.9	0.8	67.9	23.4	15.2	8.7	68.8	7.3	8.3	6.3	77.9	7.4
2014 Q1	7.7	0.8	67.2	24.3	15.1	8.8	68.5	7.6	8.4	6.3	78.1	7.1
Q2	7.9	0.7	66.5	25.0	15.0	9.3	68.5	7.3	8.4	6.1	78.7	6.8
Q3	7.8	0.8	66.4	25.0	15.0	9.2	68.3	7.4	8.7	6.4	78.4	6.4
Q4	7.8	0.8	66.5	24.9	15.0	9.5	68.0	7.5	8.6	6.6	78.7	6.1

Source: 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.

Table A6

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

(end-2014, narrow measure, in USD billions and as a percentage of the total amount outstanding)

	Total amounts outstanding (USD bln)	*of which denominated in:* US dollar (percentage)	Euro (percentage)	Japanese yen (percentage)	Other currencies (percentage)
Africa	66	81.1	12.1	4.2	2.6
Asia and Pacific	1,241	68.8	14.6	3.8	12.8
of which:					
Japan	176	85.8	6.6	…	7.6
Europe	6,075	50.5	24.7	4.5	20.3
of which:					
Euro area	2,752	58.8	…	5.4	35.8
Denmark, Sweden, United Kingdom	2,610	42.2	47.7	3.5	6.5
Other non-euro area EU Member States	212	29.8	63.3	3.1	3.9
EU27	5,583	50.0	24.3	4.4	21.3
Non-EU developed Europe[1)]	339	42.2	37.7	8.1	12.0
Non-EU developing Europe	178	77.0	19.6	0.0	3.4
International organisations	1,587	30.0	43.1	2.1	24.9
Latin America	620	86.5	8.8	1.6	3.1
Middle East	281	83.6	9.8	2.9	3.8
North America	1,367	38.3	34.9	4.8	22.0
of which:					
Canada	652	80.4	11.8	0.6	7.2
United States	715	…	55.9	8.7	35.4
Offshore centres	1,998	78.3	6.6	5.7	9.5
Total	**13,235**	**55.2**	**23.1**	**4.2**	**17.5**

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

Table A7

International dimensions of euro-denominated debt securities

(EUR billions; percentages)

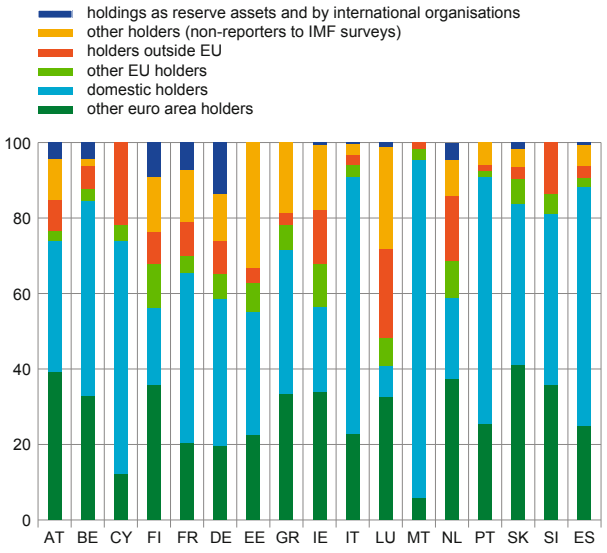
	Held by residents	Held by non-residents	Total
a) As at end-September 2014			
Issued by residents	10,815	3,601	14,416
	64%	*21%*	*86%*
Issued by non-residents	1,466	936	2,402
	9%	*6%*	*14%*
Total	12,281	4,537	16,818
	73%	*27%*	*100%*
b) As at end-September 2013			
Issued by residents	11,250	3,341	14,591
	67%	*20%*	*87%*
Issued by non-residents	1,434	815	2,249
	9%	*5%*	*13%*
Total	12,684	4,156	16,839
	75%	*25%*	*100%*

Source: ECB.

Chart A1

Debt securities issued by euro area countries, by holder

(percentages of total outstanding amounts; as at end-2013)

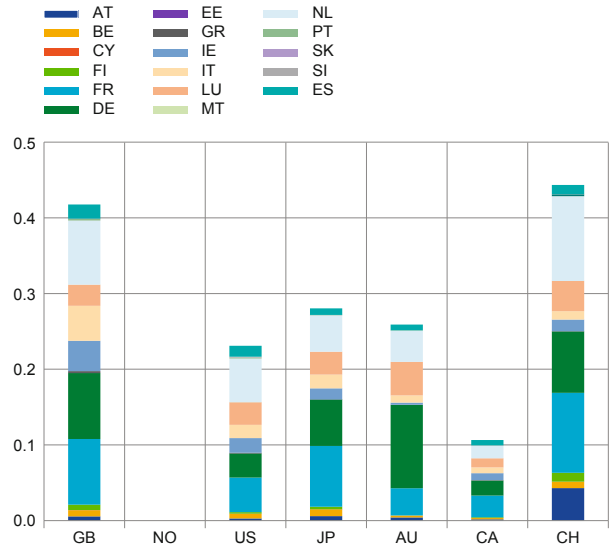


Sources: ECB calculations, IMF (CPIS, SEFER and SSIO surveys) and national sources (national accounts and i.i.p. data).
Notes: i.i.p. figures for Cyprus and the Netherlands include "special financial institutions". Reserve assets and holdings by international organisations cannot be allocated to reporting 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-2013)



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 2014; EUR millions)

Top 20 non-euro area Issuers of euro-denominated bonds		Top 20 non-US issuers of US dollar-denominated bonds	
Credit Suisse Group	10,750	European Investment Bank – EIB	28,392
JPMorgan Chase & Co	6,751	Deutsche Bank AG	27,219
Banco Santander SA	6,195	KfW Bankengruppe – KfW	26,622
UBS AG	6,000	Credit Suisse Group	25,911
AT&T Inc	5,900	Banco Santander SA	20,600
Barclays plc	5,427	Toyota Motor Corp	16,182
Verizon Communications Inc	5,400	Bank of China Ltd	14,268
Danske Bank A/S	5,334	Bank of Nova Scotia	13,494
Goldman Sachs Group Inc	4,948	HSBC Holdings plc	13,216
Citigroup Inc	4,500	Barclays plc	12,969
Svenska Handelsbanken AB	4,450	Mitsubishi UFJ Financial Group Inc	12,445
Bank of Nova Scotia	4,415	Porsche Automobil Holding SE	12,108
Lloyds Banking Group plc	4,307	Royal Bank of Canada	12,098
National Australia Bank Ltd	4,153	UBS AG	11,874
Nordea Bank AB	4,108	Honda Motor Co Ltd	10,715
Morgan Stanley	4,000	Next LP	10,675
BP plc	4,000	BPCE SA	9,400
Toronto-Dominion Bank	3,750	Nederlandse Waterschapsbank NV	9,200
Sky plc	3,750	Sumitomo Mitsui Financial Group Inc	9,030
Bank of America Corp	3,750	Commonwealth Bank of Australia	8,948

Source: DCM Analytics.

A.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)										
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
2014	6,293	1,057	3,317	179	1,740	1,847	230	883	151	583
2014 Q2	6,585	1,132	3,273	171	2,010	1,976	253	849	147	727
Q3	6,556	1,064	3,352	175	1,965	1,958	235	871	151	702
Q4	6,293	1,057	3,317	179	1,740	1,847	230	883	151	583
Percentages of outstanding amounts (at constant exchange rates, end of period)										
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
2014	100.0	16.8	52.7	2.8	27.6	100.0	12.5	47.8	8.2	31.6
2014 Q2	100.0	15.7	51.2	2.3	30.8	100.0	11.7	44.2	6.5	37.6
Q3	100.0	15.8	51.7	2.5	30.0	100.0	11.7	45.0	7.1	36.1
Q4	100.0	16.8	52.7	2.8	27.6	100.0	12.5	47.8	8.2	31.6
Percentages of outstanding amounts (at current exchange rates, end of period)										
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
2014	100.0	16.8	52.7	2.8	27.6	100.0	12.5	47.8	8.2	31.6
2014 Q2	100.0	17.2	49.7	2.6	30.5	100.0	12.8	43.0	7.4	36.8
Q3	100.0	16.2	51.1	2.7	30.0	100.0	12.0	44.5	7.7	35.8
Q4	100.0	16.8	52.7	2.8	27.6	100.0	12.5	47.8	8.2	31.6

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 loans[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)										
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
2014	6,472	1,199	3,677	124	1,472	1,639	311	941	93	294
2014 Q2	7,014	1,273	4,009	115	1,617	1,716	303	1,083	84	246
Q3	6,985	1,258	4,065	122	1,540	1,720	339	1,122	89	170
Q4	6,472	1,199	3,677	124	1,472	1,639	311	941	93	294
Percentages of outstanding amounts (at constant exchange rates, end of period)										
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
2014	100.0	18.5	56.8	1.9	22.7	100.0	19.0	57.4	5.7	17.9
2014 Q2	100.0	16.6	58.8	1.4	23.1	100.0	16.0	64.3	4.3	15.5
Q3	100.0	17.6	58.8	1.6	22.0	100.0	19.1	65.7	4.8	10.4
Q4	100.0	18.5	56.8	1.9	22.7	100.0	19.0	57.4	5.7	17.9
Percentages of outstanding amounts (at current exchange rates, end of period)										
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
2014	100.0	18.5	56.8	1.9	22.7	100.0	19.0	57.4	5.7	17.9
2014 Q2	100.0	18.2	57.2	1.6	23.1	100.0	17.6	63.1	4.9	14.3
Q3	100.0	18.0	58.2	1.8	22.0	100.0	19.7	65.2	5.2	9.9
Q4	100.0	18.5	56.8	1.9	22.7	100.0	19.0	57.4	5.7	17.9

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.

A.4 The euro in international trade in goods and services

Table A11

The euro's share as a settlement/invoicing currency in extra-euro area exports and imports of goods and services by selected euro area countries

(as a percentage of the total)

1. Exports and imports of goods

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Exports										
Euro area	-	59.5	59.6	63.6	64.1	63.4	69.9	66.7	67.5	67.3
Belgium	54.8	58.5	52.8	56.2	57.4	52.3	55.3	56.6	-	-
France	49.8	50.8	51.5	49.3	52.3	51.8	51.9	48.4	56.8	57.1
Italy	58.3	59.4	64.3	68.7	69.2	67.4	-	-	-	-
Greece	35.1	34.1	35.5	32.6	36.3	33.7	35.5	32.3	31.1	34.1
Spain	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	78.6
Luxembourg	61.4	57.7	59.2	51.9	50.3	63.2	55.3	-	-	-
Portugal	56.5	55.8	61.4	63.1	64.2	63.4	62.1	59.3	55.9	57.3
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	96.0	94.9
Estonia	-	-	-	-	50.8	46.2	66.1	67.9	76.4	77.8
Imports										
Euro area	-	48.8	47.9	47.5	45.2	49.4	52.2	51.3	48.6	48.8
Belgium	51.2	58.3	56.1	56.4	57.7	53.0	55.7	57.3	-	-
France	46.3	44.7	44.8	44.2	44.3	44.4	47.3	43.6	40.0	41.0
Italy	39.4	43.0	44.3	47.8	49.7	46.9	48.5	47.6	-	-
Greece	32.6	32.3	33.6	37.3	37.9	30.8	32.9	23.6	23.4	24.0
Spain	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	82.0
Luxembourg	43.8	38.8	37.9	38.8	55.3	55.0	48.8	-	-	-
Portugal	54.4	52.6	51.8	53.7	56.6	51.4	45.9	39.8	37.5	42.7
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	65.5	68.2
Estonia	-	-	-	-	43.7	42.4	55.9	61.6	68.2	69.0

2. Exports and imports of services

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Exports										
Euro area	-	51.0	54.5	55.5	53.4	52.7	55.0	49.6	64.4	64.4
Belgium	73.0	73.7	74.2	73.9	75.9	74.8	75.1	72.8	79.9	84.2
France	-	-	-	-	-	-	-	-	63.6	62.6
Italy	56.5	53.9	59.3	80.4	75.7	77.1	74.0	74.7	79.4	80.4
Greece	14.1	12.8	13.3	15.5	19.0	19.2	25.2	27.8	29.1	28.1
Spain	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	56.5	41.1
Latvia	-	-	-	-	-	58.3	59.0	61.3	63.0	68.5
Luxembourg	42.4	47.7	48.4	46.6	47.3	45.7	48.3	-	-	-
Portugal	58.2	60.8	59.9	65.8	68.1	62.1	65.1	63.1	67.0	67.4
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	69.6
Imports										
Euro area	-	53.8	55.7	57.7	56.1	56.9	60.5	55.9	52.0	53.1
Belgium	71.2	73.9	72.4	74.0	71.1	72.2	70.2	67.9	72.9	75.5
France	-	-	-	-	-	-	-	-	37.2	38.4
Italy	55.5	56.0	59.1	65.6	62.7	64.4	64.3	61.8	61.0	62.3
Greece	22.5	24.5	27.5	28.9	34.4	28.5	31.7	33.7	39.6	40.9
Spain	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	51.2	44.9
Latvia	-	-	-	-	-	42.5	42.1	38.6	45.0	45.3
Luxembourg	31.2	29.8	34.0	38.4	41.2	48.0	45.8	-	-	-
Portugal	72.5	74.5	72.6	73.3	72.7	71.3	73.9	73.6	73.9	74.1
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	62.0

Sources: National central banks and ECB calculations.
1) Data for 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.
3) Data from 2013 may show a break due to the implementation of the updated balance of payments international standards (BP*M6*).

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

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
					Exports					
Bulgaria	60.4	57.7	60.5	61.5	68.6	56.2	52.9	48.6	55.9	57.9
Czech Republic	71.9	68.8	72.0	73.6	76.0	76.4	77.0	77.2	79.1	78.8
Croatia	-	-	-	-	-	-	-	81.0	80.0	-
Lithuania	51.3	56.2	56.5	55.7	60.5	59.7	58.1	59.5	60.5	65.6
Poland	70.1	69.9	69.8	68.2	66.1	-	-	-	-	-
Romania	64.3	67.6	67.7	68.5	75.9	71.3	67.1	70.1	73.2	77.0
Sweden	-	-	-	-	-	22.0	21.6	23.4	23.3	20.6
					Imports					
Bulgaria	60.4	58.9	60.2	65.7	70.9	46.3	45.5	46.6	44.7	51.7
Czech Republic	70.6	67.8	68.0	68.3	68.9	68.5	68.0	68.0	68.9	68.5
Croatia	-	-	-	-	-	-	-	70.4	70.6	-
Lithuania	51.3	53.8	55.4	55.6	57.2	55.8	55.7	56.1	57.3	58.9
Poland	60.5	58.6	59.1	56.4	54.8	-	-	-	-	-
Romania	71.1	73.4	71.5	70.9	73.2	66.8	64.2	60.5	64.0	64.5
Sweden	-	-	-	-	-	18.8	18.5	17.3	19.0	20.3

2. Exports and imports of services

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
					Exports					
Bulgaria	-	73.1	76.3	77.9	79.0	79.5	73.7	74.1	78.3	75.7
Czech Republic	64.6	70.3	67.2	72.3	76.0	76.9	78.5	80.5	75.9	74.0
Lithuania	51.1	51.9	53.9	54.7	59.8	56.9	54.2	53.9	56.7	58.8
Poland	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	66.3	63.0
					Imports					
Bulgaria	-	69.9	77.1	77.1	80.8	64.8	63.1	65.4	64.1	65.9
Czech Republic	61.1	61.4	61.3	69.3	78.4	75.6	75.3	77.3	74.6	73.9
Lithuania	47.8	54.1	53.5	51.0	52.4	50.5	50.8	56.0	60.0	60.9
Poland	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	67.7	59.5

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

A.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 deposits		As a percentage of foreign currency deposits		Outstanding amounts of foreign currency deposits (in EUR millions)	
	Dec. 2013	Dec. 2014	Dec. 2013	Dec. 2014	Dec. 2013	Dec. 2014	Dec. 2013	Dec. 2014
Non-euro area EU Member States								
Bulgaria	16,430	13,852	58.5	53.2	97.0	97.1	16,929	14,261
Croatia	18,191	17,229	59.9	58.6	84.4	84.5	21,563	20,389
Czech Republic	7,550	8,405	9.4	10.2	93.4	94.3	8,087	8,914
Hungary	11,837	11,243	24.2	24.0	45.6	46.9	25,937	23,976
Lithuania	10,962	11,094	70.3	72.1	96.9	98.4	11,307	11,270
Poland	21,635	23,530	10.3	10.8	36.6	39.4	59,155	59,729
Romania	26,484	23,629	54.2	50.0	88.9	88.9	29,778	26,569
EU Candidate and Potential Candidate Countries								
Albania	2,085	2,021	54.4	51.6	89.7	87.3	2,324	2,315
Bosnia and Herzegovina	5,248	5,349	62.6	62.0	93.4	93.8	5,617	5,705
FYR Macedonia	1,859	1,919	50.3	47.2	96.5	96.6	1,926	1,987
Serbia	7,374	6,707	69.3	63.7	87.7	87.6	8,411	7,653
Turkey	35,680	41,963	10.8	10.2	33.1	30.8	107,661	136,348

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)	
	Dec. 2013	Dec. 2014	Dec. 2013	Dec. 2014	Dec. 2013	Dec. 2014	Dec. 2013	Dec. 2014
Non-euro area EU Member States								
Bulgaria	10,358	10,387	35.7	35.2	83.7	83.2	12,380	12,480
Croatia	20,444	20,367	62.2	60.6	90.5	89.6	22,595	22,727
Czech Republic	7,076	8,001	6.8	7.4	79.4	77.3	8,917	10,357
Hungary	7,222	7,009	15.6	15.1	73.8	76.5	9,780	9,158
Lithuania	2,888	3,310	21.9	22.0	79.7	81.2	3,625	4,075
Poland	12,391	13,037	6.1	6.1	65.4	68.2	18,953	19,110
Romania	14,212	14,903	29.5	28.8	86.3	86.7	16,466	17,182
EU Candidate and Potential Candidate Countries								
Albania	2,138	2,077	40.5	40.9	87.7	88.9	2,437	2,337
Bosnia and Herzegovina	3,016	3,125	41.4	39.5	90.9	90.8	3,317	3,441
FYR Macedonia	1,626	1,683	50.1	48.7	90.7	90.5	1,793	1,859
Serbia	9,158	9,323	71.6	70.1	93.5	93.6	9,795	9,965
Turkey	46,687	51,082	16.1	15.2	40.2	38.0	116,246	134,492

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.

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
SDR	special drawing rights
SEK	Swedish krona
UIP	uncovered interest rate parity
ULCT	unit labour costs in the total economy
USD	US dollar

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