EUROPEAN CENTRAL BANK

EUROSYSTEM

THE INTERNATIONAL ROLE OF THE EURO

JULY 2013

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In 2013 all ECB
publications
feature a motif
taken from
the €5 banknote.

THE INTERNATIONAL
ROLE OF THE EURO

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CONTENTS

ABBREVIATIONS

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

FOREWORD

This is the 12th annual review of the international role of the euro published by the ECB. It presents the main findings of the continued monitoring and analysis conducted by the ECB and the Eurosystem as regards the development, determinants and implications of the use of the euro by non-euro area residents.

This review finds that in 2012 the euro area sovereign debt crisis continued to weigh on the international use of the euro, which declined moderately in some market segments. The persistent fragmentation of the euro area financial system is one of the main underlying causes of these developments, as it affects the depth and liquidity of euro area capital markets. Several policy measures taken at both the European and the national level started to reduce the degree of financial fragmentation in the latter part of 2012. Some survey indicators signal a tentative turnaround as regards the international role of the euro in market segments that had previously witnessed some decline.

This review also examines in greater depth issues that have a bearing on the euro's international role and the global currency order, including prospects for non-traditional reserve currencies and a multi-polar international monetary system. This analysis is presented in the form of three special features.

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

Mario Draghi
President of the European Central Bank

I INTRODUCTION

This report reviews developments in the international role of the euro in 2012, tracking a comprehensive set of indicators covering a number of different market segments. As in previous issues, the main focus is on measures of the euro's relevance in financial markets, such as the use of the euro in foreign exchange reserves or in debt securities markets. In addition, this issue of the report includes a chapter on price-based measures, which may provide a better understanding of the international use of the euro.

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

The second part of the review offers an in-depth analysis of issues that have a bearing on the international role of the euro and the international monetary system. This year, this second part contains three special features: an analysis of global safe asset shortages as evidenced by the gradually rising use of non-traditional reserve currencies since the start of the crisis; a stock-taking of recent developments and prospects regarding the international use of the Chinese renminbi; and an analysis shedding light on long-term persistence effects in international financial investment patterns.

2   MAIN FINDINGS

DEVELOPMENTS IN THE INTERNATIONAL ROLE OF THE EURO IN 2012

In 2012 the euro area crisis continued to weigh on the international use of the euro, which declined moderately in some market segments.

The persistent fragmentation of the euro area financial system is one of the main underlying causes of these developments, as it affects the depth and liquidity of euro area capital markets.

Nevertheless, some survey indicators point to some improvements as regards the international use of the euro during the second half of 2012. These improvements were supported by several policy measures taken at the European level which demonstrated the strength of cohesion within Europe. In particular, the decision in June 2012 by European leaders to create a single supervisory mechanism and the announcement by the ECB on Outright Monetary Transactions (OMTs) helped to mitigate market concerns about the possible materialisation of tail risks. Furthermore, policies at the national level, such as the restructuring of the Spanish banking system and the success of the Greek debt buy-back operation, helped to restore market confidence towards the end of the period covered by the review, i.e. essentially 2012. However, further efforts are needed both at the euro area and the national level to tackle the fundamental causes of the financial fragmentation in the euro area, and a strengthening of the institutional framework of Economic and Monetary Union will also make a positive contribution to this end.

In addition to these factors related to the euro area crisis, some global developments, which might prove to be more long-lived, also affected the international role of the euro. For example, the rising importance of non-traditional reserve currencies may reflect, to some extent, concerns related to high public debt burdens among traditional issuers of reserve currencies, which need to be addressed.

In 2012 the financial account of the euro area remained relatively balanced, as also mirrored in a relatively stable exchange rate of the euro. The depreciation of the euro exchange rate from April 2012 until the end of July 2012 was largely related to a deteriorating economic outlook for the euro area and market concerns about the possible materialisation of tail risks. The euro then appreciated until January 2013, largely owing to positive confidence effects stemming from the announcement on OMTs. From February 2013, a moderate depreciation of the euro was followed by a period of relative stability.

The share of the euro in globally disclosed foreign exchange reserves declined in 2012 by around 1 percentage point (see Table 1). Survey evidence suggests that concerns among foreign reserve managers related to the euro area sovereign debt crisis had been alleviated by early 2013, however. Among emerging and developing countries, some portfolio rebalancing occurred; this led to the weight of the euro in emerging market reserves being aligned more closely with that in total global reserves for which the currency composition is known. Overall, these developments suggest that the US dollar and the euro, as the second-most important reserve currency, continued to perform their function as a credible store of value for foreign central banks.

In international debt markets, the share of the euro declined somewhat in 2012 (see Table 1) as tensions in the euro area sovereign debt market possibly dented the appetite for new international debt issuance denominated in euro. Funding cost considerations continued to favour issuance of debt securities denominated in US dollars, rather than issuance denominated in euro.

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	23.9 (Q4 2012)	25.1 (Q4 2011)	-1.2	10,936 (Q4 2012)	10,202 (Q4 2011)	USD billions	7.2
International debt securities: narrow measure, i.e. including home curency issuance, at constant exchange rates	25.5 (Q4 2012)	26.2 (Q4 2011)	-0.7	11,893 (Q4 2012)	10,885 (Q4 2011)	USD billions	9.3
Daily foreign exchange trading (settled by CLS), annual averages, at current exchange rates, volumes in EUR billion	19.6 (2012)	19.6 (2011)	0.0	3,689 (2012)	3,455 (2011)	EUR billions	6.8
Foreign currency-denominated loans in CESEE countries, as a percentage of total foreign currency loans, at current exchange rates	82.2 (2012)	81.7 (2011)	0.5	293.2 (2012)	300.9 (2011)	EUR billions	-2.5
Foreign currency-denominated deposits in CESEE countries, as a percentage of total foreign currency deposits, at current exchange rates	80.9 (2012)	81.1 (2011)	-0.3	188.85 (2012)	175.13 (2011)	EUR billions	7.8
Invoicing of goods exported from the euro area to non-euro area countries, at current exchange rates	62.5 (2012)	64.9 (2011)	-2.4	… …	… …		… …
Invoicing of goods imported to the euro area from non-euro area countries, at current exchange rates	49.0 (2012)	49.8 (2011)	-0.8	… …	… …		… …
Foreign holdings of euro area debt denominated in euro (as percentage of total euro-denominated debt)	17.3 (H1 2012)	17.6 (H1 2011)	-0.3	14,884 (H1 2011)	14,427 (H1 2010)	EUR billions	3.2
Cumulative net shipments of euro banknotes to destinations outside the euro area (not seasonally adjusted)	… …	… …	… …	131 (Dec. 2012)	118 (Dec. 2011)	EUR billions	11.0

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

Regarding currency substitution in 2012, statistics on net shipments of euro banknotes to destinations outside the euro area suggest that foreign demand for euro banknotes increased further in 2012 (see Table 1). This implies that the intensification of the euro area sovereign debt crisis in the second half of 2011 did not have a major impact on the use of euro banknotes outside the euro area.

With respect to the use of the euro as a parallel currency in central, eastern and south-eastern European (CESEE) countries, the euro's share in total foreign deposits remained unchanged on average (see Table 1). Evidence from household surveys in the region provided by the OeNB

confirms that trust in the euro in CESEE countries, which decreased in spring 2012, recovered in the autumn of that year. As a result, the euro remained the most widespread currency of denomination for foreign currency deposits and continued to be regarded as a more reliable store of value than most local currencies.

MAIN FINDINGS OF THE SPECIAL FEATURES

The first special feature reviews key developments regarding the emergence of non-traditional reserve currencies, such as the Australian dollar and the Canadian dollar, as well as the determinants of their growing importance since the outbreak of the global financial crisis. It shows that non-traditional reserve currency issuers have a track record of rapid and resilient growth, price stability and sound public finances. Higher risk aversion in foreign exchange markets and perceptions of heightened credit risk for some advanced economy sovereigns are shown to be two possible determinants of their recent ascent. A lack of large, deep and liquid financial markets limits the potential of non-traditional currencies to become truly major reserve units, however. In addition, their growing use might be dampened if market conditions normalise and ambitious and credible medium-term fiscal consolidation plans are introduced and implemented by all major advanced economy sovereigns.

The second special feature article takes stock of recent developments in the international use of the Chinese renminbi. It shows that China's growing weight in global output and trade, together with policy measures taken by the Chinese authorities, have led to an increasing use of the Chinese currency in international trade and, to a lesser extent, international financial markets. However, the lack of sufficiently deep and liquid domestic financial markets, tight financial restrictions, remaining capital controls and insufficient exchange rate flexibility hamper the development of the international use of the renminbi, notably as a reserve currency. It is nevertheless conceivable that the renminbi could play an increasingly prominent role to the extent that the Chinese authorities continue to gradually address these challenges.

The third special feature sheds light on one manifestation of inertia in the international financial system and on the potential sources thereof using unique data on foreign bond holdings of US investors in the early 1940s. It documents a "history effect" whereby the pattern of holdings seven decades ago continues to influence holdings today. Up to 15% of the cross-country variation in US holdings of foreign bonds in 2010 is explained by holdings 70 years ago, against 30% for bonds denominated in currencies other than the dollar. This plausibly reflects the existence of sunk costs in international financial investment, together with endogenous learning effects, i.e. the propensity of international investors to continue to invest disproportionally in assets which they have already invested in and are accustomed to.

3 PRICE-BASED INDICATORS AND EURO AREA CAPITAL FLOWS

3.1 PRICE-BASED INDICATORS

3.1.1 DEVELOPMENTS IN THE EXCHANGE RATE OF THE EURO

The nominal effective exchange rate of the euro has gone through three distinct phases since the start of 2012. First, the euro went through a period of weakness between April and July 2012, when the nominal effective exchange rate index of the euro against 20 main trading partners (NEER-20) depreciated by around 5%. This depreciation was mainly driven by a deterioration in the euro area economic outlook and by renewed tensions in euro area sovereign debt markets, largely reflecting unfounded fears about the reversibility of the euro, and characterised by widening government bond spreads across euro area countries (see below). The euro then entered a phase of broad appreciation between August 2012 and February 2013, with the index rising by more than 6%. This upward movement was initially supported by several factors. The announcement of the Eurosystem's Outright Monetary Transactions (OMTs) and the temporary improvement in the euro area's economic outlook exerted a positive confidence effect and led to a decrease in market uncertainty about the medium-term path of the euro exchange rate (see Box 1). Finally, in the third phase, after having peaked in February 2013, the euro exchange rate depreciated slightly by around 1% up to May 2013 (Chart 1).

In bilateral terms vis-à-vis major trading partners, the euro appreciated against the Japanese yen by more than 13% in 2012, by far the largest bilateral movement over the year. The euro also appreciated against the US dollar, by 2%, and against the Chinese renminbi (which fluctuates within a pre-defined moving band against the US dollar), by less than 1%. By contrast, the euro depreciated by more than 2% against the pound sterling and by around 4%, on average, against the currencies of the other EU Member States that are not part of the euro area (Chart 2a).

Between the beginning of 2013 and end-May, the euro declined by 1.4% against the US dollar, while it appreciated by 4.6% against the pound sterling (Chart 2b). Notably, the euro continued to appreciate, by a further 15%, against the Japanese yen, a development that was largely driven by the announcement of quantitative and qualitative easing by the Bank of Japan, which led to higher inflation expectations and lower real interest rates in Japan and a general depreciation of the yen.

The realised volatility of the euro exchange rate – measured as the standard deviation of daily returns against the currencies of the main trading partners – declined in the course of 2012. In particular, the volatility of the euro exchange

Chart 1 Euro nominal effective exchange rate and bilateral rate against the US dollar

(US dollar per euro; index, daily)

— USD/EUR (left-hand scale)
···· NEER-20 (right-hand scale)
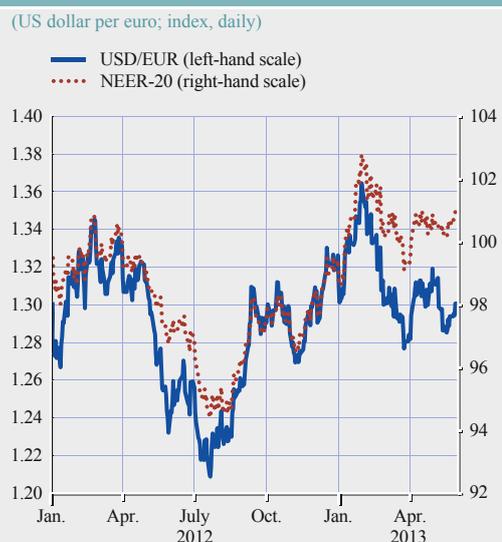
Source: ECB.
Notes: The NEER-20 is the nominal effective exchange rate of the euro against 20 main trading partners of the euro area. An upward movement of the index indicates an appreciation of the euro. The latest observation is for 31 May 2013.

Chart 2 Changes in selected bilateral exchange rates and euro nominal effective exchange rate

(percentages)

a) 1 January 2012 – 31 December 2012

b) 1 January 2013 – 31 May 2013
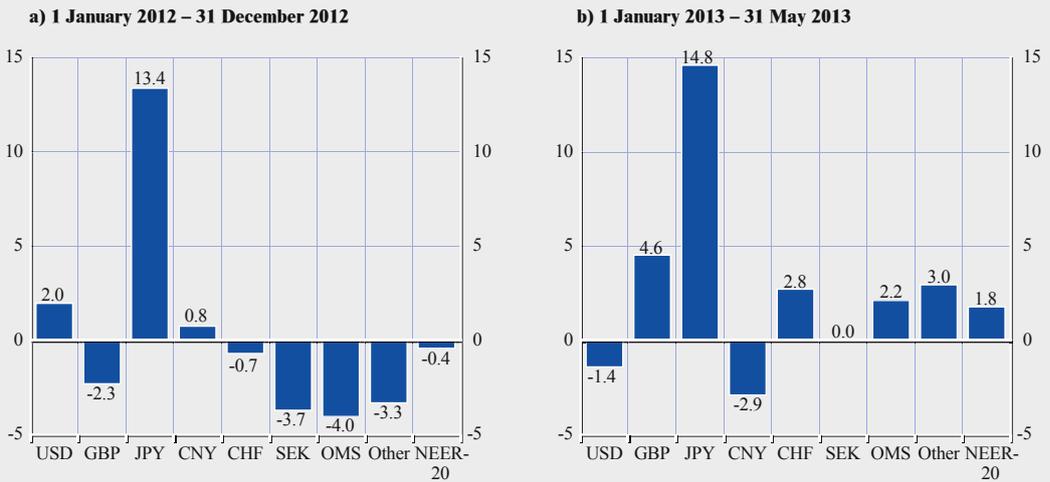
Source: ECB.
Notes: The category "other Member States" (OMS) refers to the aggregate contribution of the currencies of the non-euro area EU Member States (except the pound sterling and the Swedish krona). The category "Other" refers to the aggregate contribution of the currencies of the remaining six trading partners of the euro area included in the NEER-20 index. The latest observation is for 31 May 2013.

Chart 3 Realised volatility of the euro exchange rate since 1999

(standard deviation of daily returns; percentages)

- 1999-2007
- 2008-2011
- 2012
- January-May
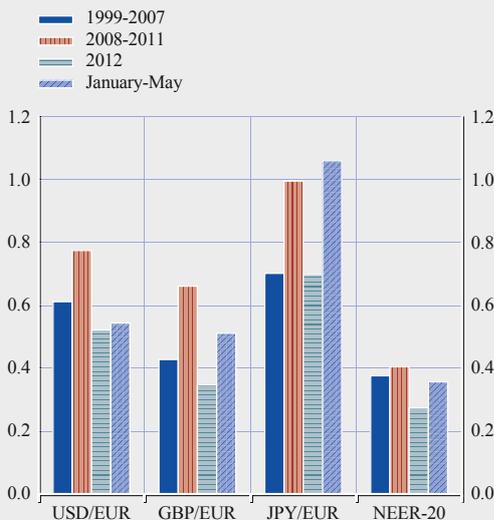
Source: ECB.
Note: The latest observation is for 31 May 2013.

Chart 4 Euro nominal and real effective exchange rates (EER-20)

(quarterly data; index: average since 1999=100)

- nominal
- real, CPI-deflated
- real, ULCT-deflated
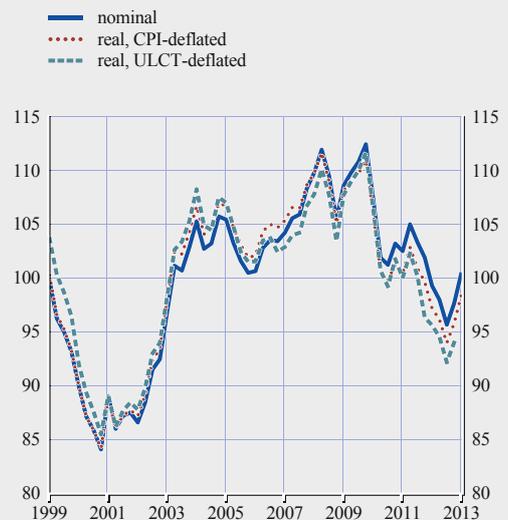
Source: ECB.
Notes: An upward movement of the EER-20 indices represents an appreciation of the euro. "ULCT" stands for unit labour costs of the total economy. The latest observation for "real, ULCT-deflated" is for the fourth quarter of 2012.

rate was significantly lower than the level prevailing in 2008-11, during a period of rising global risk aversion, and returned to levels close to those recorded before the financial crisis. However, the first few months of 2013 were characterised by an increase in euro exchange rate volatility, in particular in the bilateral rates of the euro against the Japanese yen and the pound sterling (Chart 3).

Finally, taking a longer-term perspective, in the first quarter of 2013, the euro remained very close to the average levels recorded since 1999, in nominal and real (when deflated by the CPI) effective terms (see Chart 4). When deflated by the unit labour costs of the total economy, as at the fourth quarter of 2012, the real exchange rate of the euro is slightly below (by around 4 to 5 percentage points) the long-run average.

Box I

THE EVOLUTION OF MARKET UNCERTAINTY SURROUNDING THE EURO EXCHANGE RATE

Movements in the exchange rate of the euro were relatively pronounced over the course of 2012. The euro depreciated markedly between February and July 2012, but recovered thereafter when the ECB re-affirmed the irreversibility of the euro and announced OMTs. The movements in the spot rate of the euro were accompanied by substantial changes in market sentiment on the future path of the euro exchange rate. This box describes the development of market uncertainty surrounding the future path of the USD/EUR exchange rate in the course of 2012 and documents the evolution of tail risks associated with sharp movements in the euro exchange rate.

Option prices for a given asset contain information about the probability that markets attach to the future path of the underlying asset. While the estimated densities derived from option prices are not suitable for forecasting exchange rates, they are a useful instrument to represent market sentiment on exchange rates. In particular, the probability distributions convey information on market uncertainty surrounding the future path of the exchange rate (variance), on the relative likelihood of appreciation compared with depreciation (skewness) and on the probability that markets attach to specific tail risk events.

The chart displays the option-implied densities for the USD/EUR exchange rate over the 12-month horizon at three points in 2012, at the beginning, in the middle and at the end of the year. The evolution of the distribution demonstrates the pronounced shifts in the market assessment of foreign exchange risk

Option-implied densities for the USD/EUR exchange rate over the 12-month horizon

beginning of 2012
mid-2012
end of 2012
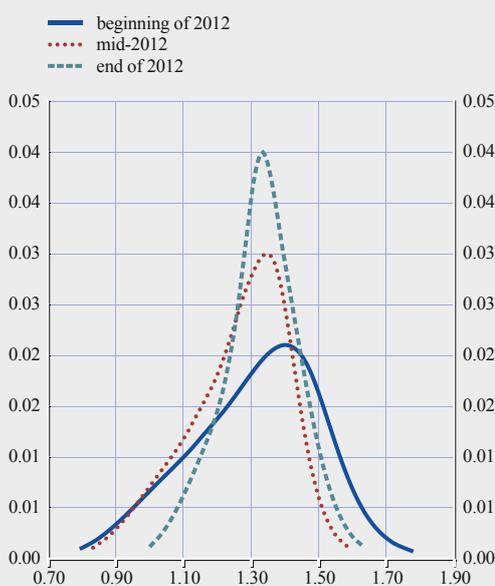
Source: ECB.

in the course of 2012. Three main observations can be made. First, general market uncertainty about the medium-term path of the euro exchange rate decreased sharply in the course of 2012. In late 2012, the variance of the distribution was approximately half and one-third the size of that observed in mid-2012 and early 2012 respectively. Second, the gradual reduction in investors' uncertainty was accompanied by a pronounced decline in the tail risks associated with sharp movements in the euro exchange rate. The likelihood attached to a 20% drop in the euro exchange rate vis-à-vis the US dollar over the 12-month horizon decreased from 10.5% at the beginning of 2012 to 7% and 1.5% in mid- and late 2012 respectively. Finally, in contrast to general levels of exchange rate uncertainty, which decreased continuously in the course of 2012, the negative skewness of the distribution peaked in mid-2012 at the height of the euro area sovereign debt crisis. In July market participants attached a markedly higher likelihood to euro depreciation than to appreciation. Following the announcement of the OMT modalities, this skewness gradually declined, with the option-implied density being broadly balanced at the end of 2012.

3.1.2 BOND YIELDS OF EURO AREA ISSUERS

On average the bond yields of euro area issuers remained relatively stable throughout 2012. However, the divergence of bond yields across different euro area issuers increased during the first half of the year (see Chart 5) as euro area sovereign bond markets continued to experience severe tensions and a significant degree of segmentation. These developments were the result of several factors: while sovereign bond yields of countries under financial stress rose owing to increasing concerns with respect to sovereign risk and its interaction with banking sector risks, the search for safe assets caused a decrease in yields in other Member States, deepening the divide in market conditions across euro area countries. In addition, a divergence in terms of market liquidity – which dried up in the case of sovereign bonds issued by stressed countries and increased in the case of other Member States as investors searched also for liquidity during times of financial stress – also contributed to the divergence in sovereign bond yields in the euro area.[1] As a result of these developments, the dispersion of sovereign bond yields across Member States increased to levels comparable with or exceeding those prevailing in the mid-1990s (ECB, 2013). After the announcement of OMTs and a clear commitment by European leaders to a single supervisory mechanism, sovereign yields declined in distressed countries, especially in the countries where they had increased the most in the preceding months, whereas they increased slightly in non-distressed countries.

Chart 5 Sovereign bond yields in the euro area

(percentages)

- min-max range
- average non-distressed
- average distressed
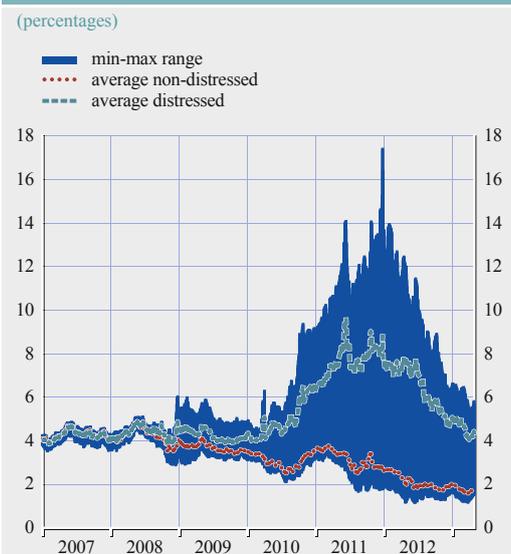
Sources: Bloomberg and ECB calculations.
Notes: "Non-distressed" countries comprise Germany, Austria, Belgium, Finland, France and the Netherlands. "Distressed" countries comprise Spain, Italy, Portugal and Ireland. The yields for Cyprus, Estonia, Greece, Luxembourg, Malta, Slovakia and Slovenia are excluded owing to infrequent or missing observations. The latest observation is for 31 May 2013.

1   Liquidity risk premia can be isolated for example by comparing agency bonds with sovereign bonds (see ECB, 2013).

Chart 6 Five-year euro corporate bond yields

(percentages)

- AA – composite euro
- AA – Europe financials
- BBB – composite euro
- BBB – Europe financials
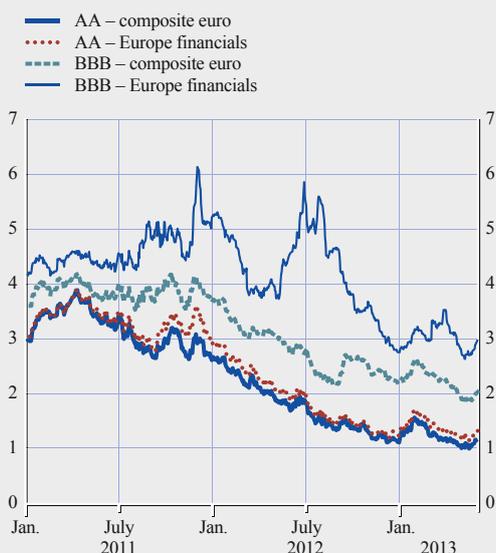
Source: Bloomberg.
Note: The last observation is for 31 May 2013.

Chart 7 Euro area financial account

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

- direct investment
- other investment
- portfolio investment
- net financial account
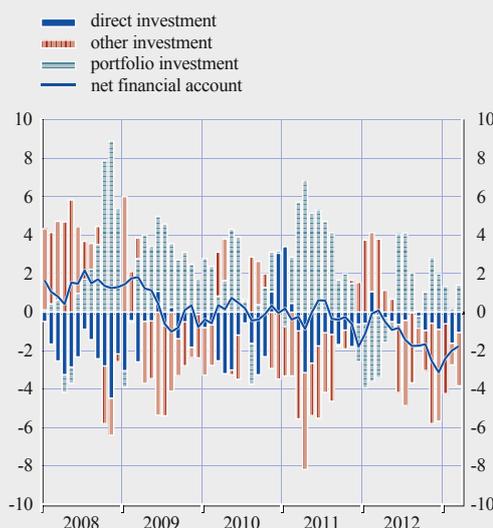
Source: ECB.
Note: The latest observation is for March 2013.

In the euro area corporate bond market, yields for lower-rated financial institutions also rose during the first half of 2012, reflecting to a large extent concerns about an adverse feedback loop between sovereign and banking sector risk in some Member States (see Chart 6). At the same time, euro area companies with high ratings benefited from low funding costs, similar to those enjoyed by euro area sovereigns with high ratings. The improved market sentiment in sovereign bond markets since July 2012 extended to bonds issued by lower-rated financial institutions as the announcement of OMTs provided a credible backstop for sovereign risk and the commitment of euro area leaders to form a single bank supervisor within the ECB sent a strong signal of cohesion.

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

The financial account of the euro area balance of payments remained in 2012 relatively balanced (see Chart 7). However, these developments mask significant cross-country divergence in the euro area, with significant private capital outflows from stressed countries coming to a halt only at the end of 2012 (see Box 2).

CAPITAL FLOWS TO STRESSED AND NON-STRESSED EURO AREA COUNTRIES

This box analyses developments in private capital flows[1] for two groups of euro area countries: "stressed" euro area countries (comprising Greece, Portugal, Spain, Ireland, Cyprus, Italy and Slovenia for the purposes of this box) and "other" euro area countries. The financial account data of the national balance of payments[2] are used for this purpose.

After a short-lived resumption of private capital inflows to stressed countries in mid-2011, these turned into outflows in the second half of the year as the sovereign debt crisis in the euro area – which had spread to the larger economies Spain and Italy – intensified. The magnitude of this reversal was thus considerable, with outflows reaching as much as 23% of GDP by mid-2012. Capital outflows took the form of both portfolio investment (mainly reflecting a reduction in exposure to government debt securities) and other investment (representing deposit flight from stressed countries). At the same time, other euro area countries recorded considerable inflows of private funds from the beginning of 2012. Outflows of private capital from stressed countries were compensated for by an increase in official capital flows, including the provision of liquidity by the Eurosystem which was reflected in an increase in TARGET2 balances. This together

Chart A Net private financial flows to stressed euro area countries

(four-quarter sums; as a percentage of GDP)

- foreign direct investment
- private other investment
- portfolio investment
- net private financial flows
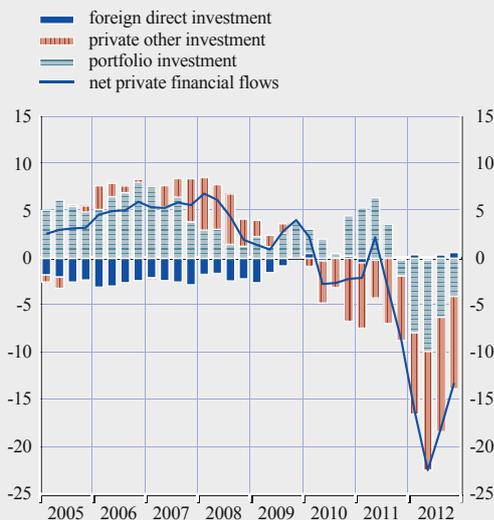
Source: ECB.

Chart B Net private financial flows to other euro area countries

(four-quarter sums; as a percentage of GDP)

- foreign direct investment
- private other investment
- portfolio investment
- net private financial flows
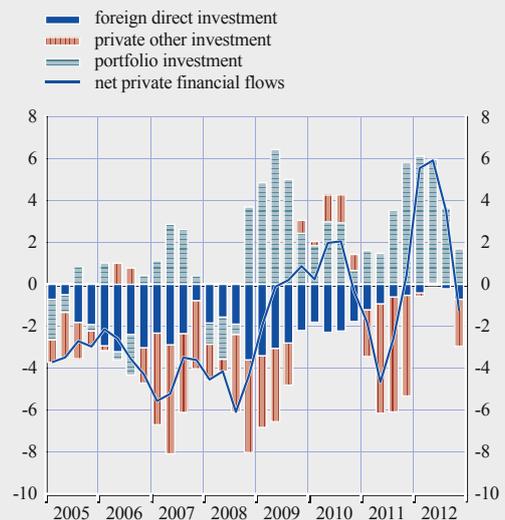
Source: ECB.

1 Capital flows are estimated as net cross-border financial flows excluding Eurosystem financing via the TARGET2 system and excluding EU-IMF programme-led funding. Official capital flows also include ECB sovereign debt purchases under the Securities Markets Programme (SMP), for which separate data are not available.
2 Net private capital flows are estimated for the purposes of this analysis as the sum of net transactions in foreign direct investment, portfolio investment and other investment, excluding net other investment transactions of monetary authorities (which stands for TARGET2 financing) and excluding other investment transactions in liabilities of general government (which stands for EU-IMF financing).

with EU-IMF financing mitigated the outflow of private capital and contributed to a gradual rebalancing of the affected economies.[3]

Following – inter alia – the announcement of OMTs in September 2012 and other policy measures taken at the European and at the national level, private funds (in the form of portfolio investment) returned to stressed countries over the last four months of 2012. As suggested by the reduction in the size of other investment liabilities of stressed countries' central banks and the concomitant decrease in the respective claims of other countries' central banks, TARGET2 balances have fallen from their peak in mid-2012, reflecting reduced funding pressure amid the first signs of a normalisation in financial market conditions.

3 It should be noted that the estimate of private capital inflows to stressed countries is on the high side since it is not possible to separate out sovereign debt purchases in the framework of the SMP.

For the euro area as a whole, capital outflows in 2012 amounted to €133 billion. These outflows mainly reflected net sales of other investment, which amounted to €132 billion, and of foreign direct investment, which made a contribution of €45 billion. These outflows were only partly offset by a cumulated portfolio investment inflow to the euro area of €52 billion.

On the liability side, temporary portfolio outflows by foreign residents were halted and reversed in early 2012 (see Chart 8). Net portfolio investment flows to the euro area from non-residents peaked in the final quarter of 2012, largely related to the gradual reduction in perceived euro area tail risks in the second half of 2012.

In terms of asset allocation across portfolio investment classes, portfolio inflows from foreign investors in early 2012 were primarily driven by net purchases of euro area equities, while net acquisitions of euro area bonds did not turn positive until mid-2012 (see Chart 8). The fact that foreign inflows in euro area equities and bonds remained positive in summer 2012 shows that foreign residents largely refrained from repatriating such longer-term investments. Foreign investors did, however, temporarily sell short-term money market instruments in mid-2012.

Further evidence of a return in market confidence in euro area assets is provided by an analysis of the asset allocation of US money market funds, which account for a considerable share of the dollar funding of euro area banks. According to a survey by Fitch Ratings, the share of short-term financial instruments issued by euro area banks in total assets under management of prime US money market funds increased somewhat in early 2012 from the historically low levels reached at the end of 2011 (see Chart 9). Following renewed concerns related to tail risks for the euro area,

Chart 8 Euro area portfolio investment liabilities by instrument

(three-month cumulated flows; as a percentage of GDP)
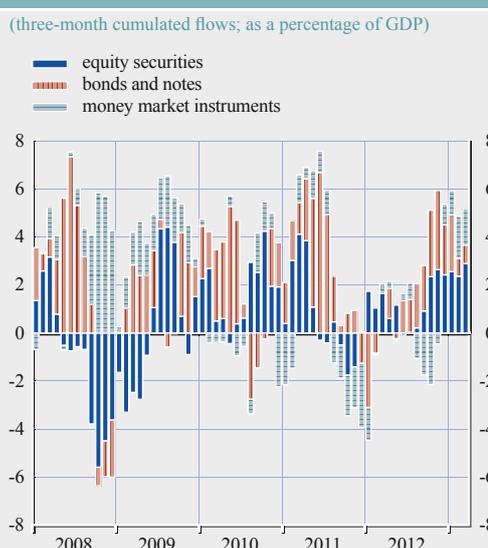
Source: ECB.
Note: The latest observation is for March 2013.

Chart 9 Asset allocation of prime US money market funds

(as a percentage of total assets under management)

— short-term instruments issued by euro area banks
····· US government securities
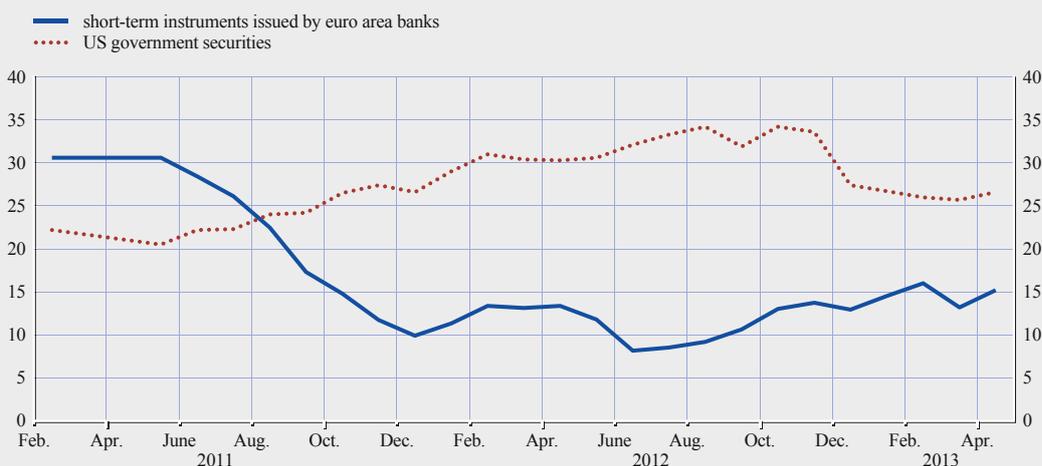
Source: Fitch Ratings.
Notes: Prime money market funds participating in the survey include the ten largest US money market funds. Short-term instruments issued by euro area banks include certificates of deposit, commercial paper, repos and other instruments. US government securities include Treasury and agency bonds as well as repos collateralised by such bonds. The latest observation is for April 2013.

this share dropped to a historical low of 8.2% in June 2012. The share of short-term debt instruments issued by euro area banks recovered thereafter following – inter alia – the announcement of OMTs in September 2012, reaching 15.2% in April 2013, following a temporary drop in March 2013. At the same time, the share of US government securities in total assets under management of US money market funds, which had increased steadily since early 2011, peaked in August 2012 and decreased to 26.6% in April 2013.

4 RECENT DEVELOPMENTS IN THE INTERNATIONAL USE OF THE EURO

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

Against the backdrop of a continued rise in global holdings of foreign exchange reserves, the importance of official holdings of euro-denominated debt by foreign central banks has further increased in relation to private foreign holdings.[2] In 2012 foreign exchange reserves continued to grow, albeit at a somewhat slower pace than in 2011, reaching a new historical high of USD 10.9 trillion at end-2012 (see Chart 10a and Table A1 in the Statistical Annex). According to IMF data, which only cover 56% of global foreign exchange reserves, the shares of major reserve currencies remained relatively stable throughout 2012 (see Chart 10b). Such inertia in the currency composition of foreign exchange reserves is likely to result from a combination of factors, including network externalities, exchange rate anchoring and the liquidity properties of major reserve currencies. The euro's share in global foreign exchange reserves decreased somewhat to stand at 23.9% at the end of 2012 when adjusted for exchange rate effects (down from 25.1% at end-2011, at constant end-2012 exchange rates). Over the same period the share of US dollar-denominated assets in global foreign exchange reserves remained broadly stable at 61.9%, slightly down from 62.2% at end-2011 (at constant end-2012 exchange rates). At the same time, the share of "other currencies" (comprising all currencies other than the special drawing right (SDR) currencies and the Swiss franc) in global foreign exchange reserves rose by around half a percentage point (from 5.4% to 6.1% at end-2012) when adjusted for exchange rate effects. As a result, reserve holdings in "other currencies", comprising non-traditional reserve currencies such as the Australian

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Chart 10 Currency composition of global foreign exchange reserves

(USD trillions; at current exchange rates)

(percentages; at constant end-2012 exchange rates)

a) Amounts

- USD
- EUR
- JPY
- other currencies
- undisclosed

b) Shares

- USD
- EUR
- other currencies
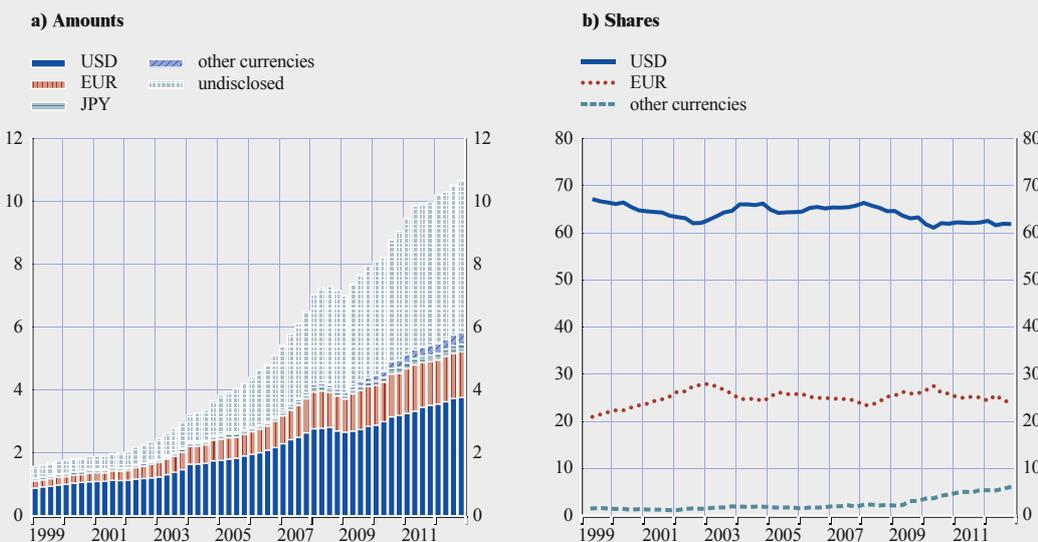
Sources: IMF and ECB calculations.
Notes: "Other currencies" excludes holdings in Swiss francs, Japanese yen and pounds sterling. The latest observation is for December 2012.

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2   IMF data on global holdings of foreign exchange reserves cannot be directly compared with data on foreign holdings of euro-denominated debt securities issued by euro area residents as shown in Table A7 in the Statistical Annex as there may be differences in the statistical reporting methods used.

dollar and the Canadian dollar, have become larger than holdings in Japanese yen or pounds sterling (see Table A1 in the Statistical Annex). This increased but still limited importance of non-traditional reserve currencies is likely to stem from a variety of factors, as discussed in Special Feature A.

Disaggregated IMF data suggest that the currency composition of foreign exchange reserves followed fairly distinct patterns at the regional level. Among the central banks in advanced economies, the share of the euro increased by around 1½ percentage points to 23.7% at end-2012 (from 22.3% at end-2011, at constant exchange rates). To some extent, this increase could reflect interventions in euro by the Swiss National Bank (see Box 3), which would be consistent with the fact that the share of the US dollar in reserves held by advanced economies dropped somewhat (see Table A1 in the Statistical Annex). Turning to emerging and developing economies, the share of the euro in reserve holdings dropped by more than 3 percentage points (from 27.4% at end-2011 to 24.2%) when measured at constant exchange rates. The US dollar and "other currencies" mostly benefited from these developments.

Recent survey-based evidence suggests that concerns of foreign reserve managers about the euro area, which may have resulted in some portfolio shifts within the euro-denominated market segment, eased following the ECB's announcement of OMTs by the Eurosystem. In a survey of 60 central banks managing reserves worth USD 6.7 trillion, 89% of respondents indicated between January and March 2013 that this announcement had alleviated their concerns about the euro in the wake of the euro area sovereign debt crisis.[3]

Among the non-euro area central banks which disclose the currency composition of their foreign exchange reserves, the euro's share remained relatively stable in most advanced economies and declined in some emerging markets, most likely reflecting factors which are specific to the reserve management practices of the individual countries (see Table A2 in the Statistical Annex). In the case of Chile, a change of the criteria for reserve management putting more emphasis on return versus liquidity considerations led to a decline in the share of the euro from 31.9% to 22.0% while the share of US dollar share increased. This portfolio adjustment took place in July 2012.

Overall, these findings suggest that the euro continued in 2012 to perform its function as the second-most important reserve currency in the world. At the same time, concerns among foreign reserve managers related to the euro area sovereign debt crisis had been significantly alleviated by early 2013. Among emerging and developing countries, some portfolio rebalancing materialised, aligning the weight of the euro more closely with that in overall reserves. Finally, the US dollar's status as the leading global reserve currency remained unchanged.

The use of the euro as an exchange rate anchor remained broadly unchanged. As in previous years, the use of the euro in the exchange rate regimes of countries outside the euro area was, to a large extent, underpinned by geographical and institutional factors, being observed mainly in countries neighbouring the euro area and countries that have established special institutional arrangements with the EU or its Member States (see Table A3 in the Statistical Annex). With the exception of the countries participating in ERM II, the decision to use the euro as an anchor currency is a unilateral one and does not involve any commitment on the part of the ECB.

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3   See Royal Bank of Scotland (2013).

THE ACCUMULATION OF EURO-DENOMINATED RESERVES BY THE SWISS NATIONAL BANK

The total holdings of foreign exchange reserves of the Swiss National Bank (SNB) were broadly stable at around CHF 50 billion between the inception of the euro in 1999 and the beginning of the financial crisis in late 2008. Over the same period the euro's share in the SNB's total reserves remained in a relatively narrow range between 40% and 50%. The stability of both the level and the composition of the SNB's currency reserves came to an end during the financial crisis. Indeed, substantial capital inflows – reflecting the Swiss franc's role as a safe-haven currency – led to strong interventions by the SNB in foreign exchange markets in order to counteract the resulting appreciation pressure on the Swiss franc. As a result, the SNB's holdings of foreign exchange reserves had increased by more than CHF 170 billion to CHF 226 billion by the second quarter of 2010. Substantial upward pressure on the Swiss currency re-emerged in mid-2011 and mid-2012 on the back of a renewed flight to safety amid rising uncertainty with respect to future developments in the euro area. As a result of the interventions in foreign exchange markets, the SNB's foreign exchange reserves stood at more than CHF 420 billion in the final quarter of 2012 (see Chart a).

The SNB diversified out of euro-denominated reserves after each intervention period in order to rebalance its foreign reserve portfolio and to bring the share of the euro in total reserves back to the long-run average. In the final quarter of 2012, the currency shares of the SNB's foreign exchange reserves stood close to levels observed before the financial crisis (see Chart b). This notwithstanding, the SNB accumulated almost CHF 200 billion of euro-denominated assets between 2008 and 2012.

Currency breakdown of the SNB's foreign exchange reserves
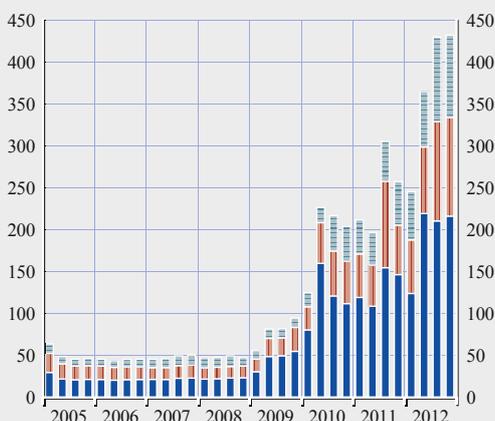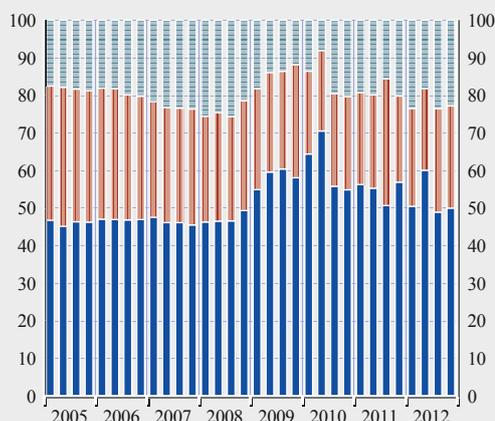
Sources: SNB and ECB calculations.
Note: "Other" comprises: Japanese yen, Canadian dollar, Australian dollar, Swedish krona, Danish krone, Singapore dollar and Korean won.

4.2 THE EURO IN INTERNATIONAL DEBT MARKETS

Following the revision and enhancement of the debt securities statistics of the Bank for International Settlements (BIS), this review will report on a new "broad" measure of the importance of different currencies in the international debt market, in addition to the ECB's traditional "narrow" measure of international debt issuance. According to the new BIS definition, international debt securities are "those issued in a market other than the local market of the country where the borrower resides".[4] In this report, the BIS measure of international debt securities is further refined in order to exclude all debt issuance which is purely domestic when the euro area is considered a single economic area (e.g. a bond issued by a German resident with registration domain or listed in Luxembourg). The ECB's "broad" measure of international debt issuance thus excludes intra-euro area issuance from the international debt securities reported by the BIS.

At the end of the fourth quarter of 2012, the total outstanding amounts of international debt securities according to the new "broad" measure (excluding intra-euro area issuance) increased by around USD 700 billion compared with the previous year, reaching USD 19.4 trillion. Euro-denominated debt securities accounted for around USD 7.3 trillion of those outstanding amounts – 37.7% at current (end-2012) exchange rates (see Table 2). When measured at constant (end-2012) exchange rates, this share shows a steady increase from 26.5% in 1999 to 39.4% in 2006, which is followed by a period of relative stability until 2011 and a decline in 2012, possibly owing to the impact of the euro area sovereign debt crisis (see Table A4 in the Statistical Annex).

As in the past, this report emphasises the "narrow" concept of international issuance, which comprises only issuance in a currency other than that of the country in which the borrower resides.[5] According to this "narrow" measure, the total stock of international debt securities reached almost USD 12 trillion at the end of 2012. Euro-denominated securities accounted for USD 3 trillion of the total outstanding amount, representing 25.5% of total stock (see Table 2). This represented a decline in the share of the euro of 0.7% compared with the end of 2011, continuing the downward correction seen in previous years (see Chart 11). By contrast, the US dollar's share in the narrow measure of international debt issuance increased by almost 2 percentage points in 2012, reaching a level of more than 52% of total issuance.

The declining share of the euro in international issuance, according to the narrow measure, can possibly be explained by two factors. First, the tensions in the euro area sovereign debt market,

Table 2 Alternative measures of the supply of debt securities and the shares of major currencies

(fourth quarter of 2012; at current exchange rates)

	Amounts outstanding (USD billions)				Shares (%)		
	Total	Euro	US dollar	Japanese yen	Euro	US dollar	Japanese yen
"Narrow" measure	11,839	3,025	6,199	581	25.5	52.4	4.9
"Broad" measure	19,374	7,299	7,523	663	37.7	38.8	3.4

Sources: BIS and ECB calculations.

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4   See *BIS Quarterly Review*, December 2012, for more information. In order to distinguish domestic from international issuance, the new BIS definition focuses on the "primary market", i.e. the market where securities are issued for the first time. This primary market is identified by three characteristics: the registration domain (ISIN), the listing place and the governing law. If at least one of these features is different from the country of residence of the issuer of the security, the issuance is classified as international.

5   The "narrow" definition has also changed slightly following the review of the BIS debt securities statistics. However, some offsetting effects between the two concepts produce very similar results. The "global" measure of international debt securities presented in previous reports is not referred to in this report owing to the above-mentioned statistical changes.

Chart II Stock of international debt securities (narrow measure): outstanding amounts and currency shares

(USD trillions; at current exchange rates)
(percentages; at constant exchange rates)

a) Outstanding amounts
- USD
- EUR
- JPY
- other currencies

b) Shares
- USD
- EUR
- JPY
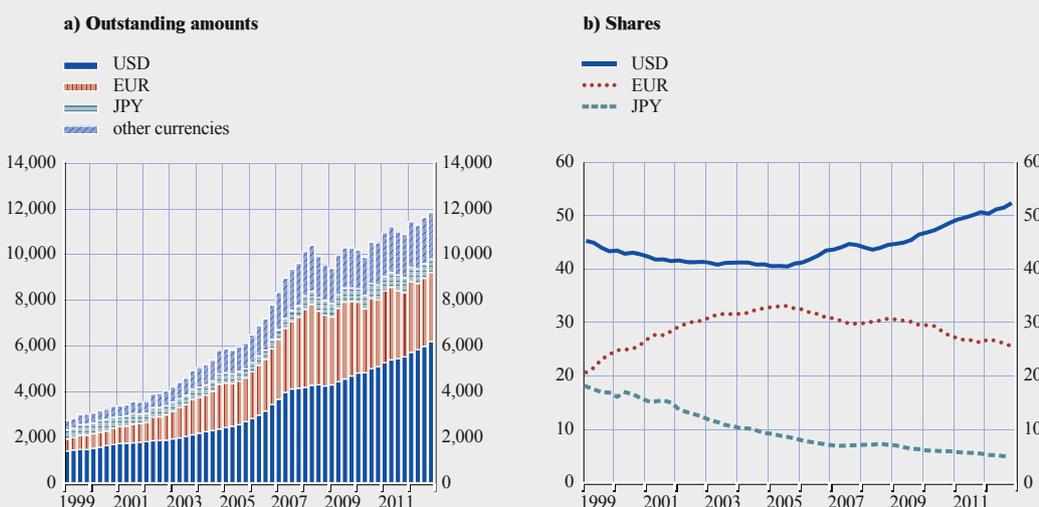
Sources: BIS and ECB calculations.
Note: The latest observation is for December 2012.

which peaked at the end of 2011 and resurfaced in the summer of 2012, apparently dented the appetite for new international debt issuance denominated in euro. Second, funding cost considerations continued to favour the issuance of debt securities denominated in US dollars, rather than those denominated in euro (or in Japanese yen). The US dollar basis swap, which measures deviations from the covered interest parity, spiked at the end of 2011 and remained positive for a large part of 2012. This implies that it was cheaper to borrow in US dollars and swap the proceeds into euro (or yen) than to borrow directly in euro (or yen).

4.3 THE EURO AS A PARALLEL CURRENCY

4.3.1 CURRENCY SUBSTITUTION

The use of euro banknotes outside the euro area cannot be estimated with complete accuracy. One estimate of the amount of euro banknotes circulating abroad (reported on a regular basis in this report) is based on the accumulation over time of net shipments of euro banknotes by euro area monetary financial institutions (MFIs) to destinations outside the euro area. On the basis of this method, some €130 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 2012 (see Chart 12). This was around 14% of the total euro currency in circulation in that month. This estimate is regarded as a clear lower bound, given that the banking channel is just one of a number of channels through which euro banknotes leave and re-enter the euro area. Anecdotal evidence suggests that the outflows of euro banknotes via non-MFI channels (e.g. via tourism or workers' remittances) are, for most countries, greater than the inflows via such channels. Net shipments by banks thus provide an incomplete picture of true net flows of banknotes. Other estimates suggest that around 25% of euro currency in circulation (and possibly slightly more) was circulating outside the euro area at the end of 2012.

Chart 12 Net shipments of euro banknotes to destinations outside the euro area

(EUR billions; adjusted for seasonal effects)

- monthly shipments (left-hand scale)
- cumulative shipments (right-hand scale)
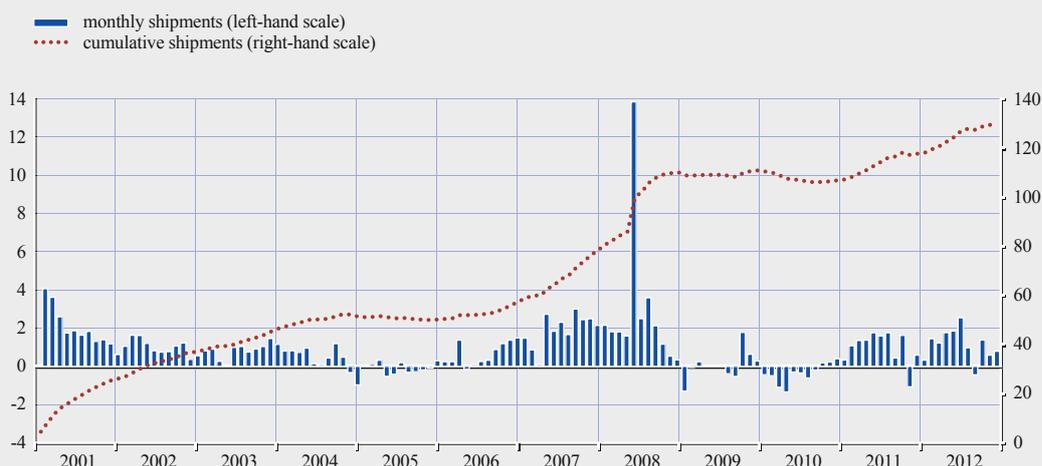
Source: Eurosystem.
Notes: Net shipments are the sum of euro banknotes sent to destinations outside the euro area minus euro banknotes received from outside the euro area. The latest observation is for December 2012.

Foreign demand for euro banknotes – as measured by net shipments by euro area MFIs – increased further in 2012, growing again at a higher annual rate than banknotes in circulation within the euro area. Indeed, the annual growth of foreign demand for euro banknotes (based on the accumulation over time of net shipments of euro banknotes by euro area MFIs to destinations outside the euro area) remained at double-digit levels for the second consecutive year (standing at 11.1% in December 2012), while that of euro banknotes in domestic circulation moderated considerably (to 2.7%). The value of monthly net shipments of euro banknotes abroad remained robust throughout 2012 and was marginally higher than the value registered on average in 2011, following a modest contraction in 2010. Nonetheless, monthly net shipments in the last two years have not been as large as the average shipments observed in 2007-08, in particular following the collapse of Lehman Brothers. The marginal rise in net shipments of euro banknotes in 2012 as compared with 2011 was mostly explained by the somewhat lower gross backflows of euro banknotes from non-euro area residents. At the same time, the gross outflows of euro banknotes remained broadly unchanged from the previous year. Overall, recent developments in the net shipments of euro banknotes abroad continue to suggest that the intensification of the euro area sovereign debt crisis in the second half of 2011 did not have a major impact on the use of euro banknotes outside the euro area.

Further evidence on the holdings of euro currency abroad can be derived from statistics provided by the monetary authorities of non-euro area countries. For example, the Central Bank of Russia publishes data on foreign currency brought into and taken out of the Russian Federation by authorised banks. These statistics show that net shipments of euro banknotes to Russia increased for the second consecutive year in 2012 (see Chart 13), following persistent net outflows for most of 2009 and 2010. The net increase in euro banknotes taken into the Russian Federation by authorised banks in 2012 was somewhat higher than in the previous year and reached broadly the levels observed on average before the collapse of Lehman Brothers. The data thus suggest that Russian residents might have increased their euro and US dollar banknote holdings by broadly the same amounts in 2011 and 2012, after reducing their holdings of both currencies for most of the previous two years.

Chart 13 Foreign currency brought into and taken out of the Russian Federation by authorised banks

(USD billions; USD/EUR)

- in/out balance US dollar (left-hand scale)
- in/out balance euro (left-hand scale)
- USD/EUR exchange rate (right-hand scale)
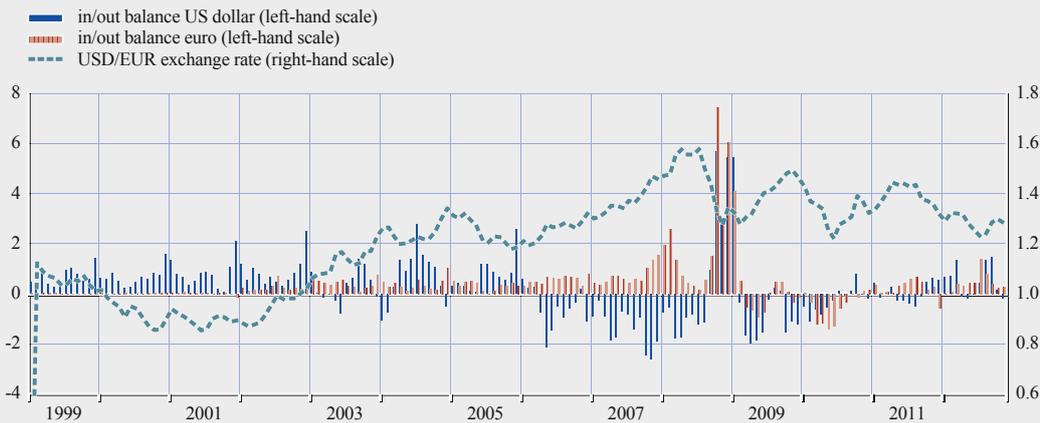
Sources: Central Bank of Russia and ECB.
Note: The latest observation is for December 2012.

Data collected from international wholesale banks show that sales of euro banknotes increased in 2012, mainly owing to an increased demand from Russia and northern Africa, while banknote sales to Switzerland and the United Kingdom continued to account for the largest share of total sales to non-euro area destinations (see Chart 14a). At the same time, backflows of euro banknotes

Chart 14 Regional breakdown of euro banknote purchases from and sales to locations outside the euro area

(EUR billions)

- Central and South America
- North America
- Africa
- Asia and Australia
- Middle East
- Switzerland
- rest of Europe
- Russia
- non-EU Member States in eastern Europe excluding Russia
- other non-euro EU
- non-euro area EU Member States in eastern Europe
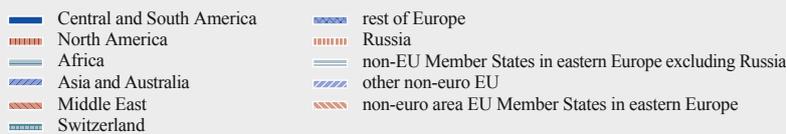
a) Sales
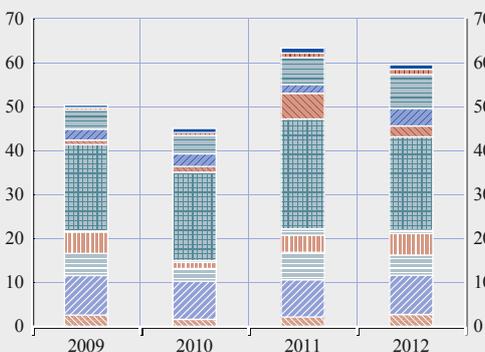
b) Purchases
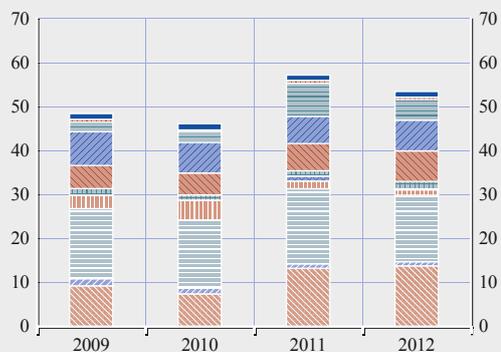
Source: ECB (based on data from wholesale banks).
Notes: These data exclude trades between wholesale banks. The 2012 figures contain data obtained from one additional wholesale bank which previously had not responded to this survey. These data differ from statistics on net shipments, as the latter do not take account of the recirculation of banknotes by wholesale banks outside the euro area (e.g. where a wholesale bank purchases a euro banknote from a client in Asia and sells it to a client in Russia).

(i.e. purchases from wholesale banks) stemmed mainly from EU Member States in eastern Europe and from Turkey, broadly in line with developments in previous years (see Chart 14b).

4.3.2 ASSET AND LIABILITY SUBSTITUTION

Economic agents in central, eastern and south-eastern European (CESEE) countries use the euro widely in the domestic economy. As in previous reports, this section reviews the share of euro deposits and loans in total deposits and loans in CESEE countries.

The euroisation of liabilities on banks' balance sheets remains substantial in several non-euro area EU Member States, as well as in most EU candidate and potential candidate countries. In general, the use of the euro seems to be most widespread in the Western Balkans[6]. Among non-euro area EU Member States, Poland and the Czech Republic are at the lower end of the range, with the euro's share in total deposits standing at about 6% in 2012, while Latvia (42.3 %) is at the upper end of the range. By comparison, in the Western Balkans this share ranges from 32.6% in Albania to 70.6% in Serbia. The euro's share in total deposits remained broadly stable in 2012 (see Table A16 in the Statistical Annex). Marginal changes in this ratio in most CESEE countries appear to be related to differing factors.[7]

Overall, the euro remained the most widespread currency of denomination for foreign currency deposits in CESEE countries, and continued to be perceived as a preferable store of value relative to local currencies, particularly in countries which had previously experienced periods of macroeconomic instability. In countries where the euro's share in total deposits declined somewhat, the fall may stem from economic agents' response to a gradual decline in domestic macroeconomic and financial uncertainty. The euro's share in total foreign deposits also remained

Chart 15 The euro's share in deposits in non-euro area EU Member States and EU candidate and potential candidate countries

(as a percentage of foreign currency-denominated deposits)
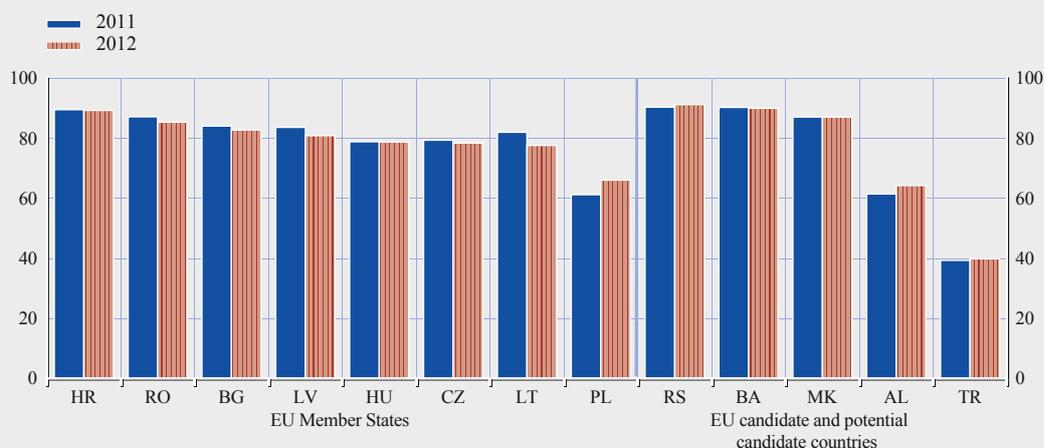
Sources: National central banks and ECB calculations.
Notes: The definition of deposits may vary from country to country. Foreign exchange-indexed loans are not included. For EU candidate and potential candidate countries, figures for 2012 refer to outstanding amounts in September 2012. Kosovo and Montenegro are excluded owing to the lack of a separate legal tender. Croatia joined the EU on 1 July 2013.

6   Albania, Bosnia and Herzegovina, Croatia, FYR Macedonia, Kosovo, Montenegro and Serbia.
7   Valuation effects might also be reflected to some extent, as the data are not adjusted for exchange rate movements.

Chart 16 Ratio of loans in foreign currency to deposits in foreign currency in non-euro area EU Member States and EU candidate and potential candidate countries

(percentages)

■ 2011
▥ 2012
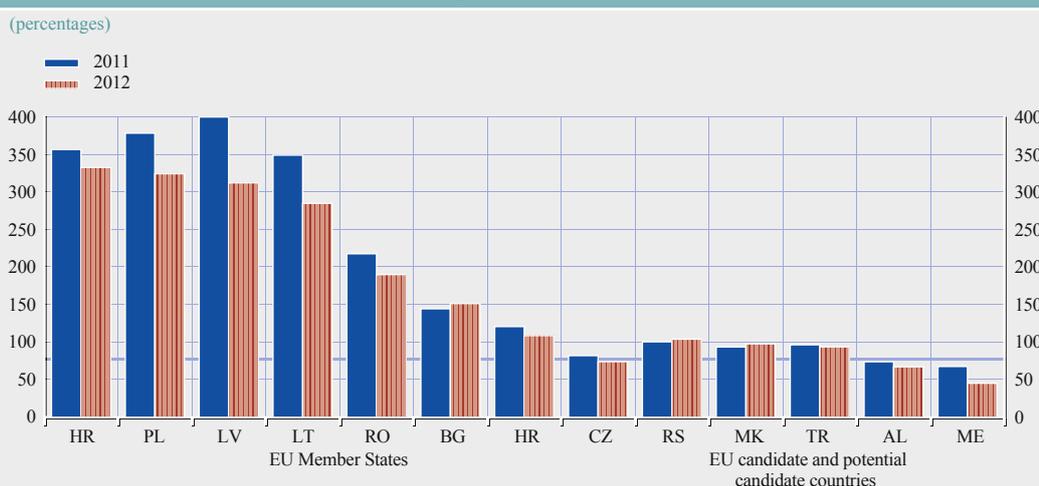
Sources: National central banks and ECB calculations.
Notes: The definition of loans may vary from country to country. Where available, foreign exchange-indexed loans are included. For EU candidate and potential candidate countries, figures for 2012 refer to outstanding amounts in September 2012. Bosnia and Herzegovina is excluded for reasons of scale. The corresponding figures are 4.4% (2011) and 3.3% (2012). Given the use of the euro as legal tender in Montenegro, "foreign currency" here refers to all currencies except the euro. Croatia joined the EU on 1 July 2013.

broadly unchanged on average (see Chart 15). Evidence provided by the OeNB confirms that trust in the euro in CESEE countries, while decreasing in spring 2012, increased in the autumn of 2012 (see Section 4.5).

On the assets side of banks' balance sheets, euroisation continues to be pronounced in line with the pattern on the liabilities side. The share of euro-denominated loans in total lending varies between countries but in general remains high, in particular in countries with a currency board or tightly managed exchange rate vis-à-vis the euro. It ranged from 7.5% in the Czech Republic to 81.4% in Latvia in 2012 (see Table A16 in the Statistical Annex). Lending in euro outside the euro area or in foreign currency in general entails macroeconomic costs and financial stability risks, especially if borrowers' liabilities do not correspond to assets in the same currency.[8] In this context, it should be noted that foreign exchange loan-to-deposit ratios in many countries remain relatively high (see Chart 16).

4.4 THE EURO IN OTHER MARKET SEGMENTS

4.4.1 THE USE OF THE EURO IN FOREIGN EXCHANGE MARKETS

The use of the euro in foreign exchange markets remained broadly unchanged in 2012. Data on settlements in CLS show that, while foreign exchange transactions have continued to rise, notwithstanding some volatility (see Chart 17a), the currency composition of trades settled in CLS has remained stable: the US dollar was the counterpart in 90% of all currency exchanges,

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8   In order to address the risks stemming from lending in foreign currency, the European Systemic Risk Board published seven recommendations on lending in foreign currencies in October 2011 (see ESRB, 2011). Further information can also be found in ECB (2011), in particular in Box 3 entitled "Risks and costs associated with foreign currency lending".

(EUR billions; at current exchange rates)

(percentages; at current exchange rates)

a) Amounts

- average daily turnover (value in EUR equivalent)
- three-month moving average

b) Shares

- GBP
- EUR
- USD
- JPY
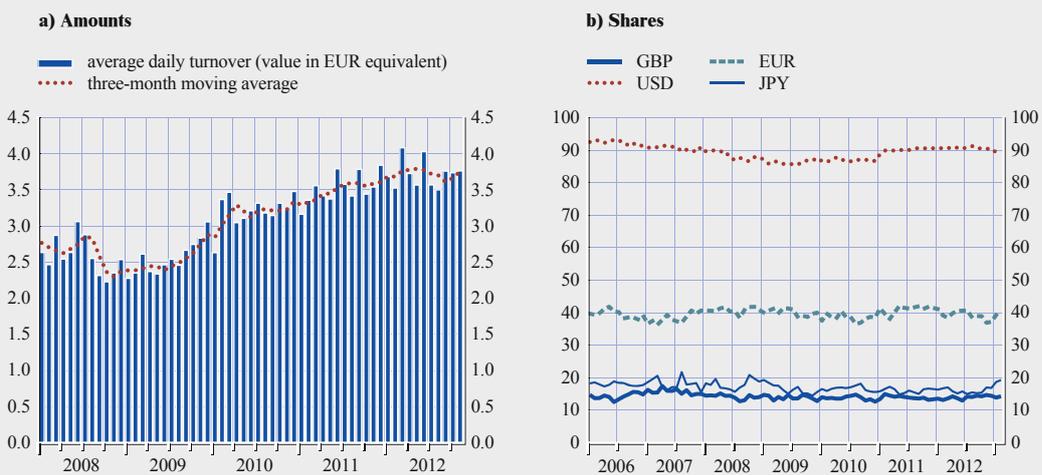
Sources: CLS and ECB calculations.
Notes: The last observation is for February 2013.

confirming its role as the main vehicle currency[9] in foreign exchange markets, while the euro's share remained around 40% (see Chart 17b).[10]

4.4.2 THE USE OF THE EURO IN INTERNATIONAL TRADE INVOICING

In 2012 the euro's use in the settlement or invoicing of international trade flows remained close to levels observed in previous years. The share of the euro in the euro area's exports of goods declined by about 2 percentage points relative to 2011, to 62.5%, but remained about 3 percentage points higher than in 2007, i.e. before the onset of the global economic and financial crisis (see Table A13 in the Statistical Annex). The share of the euro in euro area imports of goods remained stable, at 49%, roughly 1 percentage point higher than in 2007. The share of the euro in the euro area's international trade in services declined by about 2 percentage points for exports, while remaining stable for imports, standing at 52.1% and 58.4% respectively.[11] The euro's share as

(cross-country median; as a percentage; 2010)
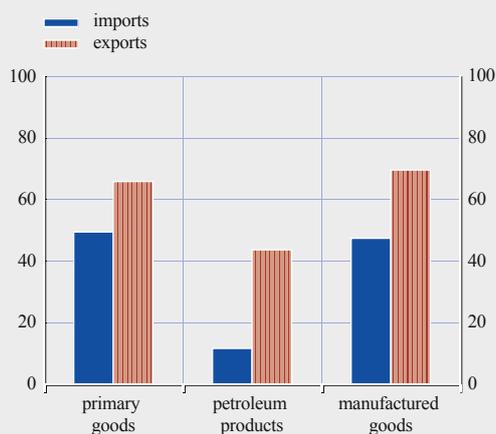
- imports
- exports

Sources: Eurostat and ECB staff calculations.
Notes: Petroleum products = petroleum, petroleum products and related materials. Calculations exclude Belgium for imports and exports and Malta for imports owing to data availability.

9 A vehicle currency (B) is used to exchange two other currencies (A and C), so A and C are exchanged not directly (i.e. AC), but in two transactions (i.e. AB and BC). Most transactions between relatively illiquid currencies are executed via vehicle currencies, owing to the lower transaction costs.
10 Payment-versus-payment settlement involves two currencies, so the sum of all currency shares equals 200%.
11 It should be noted that the euro area's international trade transactions in services account for about one-third of total international trade transactions in goods and services.

an invoicing/settlement currency in the external trade of most non-euro area EU countries remained by and large stable in 2012 (see Table A13 in the Statistical Annex).

New data available for 2010 on the currency composition of euro area countries' extra-EU trade broken down by main product groups also provide further evidence on the use of the euro across sectors (see Chart 18). The median share of the euro across the euro area countries for which data are available is roughly the same for primary goods and manufactured goods (about 50% for imports and over 66% for exports). However, the euro's share is markedly lower for petroleum, petroleum products and related materials, at 43% for exports and only 12% for imports, reflecting the dominant role traditionally played by the dollar in the global oil market.

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

Households' portfolio choices in CESEE countries are mainly based on the interplay between two elements: the cash-versus-deposits decision and the foreign currency-versus-domestic currency decision. The underlying preferences motivating these decisions are determined by various (supply and demand-related) factors that influence a person's assessment of return and risk. Recent research underlines the central role of confidence in households' financial decisions: confidence in the security of deposits, in the stability of banks and in positive economic developments, as well as in the stability of the domestic currency versus a safe-haven currency (Stix, 2012; Coupé, 2011; Beck and Brown, 2011). Furthermore, there is evidence that past periods of crisis have a lasting effect on household preferences for a safe-haven currency (Mudd et al., 2010; Stix, 2011; Beckmann and Scheiber, 2012). Against this background this section addresses the following questions: How do households view the euro as compared with their domestic currency, and can we observe any significant change in this assessment? What was the portfolio composition of households in CESEE countries in 2007? Has the portfolio composition changed since 2007? Can we infer any trends in households' saving behaviour for the future?

Relative trust in the euro versus the domestic currency has a significant impact on the currency composition of households' savings, in particular in the highly euroised economies of south-eastern Europe (SEE).

According to the OeNB Euro Survey, households' trust in the euro relative to their domestic currencies declined considerably in all countries except Serbia in the course of the sovereign debt crisis (Chart 19). Agreement with the statement that "the euro will be a very stable and trustworthy currency over the next five years" reached a historic low in spring 2012. However, trust in the euro has recovered substantially in all countries since then. As a result, in autumn 2012 the share of respondents who trusted the euro exceeded the share of those who trusted their domestic currencies in all countries surveyed except the Czech Republic.

Turning to the composition of households' financial portfolios in CESEE countries, evidence from the OeNB Euro Survey reveals that households mainly hold their savings in bank accounts or as cash reserves.[12] Furthermore, some countries exhibit a relatively strong demand for foreign currency cash and deposits designed to serve as a safe-haven asset. In most cases these safe-haven assets are denominated in euro.

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12 This descriptive analysis focuses on these two main components of the financial portfolio of CESEE households.

Chart 19 Trust in the euro versus trust in domestic currencies

(difference in normalised sample means per country)

a) EU Member States

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

b) Candidate and potential candidate countries

— Albania   — FYR Macedonia
····· Bosnia and Herzegovina   ····· Serbia
- - - Croatia
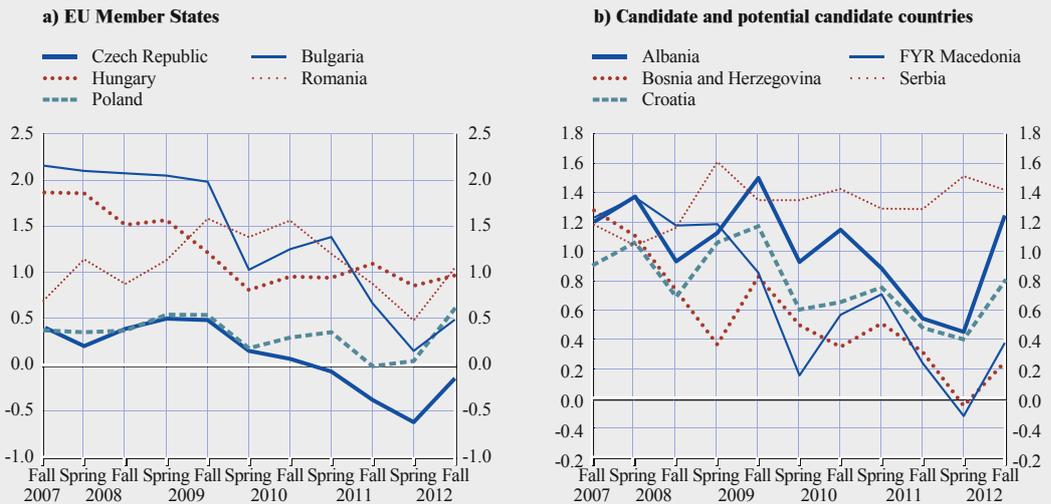
Source: OeNB Euro Survey.
Notes: Positive values indicate that households' assessment of the stability and trustworthiness of the euro is more favourable than their assessment of the domestic currency. Normalised sample means range from -2.5 ("exclusively trust in the domestic currency") via 0 ("neutral") to 2.5 ("exclusively trust in the euro"). For details see Beckmann and Scheiber (2012).

Chart 20 shows the preference for savings in cash over savings deposits in the CESEE region. On average, 31% of respondents who report savings as well as a bank relationship prefer to hold cash savings rather than savings on a bank account. Fairly low figures are reported for Albania, the Czech Republic, Hungary and Poland; figures for the remaining SEE countries are higher. As these figures are for "banked" respondents (i.e. those that hold a bank account), the high preference for cash is clearly not caused by the unavailability of banking services. Moreover, in some SEE countries, euro cash holdings constitute a sizeable share of total currency in circulation.[13] In these countries, euro cash is used by households as a store of value, in addition to serving as a secondary means of payment (Scheiber and Stix, 2009).

Studying this phenomenon in greater depth, Stix (2012) shows that a lack of confidence in the banking system (in particular a perceived lack of deposit security) is a key factor in explaining households' strong preference for

Chart 20 Preference for cash of banked households with savings in CESEE countries

(percentage of respondents)

1 Bulgaria   6 Albania
2 Czech Republic   7 Bosnia
3 Hungary   8 Croatia
4 Poland   9 FYR Macedonia
5 Romania   10 Serbia
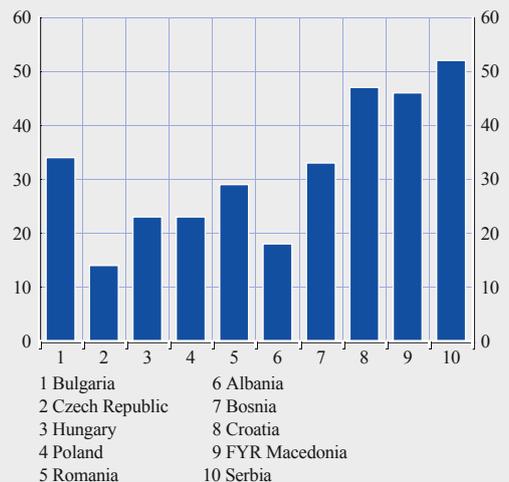
Source: OeNB Euro Survey.
Notes: Respondents were asked whether they agreed or disagreed, on a scale of 1 ("fully agree") to 6 ("fully disagree"), with the statement "I prefer to hold cash rather than a savings account". Figures represent the average percentage share of banked respondents with savings who agreed with the statement (1 and 2) in all survey waves from autumn 2007 to autumn 2012, excluding respondents who answered "Don't know" or gave no answer.

13   Calculations based on OeNB Euro Survey data show that in 2012 the share of euro cash in circulation as a percentage of total currency in circulation amounted to around 20% in Albania and Croatia, 41% in the former Yugoslav Republic of Macedonia and 62% in Serbia.

holding sizeable shares of their assets in cash at home rather than with banks. The recollection of past banking crises aggravates this effect. Furthermore, weak institutional frameworks, with low levels of legal enforceability or tax collection, for example, as well as a low penetration of banks constitute significant factors that explain the strong preference for cash. Finally, Stix (2012) provides empirical evidence that the preference for cash is stronger in euroised economies.

To allow an identification of the trends in households' portfolio choices since 2007, Chart 21 combines aggregate data from monetary statistics and microdata from the OeNB Euro Survey. It shows the portfolio composition of an average household with respect to cash holdings and savings deposits in both domestic and foreign currency. Deposits per capita (for the household sector including non-profit institutions serving households) denominated in both domestic and foreign currency are annual averages of monthly figures from the monetary statistics of national central banks. Domestic currency cash per capita is derived from M0. Euro cash holdings per capita have been calculated on the basis of Euro Survey data.[14] Foreign currency assets have been adjusted for exchange rate fluctuations by holding the exchange rate fixed at the level of 2007. These adjustments make it possible to identify changes in the relative shares of the four asset classes. This overcomes the often-faced limitation that figures for per capita cash in circulation are uninformative in euroised/dollarised economies because data on foreign currency cash in circulation are not available (Feige, 2003). Chart 21 thus presents new information following up on earlier work in this area by Scheiber and Stix (2009).

Looking at the status quo in 2007, households in the Czech Republic, Hungary and Poland predominantly held savings as bank deposits denominated in domestic currency. In Romania and Albania, the share of domestic currency deposits was somewhat higher on average than that of

Chart 21 Relative importance of savings deposits and cash holdings in households' portfolios, 2007 compared with 2012

(percentages)

- domestic currency deposits
- domestic currency cash
- foreign currency deposits
- foreign currency cash
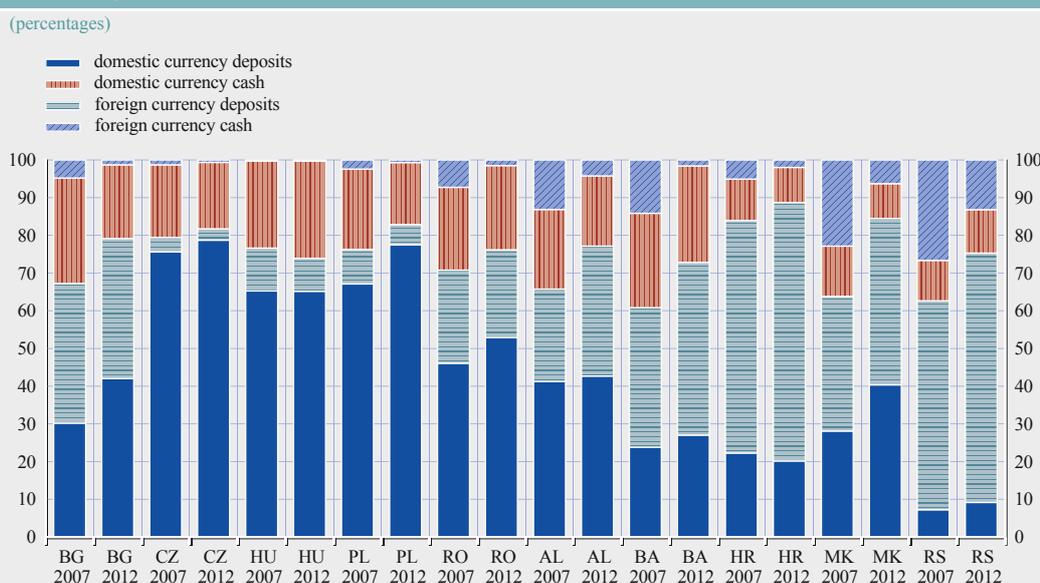
Sources: National central banks and OeNB Euro Survey.

14 For details see Scheiber and Stix (2009).

foreign currency deposits. The opposite was true for Bosnia and Herzegovina, Bulgaria and the former Yugoslav Republic of Macedonia, where foreign currency deposits played a more important role. In Croatia and Serbia, foreign currency deposits, mainly denominated in euro, dominated households' portfolios. Furthermore, euro cash holdings made up over 10% of households' portfolios in Albania and Bosnia and Herzegovina, 23% in the former Yugoslav Republic of Macedonia and as much as 27% in Serbia. The relatively high shares of domestic currency cash holdings in several countries suggest that domestic currency cash also served as a store of value in these countries. In Croatia, the former Yugoslav Republic of Macedonia and Serbia, by contrast, the shares were fairly low, indicating that domestic currency cash holdings were mainly used as a means of payment.

In general, since 2007 the relative importance of savings deposits over cash holdings has increased in all countries, except Hungary. Households tend to hold fewer savings in cash, which is mainly attributable to a relative decline in euro cash holdings. In particular, SEE countries which had recorded a relatively high share of euro cash in total currency in circulation in 2007 (currency substitution) witnessed a substantial decline both in the relative importance of euro cash holdings in households' portfolios and in the absolute value of euro cash holdings.[15] However, savings at banks have increased over the last six years in absolute terms.

From 2007 to 2012, the portfolio structure of Czech and Hungarian households remained broadly unchanged, while that of households in the other countries surveyed shifted considerably. The increase in the relative share of savings deposits in Bulgaria, the Czech Republic, Poland and Romania was exclusively driven by domestic currency deposits. In the former Yugoslav Republic of Macedonia, the growth rate of domestic currency deposits outpaced the growth rate of foreign currency deposits, with the result that the relative importance of domestic currency deposits increased by around 12 percentage points. In Albania, Bosnia and Herzegovina and Serbia, by contrast, foreign currency deposits grew faster than domestic currency deposits, increasing the relative importance of foreign currency deposits by around 10 percentage points, mainly at the expense of euro cash holdings. Finally, the increase in the relative share of savings deposits in Croatia was exclusively caused by a rise in the volume of foreign currency deposits.

In seven out of nine countries, the relative share of foreign currency assets has declined since 2007; in particular, savers in the former Yugoslav Republic of Macedonia and Romania have increasingly turned to their domestic currencies. By contrast, in Albania and Croatia the share of foreign currency assets has increased moderately. Overall, assets denominated in foreign currency, mainly euro, still account for a significant share of SEE households' portfolios, in particular in Croatia and Serbia, where foreign currency assets amount to 71% and 79% respectively. The euro can be expected to continue to play an important role in SEE households' portfolios, not least because of the recent rebound in relative trust in the euro in CESEE countries.

Moreover, the recent drop in euro cash holdings seems to be related not only to households' depletion of euro cash reserves to finance basic expenditure in times of crisis; it also reflects a medium-term trend towards restructuring household portfolios that will strengthen (euro) deposits in relation to (euro) cash. This phenomenon can be interpreted as a slow recovery of confidence in the banking system or the result of easier access to banking services for larger parts of the population in south-eastern Europe.

15 At the onset of the financial and economic crisis in autumn 2008, the erosion of trust in banks and in the safety of deposits prompted withdrawals of savings deposits in some SEE countries. However, this shift towards assets that were considered secure (e.g. euro cash) was moderate and short-lived (Ritzberger-Grünwald and Scheiber, 2012).

REFERENCES

Beck, T. and Brown, M. (2011), "Which Households Use Banks? Evidence from the Transition Economies", *Swiss National Bank Paper*, Zurich, 2011(1).

Beckmann, E. and Scheiber, T. (2012), "The Impact of Memories of High Inflation on Households' Trust in Currencies", *Focus on European Economic Integration*, 2012(4), Vienna, pp. 80–93.

Coupé, T. (2011), "Mattresses versus Banks – The Effect of Trust on Portfolio Composition", *Kyiv School of Economics and Kyiv Economics Institute Discussion Paper*, 40.

European Central Bank (2011), *The international role of the euro*, July 2011.

European Central Bank (2013), *Financial integration in Europe*, April 2013.

European Systemic Risk Board (2011), "Recommendations of the European Systemic Risk of 21 September 2011 on lending in foreign currencies (ESRB/2011/1)", *Office Journal of the European Union*, C342, pp. 1-47.

Feige, E. (2003), "The Dynamics of Currency Substitution, Asset Substitution and De Facto Dollarization and Euroization in Transition Countries", *Comparative Economic Studies*, 45(3), pp. 358–383.

Mudd, S., Pashev, K. and Valev, N. (2010), "The Effect of Loss Experiences in a Banking Crisis on Future Expectations and Behavior", *The B.E. Journal of Macroeconomics*, 10(1), Article 32.

Ritzberger-Grünwald, D. and Scheiber, T. (2012), "Euro Cash in Central, Eastern and Southeastern Europe", *Monetary Policy & the Economy*, 2012(1), Vienna, pp. 41–55.

Royal Bank of Scotland (2013), *RBS Reserve Management* Trends 2*013*, Central Banking Publications, London.

Scheiber, T. and Stix, H. (2009), Euroization in Central, Eastern and Southeastern Europe – New Evidence On Its Extent and Some Evidence on Its Causes", *OeNB Working Paper*, 159, Vienna.

Stix, H. (2011), "Euroization: What Factors Drive its Persistence? Household Data Evidence for Croatia, Slovenia and Slovakia", *Applied Economics*, 43(21), pp. 2689–2704.

Stix, H. (2012), "Why Do People Save in Cash? Distrust, Memories of Banking Crises, Weak Institutions and Dollarization", *OeNB Working Paper*, 178, Vienna.

SPECIAL FEATURES

A GLOBAL SAFE ASSET SHORTAGE, NON-TRADITIONAL RESERVE CURRENCIES AND THE GLOBAL FINANCIAL CRISIS[16]

The share of global reserves invested in non-traditional currencies, such as the Australian or the Canadian dollar, has increased significantly since the onset of the global financial crisis, reaching a 40-year peak of more than 6% at the end of 2012. This marked increase has occurred against the backdrop of growing discussions about a possible shortage of safe assets globally and a perceived worsening in the credit risk of several major advanced economy sovereigns.

This special feature reviews key developments regarding the emergence of non-traditional reserve currencies as well as the determinants of their growing importance since the outbreak of the global financial crisis. It shows that non-traditional reserve currency issuers are characterised by a track record of rapid and resilient growth, price stability and sound public finances. However, their debt security markets are markedly thinner and less liquid than those of major reserve currency issuers, which may act as a drag on the role of non-traditional currencies as reserve assets in the future. In addition, the special feature shows that higher risk aversion in foreign exchange markets and perceptions of a heightened credit risk of some advanced economy sovereigns have been two contributing factors to the increasing share of non-traditional currencies in global reserve portfolios, while traditional factors such as diversification and trade relations with the issuers of non-traditional reserve currencies have been less relevant.

I INTRODUCTION

Foreign exchange reserve holdings of central banks are traditionally invested in liquid financial assets denominated in the major floating currencies, namely the US dollar, the euro and – to a lesser extent – the pound sterling and the yen. About 95% of all global foreign exchange reserve holdings for which the composition is disclosed are invested in these four currencies. The fact that these four major reserve currencies are the only units (along with the Swiss franc) reported by the IMF in its statistics on the currency composition of official foreign exchange reserves (COFER) further illustrates their dominant reserve currency status. In addition, these four currencies are used to calculate the special drawing right.

The outbreak of the European sovereign debt crisis together with the credit downgrades of previously highly-rated sovereigns have triggered growing discussions about a possible shortage of assets perceived as safe and the potential implications for global financial stability (see Caballero, 2010; Garcia, 2011; Gourinchas and Jeanne, 2012). Such implications may stem from the key role of safe assets in global financial markets, including their use as a reliable store of value and reserve instruments, as collateral in repurchase and derivatives markets, as the main vehicle to fulfil prudential requirements and as a benchmark for the pricing of other financial assets (IMF, 2012).

Against this backdrop, there is tentative evidence that central banks have recently started to diversify part of their reserve portfolios into non-traditional currencies, albeit in still modest amounts. These "other" currencies (i.e. other than the US dollar, euro, pound sterling, yen and Swiss franc) accounted for more than 6% of global reserve holdings at the end of 2012, according to the IMF COFER data, standing at a four-decade high. In addition, the Australian dollar and the Canadian dollar are planned to be reported as separate items in these data. Many market participants consider

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16 Prepared by Roland Beck and Arnaud Mehl.

this as an explicit recognition of the accession of these units to full reserve currency status (see e.g. State Street Global Markets, 2012).

Section 1.2 of this special feature reviews selected stylised facts on the emergence of non-traditional reserve currencies. It examines, in Section 1.3, the extent to which non-traditional reserve currencies meet the standard criteria associated with international reserve currency status. Empirical estimates of the determinants of their growing importance in global reserve holdings (based on a unique dataset of 47 countries covering the period 1999-2012) are presented in Section 1.4. Section 1.5 provides concluding remarks.

2 STYLISED FACTS ON THE EMERGENCE OF NON-TRADITIONAL RESERVE CURRENCIES

The share of global foreign exchange reserves invested in non-traditional currencies has increased significantly since the onset of the global economic crisis (see Chart 22a). It almost tripled between mid-2007 and the end of 2012, from about 2.1% of globally disclosed foreign exchange reserve holdings to 6.2%. An equivalent of about USD 372 billion worth of central bank reserves is now known to be held in these currencies, which is above the figure for those held in yen or in pound sterling.[17] The increase in the holdings of emerging market economies – which hold the bulk of global reserves – is especially noteworthy. The share of their investments in non-traditional currencies has more than tripled in just five years, from 1.9% in mid-2007 to 7.6% at the end of 2012.[18] In advanced and emerging economies alike, the increase is noticeably steep after the third quarter of 2009, which

Chart 22 Share of non-traditional currencies in global reserves

(as a percentage of total)

a) Since the introduction of the euro

- all countries
- advanced economies
- EMEs

b) Since the end of Bretton Woods

- non-adjusted
- adjusted
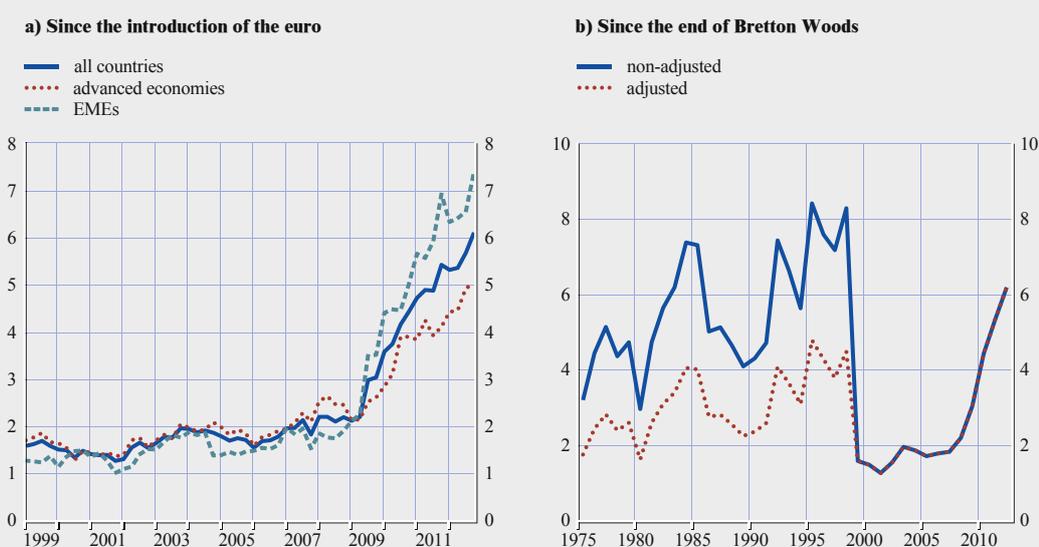
Sources: IMF COFER data and ECB staff calculations.
Note: The adjustment in the share of non-traditional currencies prior to 1994 assumes that 55% of the share of "unspecified currencies" reported by the IMF – which included "other" and "non-identified" currencies – is accounted for by non-traditional reserve currencies.

17 Reserves denominated in pounds sterling and yen accounted for 3% and 4.7% of globally disclosed reserves in the fourth quarter of 2012.
18 Valuation effects, arising from the marked appreciation of some of the non-traditional reserve currencies since the global economic and financial crisis, have played a limited role in these developments.

| Table 3 Survey-based evidence of diversification into non-traditional reserve currencies |

(as a percentage of respondents)	Investing in	Considering investing in now	Would consider investing in 5-10 years	No interest in investing
Advanced economy currencies				
Australian dollar	61	18	14	7
Canadian dollar	53	26	13	8
New Zealand dollar	36	9	28	28
Norwegian krone	37	12	24	27
Emerging market currencies				
Brazilian real	7	7	32	55
Chinese renminbi	14	27	37	22
Indian rupee	4	6	34	55
Russian rouble	7	7	26	61

Source: RBS (2013, p.22).
Note: Overview of survey responses to the following question: "Which view best describes your attitude to the following currencies (please tick one per currency)?"

marked the onset of the intensification of the sovereign debt crisis in advanced economies. From a longer-term perspective, these developments are more remarkable still. According to estimates, at the end of 2012 the share of global reserves held in non-traditional currencies was the highest it had ever been since the end of the Bretton Woods system, i.e. some 40 years ago (see Chart 22b).[19]

Recent evidence from a regular survey of reserve managers (RBS, 2013) confirms that the Australian and the Canadian dollar are among the most popular non-traditional reserve currencies. In this survey, over half of the respondents – with USD 3.8 trillion in assets under management – indicated that they already invest in these currencies (see Table 3). The Chinese renminbi also appealed to some reserve managers, but its lack of convertibility was often cited as an obstacle to investment. Within the next five to ten years, however, 37% of the respondents indicated that they would consider investing in the Chinese renminbi.[20] Fewer reserve managers would consider investing in other emerging market currencies, such as the Brazilian real, Indian rupee or Russian rouble.

3 DETERMINANTS OF INTERNATIONAL RESERVE CURRENCY STATUS

Reserve currencies are typically issued by large economies (in terms of global output and trade) that have deep and liquid financial markets along with a record of price stability.[21] How do non-traditional reserve currencies score by these measures? Non-traditional reserve currency issuers are characterised by a track record of resilient growth, price stability and sound public finances (see Table 4).

The emergence of non-traditional reserve currencies is constrained by the fact that bond markets denominated in these currencies are markedly thinner and less liquid than those of major reserve currency issuers. The outstanding amounts of international bonds and notes denominated in traditional reserve currencies exceed USD 15 trillion (see Table 4). Those denominated in

19 This estimate corrects for the fact that the IMF does not report data on reserves invested in non-traditional (i.e. "other") currencies prior to 1994, but only on reserves invested in "unspecified" currencies (i.e. including both "other" and "unidentified" currencies). It is assumed that 55% of the share of "unspecified currencies" reported by the IMF – which included both "other" and "non-identified" currencies – is accounted for by non-traditional reserve currencies (55% being the average share of these currencies between 1994 and 1999, i.e. when the two series overlap).

20 The possible future role of the Chinese renminbi is discussed in detail in Special Feature B of this report.

21 See e.g. Chinn (2012) and Chinn and Frankel (2008 and 2007) for a survey of the traditional determinants of reserve currency choice.

Table 4 Reserve currency characteristics

Indicator	Unit	Traditional reserve currency issuers	Non-traditional reserve currency issuers
Size of the economy	GDP, USD billions (2011)	37,104	4,132
Size of the trade sector	Exports plus imports, USD billions (2011)	19,859	2,603
Size of bond market	USD billions (2012 Q2)	72,507,331	5,153,637
Size of international bond market	USD billion (2012 Q4)	15,162	2,046
Inflation	CPI, average (January 1999 – September 2012)	1.4	2.1
GDP growth	Average (1999-2011)	1.6	2.5
Sovereign rating	Long-term foreign currency rating by S&P	AA+	AAA
General government gross debt	(percentages of GDP)	114.6	50.3

Sources: IMF, World Bank, BIS, Standard and Poor's and ECB calculations.
Notes: Traditional reserve currency issuers include the United States, the euro area, Japan, Switzerland and the United Kingdom. Non-traditional reserve currency issuers include Australia, Canada, Norway and Sweden. Both aggregates show unweighted averages or sums in the case of size measures. The size of the bond market refers to total debt securities issued by residents in the respective countries, irrespective of the currency of denomination.

non-traditional reserve currencies including the Canadian dollar and the Australian dollar are considerably smaller (at about USD 2 trillion).

Other factors that work against a growing role for non-traditional reserve currencies include network externalities and lock-in effects, which tend to benefit incumbent currencies and lead to significant inertia in the composition of global reserve portfolios.[22] If reserves are mainly held for precautionary or insurance motives – e.g. to pay for imports of goods and services, to service external debt or to provide a cushion against sudden stops in capital flows – central banks have limited interest in diversification. Therefore, even large reserve holdings, to the extent that they are held for precautionary reasons, are not necessarily more diversified.[23] In line with this, the build-up in reserves by emerging economies since the Asian crisis has largely been interpreted as a shift towards a preference for self-insurance against sudden stops in capital flows.[24]

Other factors might have contributed to the growing importance of non-traditional reserve currencies in global foreign exchange reserves. One such factor might be risk and return motives, i.e. the fact that central banks might wish to invest part of their reserves (e.g. the fraction not held for precautionary reasons) in non-traditional currencies to enhance returns and achieve a more diversified reserve portfolio. This is supported by a long-standing body of literature which derives the optimal currency composition of official reserves as the solution to a mean-variance optimisation problem à la Markowitz.[25] In this framework central banks maximise the risk-adjusted return of their reserve holdings in a similar way to private investors, albeit with a smaller risk appetite parameter or additional hedging considerations.[26] Hence central banks could invest in non-traditional currencies if they expect attractive returns (not least since the Australian and the Canadian dollar, for example, have both appreciated markedly in the last decade) or if they consider these currencies helpful in lowering the variance of their portfolio because they might be negatively correlated with traditional reserve assets.

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22 See e.g. Krugman (1980) and (1984), as well as Matsuyama, Kiyotaki and Matsui (1993).
23 See e.g. Beck and Weber (2011).
24 See e.g. Aizenman and Lee (2008), Jeanne and Rancière (2011) or Obstfeld, Shambaugh and Taylor (2010), who find strong empirical support for this hypothesis. Non-linearities might also be at play. The larger the reserve holdings of a country are, the more likely it is that that country might move prices against its reserve positions involuntarily, and the weaker is its incentive to diversify into non-traditional currencies.
25 See Ben-Bassat (1980) for an earlier contribution, as well as Dooley (1983), Dooley et al. (1989), Dellas and Yoo (1991), and Papaioannou et al. (2006).
26 Beck and Rahbari (2011) consider the case where central banks hedge against sudden stops in capital inflows.

Mercantilist motives might be a further factor. The recent accumulation of foreign reserves in non-traditional currencies may arise from concerns about export competitiveness losses vis-à-vis countries issuing these currencies. Such motives also seem to partly explain the large build-up in foreign exchange reserves in emerging economies in recent years (see e.g. Dooley et al., 2003). Given that trade linkages with countries issuing non-traditional reserve currencies have strengthened (with several of them being commodity producers which face growing demand from emerging economies), the incentive to increase portfolio exposure to these currencies might, in turn, increase.[27] The fact that several non-traditional reserve currencies have appreciated strongly over the last decade works prima facie against the hypothesis that competitiveness concerns have become more pressing, however.

A final factor might stem from the tight risk management standards typically applied in central bank reserve management in connection with recent changes in risk appetite in foreign exchange markets and perceptions of increased credit risk among the traditional issuers of reserve currencies. In the recent period non-traditional reserve currency issuers have, on average, received higher sovereign credit ratings than traditional reserve currency issuers (see Table 4). In addition, survey-based evidence suggests that the euro area sovereign debt crisis, along with the downgrading of US government debt by one rating agency, has triggered a "profound debate about the future of reserve management" (RBS, 2012, p. 1). As this survey evidence puts it, challenges regarding the two major reserve currencies have "sharply increased interest in non-traditional currencies" (ibid). It also suggests that such considerations are indeed taken into account by central bank reserve managers.[28]

4   EMPIRICAL ESTIMATES

In order to shed light on the relative importance of alternative potential explanations for the rising importance of non-traditional reserve currencies, Table 5 reports panel estimates of the determinants of the share of non-traditional reserve currencies in a sample of 47 countries – i.e. all countries that publish data on their holdings of reserves denominated in currencies other than SDR currencies – over the period 1999-2012.[29] The estimates include standard determinants of reserve currency choice, namely persistence, stability and liquidity metrics. They also include a range of alternative determinants relating to (i) precautionary, (ii) mercantilist and (iii) diversification motives, as well as to (iv) changes in risk appetite in foreign exchange markets and in perceptions of the credit risk of advanced economy sovereigns.[30] Finally, the estimates control for fixed effects and time effects.

The overall model explains reasonably well the heterogeneity of the share of non-traditional currencies over time and across countries (fitting about 80% of the latter's variance; see also Chart 23). Persistence is found to exert a statistically significant effect, confirming the relatively

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27 Heller and Knight (1978) find that a country's exchange rate regime and its trade patterns are significantly related to the currency composition of its reserves. Dooley et al. (1989) and Eichengreen and Mathieson (2000) find similar evidence for such a trade channel, as well as for a financial channel in the form of the currency composition of external debt or financial flows. Dellas and Yoo (1991) note, however, that the currency composition of reserves should be related to the currency denomination of imports.

28 78% of respondents to the survey also indicated that the euro area sovereign debt crisis had "impacted" their reserve management strategy. Moreover, 8% of respondents stated that the S&P rating downgrade of the United States in August 2011 had put the reserve currency status of the US dollar "at risk".

29 Such data are made publicly available in the framework of the IMF's Data Template on International Reserves and Foreign Currency Liquidity and may include reserves denominated in the Swiss francs, which is considered a traditional reserve currency. However, the IMF data on the currency composition of global foreign exchange reserves suggest that the share of Swiss franc holdings in total reserves is relatively small.

30 In an alternative specification, it is shown that the VIX as an indicator of risk aversion related to global stock market volatility is not statistically significant, in contrast to a more narrow measure of risk appetite in foreign exchange markets.

Table 5 Panel estimates of determinants of the share of non-traditional reserve currencies

(47 countries; 1999-2012)

	Standard	Precautionary		Mercantilist		Diversification		Perceived	safety
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistence	0.838***	0.838***	0.751***	0.838***	0.864***	0.510***	0.837***	0.838***	0.752***
	(0.063)	(0.063)	(0.120)	(0.063)	(0.074)	(0.176)	(0.064)	(0.063)	(0.062)
Stability	-0.096	-0.095	0.112	-0.202	-0.467	-0.487	-0.200	0.206	-0.249
	(0.607)	(0.608)	(0.289)	(0.575)	(0.457)	(0.321)	(0.426)	(0.575)	(0.581)
Liquidity	0.770	0.760	1.182*	0.717	0.954*		1.099**	0.714	
	(0.984)	(0.999)	(0.631)	(0.947)	(0.495)		(0.513)	(1.038)	
Bilateral imports		0.021							
		(0.134)							
External debt			-0.016						
			(0.038)						
Export growth				0.006					
				(0.016)					
Overvaluation					0.018				
					(0.025)				
Excess reserves						0.037			
						(0.071)			
Hedging							-0.090		
							(1.339)		
Risk appetite								-0.023*	
								(0.013)	
Credit risk									0.019*
									(0.012)
Constant	-1.339	-1.365	-3.671	-0.880	-1.363	2.064**	-2.698	-1.164	2.310*
	(3.247)	(3.224)	(2.387)	(3.708)	(2.119)	(0.845)	(2.320)	(3.972)	(1.220)
Observations	461	461	246	461	392	172	461	461	379
R^2 (overall)	0.823	0.826	0.728	0.826	0.803	0.645	0.823	0.826	0.809

Sources: Beck and Mehl (2013).
Notes: Estimates obtained with a fixed effect estimator and controlling for time effects. The standard errors reported in brackets are robust to heteroskedasticity and clustered heterogeneity; *** $p<0.01$, ** $p<0.05$, * $p\le0.11$.
Persistence: lag of the share of non-traditional reserve currencies. Stability: domestic inflation in Australia and Canada. Liquidity: share of Canada and Australia in the global stock of debt securities. Bilateral imports: imports from Australia and Canada to total imports. External debt and export growth: external debt-to-GDP ratio and nominal export growth in USD. Overvaluation: real effective exchange rate deviation from a time trend. Excess reserves: residual of a regression of reserves-to-GDP on a range of precautionary and mercantilist determinants of reserve accumulation. Hedging: average correlation coefficient between returns in AUD-USD and CAD-USD, on the one hand, and EUR-USD, on the other hand. Risk appetite: carry-to-risk ratios (long AUD-USD/CAD-USD short JPY/USD) for the three-month maturity. Credit risk: differential of the CDS sovereign spreads of major reserve currency issuers (United States, euro area, Japan and United Kingdom) relative to those of Australia and Canada. See Beck and Mehl (2013) for more details on the estimation and the results, as well as for robustness checks and sensitivity tests.

prudent portfolio management style of central bank reserve managers. Stability and liquidity are both found to have effects in line with theoretical priors (higher inflation reduces the share of non-traditional currencies; greater liquidity increases it), albeit statistically insignificant. Alternative determinants relating to precautionary, mercantilist and diversification motives are not found to exert statistically significant effects either. This contrasts with changes in risk appetite in foreign exchange markets and in perceptions of credit risk among the issuers of traditional reserve currencies, which are both found to have statistically significant and economically meaningful effects.[31] The aforementioned results are robust to the inclusion of additional control variables such as the VIX index, an EMU membership dummy variable, terms of trade, imports relative to

31 As a metric of the former, the carry-to-risk ratios (based on a long Australian dollar/Canadian dollar-short yen position) and, as a metric of the latter, the differential between the sovereign CDS spreads of traditional reserve currency issuers (average of the United States, the euro area, Japan, the United Kingdom and Switzerland) relative to that of the (average) Australian and Canadian sovereigns are used.

Chart 23 Model fit

x-axis: model-based estimates
y-axis: actual shares

● non-SDR currencies (% of FX reserves)
···· OLS line
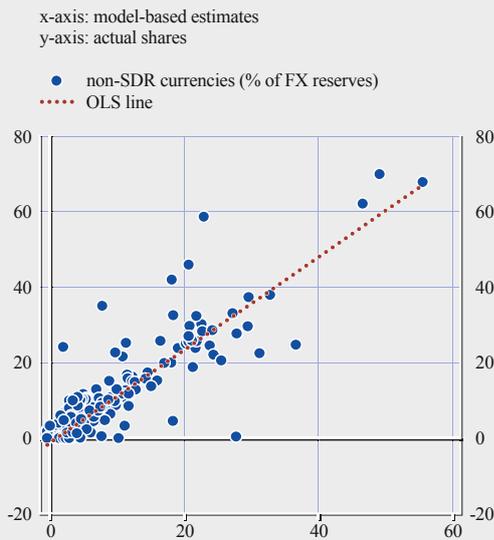
Sources: Beck and Mehl (2013).
Note: The chart plots the average share of non-standard currencies in foreign exchange reserve holdings across all country-year observations for a sample of 47 countries between 1999 and 2012 against the fitted share obtained with the benchmark model estimates.

Chart 24 Estimated impact on the share of non-standard reserve currencies

(percentage points)

y-axis: increase in non-SDR currencies' share (p.p.)

■ short term
▥ long term
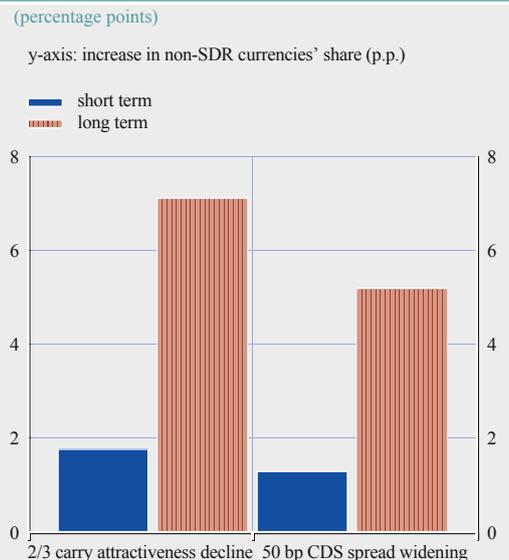
Sources: Beck and Mehl (2013).
Note: The chart shows the estimated short-term and long-term impact (in percentage points) on the share of non-standard currencies in the foreign exchange reserves of the sample's 47 countries of changes in risk appetite in foreign exchange markets and in perceptions of credit risk among issuers of traditional reserve currencies under two scenarios: (i) a two-thirds decline in carry trade attractiveness and (ii) a 50 basis point widening in the differential of the CDS sovereign spreads of major reserve currency issuers relative to those of Australia and Canada.

GDP and exchange rate flexibility. With respect to potential endogeneity, system GMM estimates suggest that relations between the variables may not necessarily be causal, however.[32]

Chart 24 gives more indications of the magnitudes involved. It shows the estimated short-term and long-term impacts (in percentage points) on the share of non-standard reserve currencies of (i) two-thirds decline in risk appetite in foreign exchange markets and (ii) a 50 basis point widening in the sovereign CDS spreads of major reserve currency issuers relative to those of Australia and Canada (two scenarios fairly close to actual developments during the crisis). The estimated effects are large.[33] Higher risk aversion in foreign exchange markets is associated with an almost 2 percentage point increase in the share of non-standard currencies in the short term (and 7 percentage points in the long term). Perceptions of a heightened credit risk for major reserve currency issuers are associated with about a 1 percentage point increase in the share of non-standard currencies in the short term (and 5 percentage points in the long term). This is broadly comparable with the actual increase in the share of non-traditional reserve currencies, i.e. about 5 percentage points in our sample between 2007 and 2012, hence underscoring that higher risk aversion in foreign exchange markets and perceptions of a

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[32] Owing to instrument proliferation arising from the relatively small number of cross-sectional units relative to the time dimension of the panel dataset, these system GMM estimates should be interpreted with caution, however.

[33] The effects shown in Chart 28 stem from separate ceteris paribus exercises. They are therefore not additive and cannot be considered to be contributions if the explanatory variables are correlated.

heightened credit risk for some advanced economy sovereigns have been two contributing factors to the increasing share of non-traditional currencies in global reserve portfolios.

5 CONCLUDING REMARKS

Within the investment universe of globally safe assets, which has become smaller owing to rating downgrades of major advanced economies, the share of non-traditional reserve currencies in global foreign exchange reserves (among countries which disclose such information) has increased markedly since 2009, albeit from a low level. The results presented in this special feature tentatively suggest that this increase cannot be explained by traditional factors which used to largely determine the portfolio allocation of central bank reserves. In particular, precautionary reserve holdings, for example due to trade relations with the issuers of non-traditional reserve currencies, do not appear to be associated with the increase in non-traditional reserve holdings. Reserve portfolio diversification – which was put forward as one way to reduce the cost of large reserve holdings prior to the crisis – does not explain the increase in non-traditional reserve holdings either.

Two other factors which appear to be more novel drivers of reserve currency choice appear to largely explain the increase in non-traditional reserve holdings: perceptions of increased credit risk among the traditional issuers of reserve currencies and risk aversion in foreign exchange markets, both of which have intensified since 2009.

Overall, the use of new reserve currencies such as the Australian and the Canadian dollar reflects temporary and structural factors alike. The lack of large, deep and liquid financial markets limits their potential to become truly major reserve currencies, however. In addition, the growing use of such currencies might decelerate to the extent that market conditions normalise and all major advanced economy sovereigns introduce and implement ambitious and credible medium-term fiscal consolidation plans.

REFERENCES

Beck, R. and Mehl, A. (2013), "Global safe asset shortage, non-traditional reserve currencies and the global financial crisis", ECB mimeo, Frankfurt am Main.

Beck, R. and Rahbari, E. (2011) "Optimal Reserve Composition in the Presence of Sudden Stops", *Journal of International Money and Finance* 30 (2011) 1107-1127.

Beck, R. and S. Weber (2011), "Should larger reserve holdings be more diversified?" *International Finance*, 14(3), pp. 415–444.

Ben-Bassat, A. (1980), "The optimal composition of foreign exchange reserves", *Journal of International Economics*, 10, pp. 285–295.

Caballero, R. (2010), "Understanding the global turmoil: It's the general equilibrium, stupid", Vox, 21 May 2010.

Chinn, M. (2012),"A note on reserve currencies with special reference to the G-20 Countries", prepared for the International Growth Centre, India Central Programme, 24 April 2012.

Chinn, M. and J. Frankel (2008), "Why the dollar will rival the euro", *International Finance*, 11(1), pp. 49-73.

Chinn, M. and J. Frankel (2007), "Will the euro eventually surpass the dollar as leading international reserve currency?" in R. Clarida (ed.), G7 *Current Account Imbalances: Sustainability and Adjustment* (Chicago: University of Chicago Press), pp. 285-322.

Dellas, H. and C.B. Yoo (1991), "Reserve currency preferences of central banks: the case of Korea", *Journal of International Money and Finance*, 10, pp. 406–419.

Dooley, M. (1983), "An analysis of the management of the currency composition of reserve assets and external liabilities of developing countries" in Aliber, R. (ed.), *The Reconstruction of International Monetary Arrangements*, Macmillan, Basingstoke.

Dooley, M., S. Lizondo and D. Mathieson (1989), "The currency composition of foreign exchange reserves", *International Monetary Fund Staff Papers*, 36(2), pp. 385–434.

Dooley, M., D. Folkerts-Landau and P. Garber (2003), "An essay on the revived Bretton Woods system", *NBER Working paper*, No 9971.

Eichengreen, B. and D. Mathieson (2000), "The currency composition of foreign exchange reserves: retrospect and prospect", *IMF Working Paper*, No 131, Washington DC.

Garcia, C. (2011), "The decline of safe assets", *Financial Times*, Alphaville, 5 December 2011.

Gourinchas, P. O. and O. Jeanne (2012), "Global safe assets", paper prepared for the XIth BIS Annual Conference held in Lucerne, 20-21 June 2012, mimeo, UC Berkeley and Johns Hopkins University.

Heller, H. and M. Knight (1978), "Reserve currency preferences of central banks", Essays in *International Finance*, No 131, Princeton.

International Monetary Fund (2012), "Safe assets: Financial system cornerstone?", Global Financial Stability Report, chapter 3, April, Washington, DC.

Jeanne, O. (2007), "International reserves in emerging market countries: too much of a good thing?", *Brookings Papers in Economic Activity, Economic Studies Program*, The Brookings Institution, pp. 1-80.

Jeanne, O. and R. Ranciere (2011), "The optimal level of international reserves for emerging market countries: a new formula and some applications", *Economic Journal*, 121(555), pp. 905-930.

Krugman, P. (1980), "Vehicle currencies and the structure of international exchange", *Journal of Money, Credit and Banking*, 12(3), pp.513-526.

Krugman, P. (1984), "The international role of the dollar: theory and prospects", in *Exchange Rate Theory and Practice*, edited by J. Bilson and R. Marston (Chicago: University of Chicago Press).

Matsuyama, K., N. Kiyotaki and A. Matsui (1993), "Toward a theory of international currency", *Review of Economic Studies*, 60, pp. 283-307.

Lane, P. and J. Shambaugh (2010), "Financial exchange rates and international currency exposures", *American Economic Review*, 100(1), pp. 518-40.

Lim, E.-G. (2006), "The euro's challenge to the dollar: different views from economists and evidence from COFER and other data", *IMF Working Paper*, No 06/153, Washington DC.

Lim, E.-G. (2007), "Do reserve portfolios respond to exchange rate changes using a portfolio rebalancing strategy? An Econometric Study Using COFER Data", *IMF Working Paper*, No 07/293.

Obstfeld, M., J. Shambaugh and A. Taylor (2010), "Financial stability, the trilemma, and international reserves", *American Economic Journal: Macroeconomics*, 2 (2), pp. 57–94.

Papaioannou, E., R., Portes and G. Siourounis (2006), "Optimal currency shares in international reserves: the impact of the euro and the prospects for the dollar", *Journal of the Japanese and International Economies*, 20(4), pp. 508–547.

RBS (2012), *RBS Reserve Management Trends* 2011, Central Banking Publications.

RBS (2013), *RBS Reserve Management Trends* 2012, Central Banking Publications.

State Street Global Markets (2012), "Small dollars make it into the big league", *Global Markets Today*, 20 November 2012.

Roger, S. (1993), "The management of foreign exchange reserves", *BIS Economic Papers*, No 38, Basel.

Wong, A. (2007), "Measurement and inference in international reserve diversification", *Peterson Institute for International Economics Working Paper*, No 07-6, Washington DC.

In view of China's rapid economic development and the recent measures taken by the Chinese authorities to enable the international use of the Chinese renminbi (RMB), some observers have argued that the latter could become an important international currency over the medium term, alongside the US dollar and the euro, which could possibly lead to the emergence of a tri-polar international monetary system. This special feature takes stock of recent developments in the international use of the renminbi, discussing drivers and challenges, and updates the analysis presented in earlier releases of this review. Overall, the special feature finds that China's growing weight in global output and trade, together with policy measures taken by the Chinese authorities, have led to an increasing use of the Chinese currency in international trade and, to a lesser extent, international financial markets. However, the lack of sufficiently deep and liquid domestic financial markets, financial restrictions and remaining capital controls, as well as constraints regarding exchange rate flexibility, hamper the development of the renminbi as an international currency, and in particular as a reserve currency. However, it is conceivable that the renminbi could play an increasingly prominent international role over the medium term to the extent that the Chinese authorities continue to gradually introduce domestic financial sector reforms, liberalise the capital account and strengthen exchange rate flexibility.

I   INTRODUCTION

In view of China's rapid economic development and the recent measures taken by the Chinese authorities to remove obstacles to the international use of the renminbi, some observers have argued that the latter could become a prominent international currency over the medium term, alongside the US dollar and the euro, which could possibly lead to the emergence of a tri-polar international monetary system.[35] Some observers have argued that the renminbi could play a prominent international role within the next 15 to 20 years (see e.g. Eichengreen, 2012, for a review of the debate). The Chinese authorities have already taken several steps to allow the international use of the renminbi as a trade invoicing and settlement currency, in particular. At the same time, the renminbi's international role has also developed along several other dimensions, including as an international investment and financing currency. This special feature takes stock of recent developments in the international role of the renminbi (Section 2.2), reviews economic and policy-driven determinants of this role (Section 2.3) and assesses the challenges ahead if the renminbi is to play a still more prominent role in the international monetary system (Section 2.4).

2   RECENT DEVELOPMENTS IN THE INTERNATIONAL USE OF THE CHINESE RENMINBI

The gradual internationalisation of the renminbi is particularly visible in its growing use as an invoicing and settlement currency for China's international trade transactions, in line with China's significant integration into global trade. While the US dollar remains the dominant settlement currency of China's international trade transactions to date, the use of the renminbi has grown significantly in just a few years, inspired by the desire to reduce the foreign exchange exposure of Chinese companies. Between 2010 and the end of 2012, the share of China's trade in goods settled in renminbi increased from essentially nought to almost 10% (see Chart 25).

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34 Prepared by Roland Beck, Georgios Georgiadis and Arnaud Mehl with comments by Michel Soudan.
35 See ECB (2012) for a review of this debate.

Chart 25 Share of RMB-denominated settlements in China's trade in goods

(as a percentage)
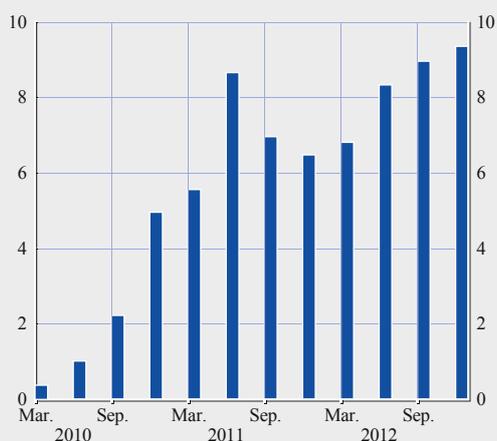
Sources: CEIC and People's Bank of China.

Chart 26 RMB-denominated deposits in Hong Kong

(RMB billions; as a percentage of total deposits)

■ share of RMB deposits in total deposits in Hong Kong (left-hand scale)
···· RMB deposits in Hong Kong (right-hand scale)
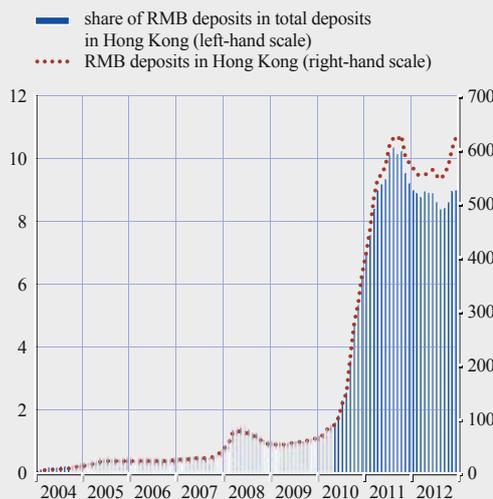
Sources: CEIC and Hong Kong Monetary Authority.

As non-Chinese resident companies started to accumulate renminbi payments in exchange for exports to China, the renminbi's growing use as an international settlement currency also gave impetus to its use as an international deposit currency. Renminbi-denominated deposits in Hong Kong have grown steeply since 2004, reaching roughly USD 100 billion in 2011 (see Chart 26).[36]

In turn, the international issuance of renminbi-denominated bonds has risen strongly since 2007 (see Chart 27). Although the bulk of issuance of such bonds is still accounted for by firms originating from China or Hong Kong (see Chart 28)[37], several non-Chinese multinational companies have also issued so-called "dim sum" bonds in Hong Kong, thereby offering an investment opportunity for non-resident renminbi deposit holders. Furthermore, non-financial firms from mainland China have launched initial public offerings in Hong Kong. In addition, international development organisations have issued renminbi-denominated bonds in mainland China (also known as "panda" bonds), and London, Singapore and Taipei have taken steps to develop their own renminbi financial centres.

The international use of the renminbi as a reserve currency is significantly more limited thus far, mainly reflecting the fact that it is still largely inconvertible for investment purposes. Only a few central banks have started to add renminbi-denominated assets to their reserve holdings, as part of bilateral agreements with China, although the amounts – which remain confidential – are believed to be marginal to date.[38]

36 Renminbi deposits in Hong Kong have stabilised recently owing to a greater use of the renminbi to pay for imports from China, thereby creating more, although not fully, balanced payment flows. The emergence of expectations of a depreciation of the renminbi vis-à-vis the US dollar during 2012 also played a role.

37 BIS data based on the residence of issuer reveal similar trends, although the assessment of issuer distribution is complicated by the fact that many Chinese firms issue renminbi-denominated bonds via subsidiaries registered in small financial offshore centres, such as the Cayman Islands.

38 According to IMF guidelines, only assets denominated in convertible currencies count as foreign exchange reserves. The central banks of a few countries are reported to have added renminbi assets to their foreign exchange reserve portfolios, while others have said that they would consider adding renminbi-denominated reserves to their reserve portfolios. In a recent survey of reserve managers, 37% of the respondents indicated that they would consider investing in the renminbi within the next five to ten years (RBS, 2013).

Chart 27 Amount of international RMB-denominated bonds and notes outstanding

(USD billions; as a percentage)

- ■ stock of RMB-denominated international bonds and notes (left-hand scale)
- ••••• share of RMB-denominated bonds and notes in international debt security markets (right-hand scale)
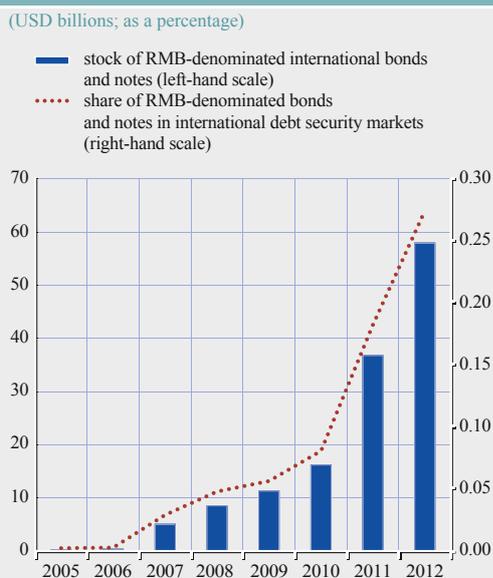
Source: BIS.

Chart 28 Dim sum bond issuance

(USD billions)

- ■ total dim sum bond issuance
- ▥ non-mainland CHN/non-HKG issuers
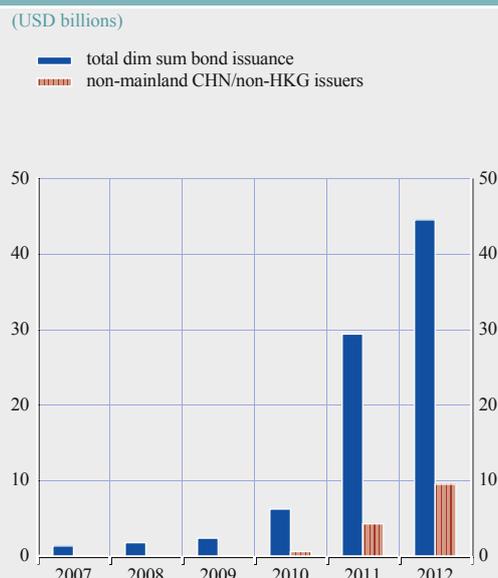
Source: Bloomberg.
Note: Bloomberg's "country risk" indicator is used to determine the economic residence of the issuer.

Despite its rapid development, the use of the renminbi in trade and financial transactions in Asia remains limited compared with the US dollar, which is still the main international currency in the region. For example, 80% of the trade settled in renminbi is between mainland China and Hong Kong, partly reflecting processing trade. Settlement of exports to China denominated in renminbi is also larger than renminbi-denominated settlement of imports from China, which some observers consider to be evidence that the use of China's currency as a settlement unit might be driven by expectations of a future appreciation of the renminbi (see Prasad and Ye, 2012, and Yu, 2012). There is thus still some way to go until the renminbi fulfils the regional role of an international currency in Asia.

3   DETERMINANTS OF THE GROWING INTERNATIONAL USE OF THE RENMINBI

International currency status can largely be explained by persistence, economic size, the stability of the value of the currency (measured against either a basket of currencies or a basket of goods), and the depth and liquidity of financial markets.[39]

With respect to economic size, the growing international use of the renminbi results first and foremost from the increasing importance of China in the global economy. In 2010 China overtook Japan as the second largest economy behind the United States in PPP-adjusted terms. Projections suggest that China could overtake the United States as the largest economy by 2016 (see IMF

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39 For a policy-oriented review of international currency status, see BIS (2011). Academic reviews in this context include Chinn (2012) and Chinn and Frankel (2007, 2008).

Table 6 Overview of bilateral swap agreements signed by the People's Bank of China

Partner country	Date	Observation	Amount	
			RMB billions	USD billions
Korea	12/2008	Renewed (10/2011)	360	57
Hong Kong	01/2009	Renewed (11/2011)	400	63
Malaysia	02/2009	Renewed (02/2012)	180	29
Belarus	03/2009		20	3
Indonesia	03/2009		100	15
Argentina	04/2009		70	10
Iceland	06/2010		3.5	1
Singapore	07/2010	Renewed (03/2013)	300	22
New Zealand	04/2011		25	4
Uzbekistan	04/2011		0.7	0
Mongolia	04/2011	Expanded (03/2012)	10	2
Kazakhstan	06/2011		7	1
Thailand	12/2011		70	11
Pakistan	12/2011		10	2
United Arab Emirates	01/2012		35	6
Turkey	02/2012		10	2
Australia	03/2012		200	31
Ukraine	06/2012		15	2
Brazil	03/2013		190	30
United Kingdom		Under discussion (02/2013)		
Total			**2,006.2**	**289**

Source: People's Bank of China.

WEO, 2012).[40] China also accounts for 9% of global trade, closely behind the United States, which accounts for 11%. In terms of price stability, the level of inflation in China and its volatility have been relatively moderate in recent years and this is expected to continue.[41] The development of deep, liquid and broad domestic financial markets, on the other hand, remains a key challenge for the internationalisation of the renminbi (see below).[42]

A particular feature of the growing international use of the renminbi – which is typically not taken directly into account by empirical models of international currency use – is the key role played by supporting policies aimed at liberalising China's current and capital account as well as fostering the international use of the renminbi. For example, in 2009 a pilot project for settling trade in renminbi was initiated. It was initially limited to a small number of Chinese cities, firms and trading partners,

Table 7 Liquidity of Chinese government bond markets

(percentages)

	Stock	Turnover	Ratio
	RMB billions		(percentages)
2000	1,574	13	1
2002	2,716	95	3
2004	4,717	805	17
2006	8,271	2,149	26
2008	13,187	10,373	79
2010	15,906	15,312	96
2012	17,200	12,950	75

Sources: AsianBondsOnline and ECB staff calculations.
Notes: Turnover is defined as the value of bonds traded on the secondary market. The turnover ratio is defined as total turnover divided by the amount of bonds and notes outstanding in the corresponding year.

40 Similarly, OECD projections suggest that China will overtake the US economy in 2018. There are ongoing discussions about the plausibility of the assumptions underlying these projections (see Subramanian, 2011; Eichengreen, 2013).

41 The People's Bank of China does not have a precise medium-term inflation target, but gears its monetary policy towards balancing stable but relatively fast growth and supporting China's reform process while maintaining a stable price level and managing inflation expectations.

42 Financial development and liquidity are also among the criteria considered for currencies to be included in the SDR basket (see e.g. IMF, 2011a).

but was extended in 2012 so that (almost) all of China's trade can now be settled in renminbi. The Chinese authorities have also developed a network of bilateral swap agreements between the People's Bank of China and foreign central banks (see Table 6). These facilities are mainly intended to provide renminbi liquidity for situations in which foreign importers are temporarily unable to obtain renminbi for the settlement of trade transactions with Chinese exporters (see Ito, 2011). So far only marginal amounts have been drawn from these swap lines (Prasad and Ye, 2012).[43]

The Chinese authorities have also adopted measures to support the use of the renminbi in financial markets in mainland China and Hong Kong, as well as to liberalise China's capital account. Policy initiatives undertaken by China's authorities have focused on (i) promoting Hong Kong as an offshore renminbi financial centre (by using its position as a financial hub and as an entry point to mainland China's financial markets; see Vallée, 2012); (ii) increasingly allowing selected Hong Kong-based subsidiaries of Chinese investment firms to invest limited amounts of renminbi raised offshore in specific assets in mainland China; (iii) promoting the use of the renminbi as a reserve currency for foreign central banks. To that end, the authorities have taken a host of measures, ranging from streamlining application procedures to allowing issuance of renminbi-denominated bonds by foreign institutions in mainland China (see Table 8). There have also been important bilateral policy initiatives, such as the agreement announced by China and Japan in December 2011 to liberalise bilateral financial flows.[44] In particular, the agreement involves the development of direct exchange markets in yen and renminbi, allowing Japanese firms to undertake renminbi-denominated foreign direct investment vis-à-vis subsidiaries in mainland China and to issue renminbi-denominated bonds in Tokyo. The agreement also allows the Japanese authorities to invest in Chinese government bonds.

Table 8 Overview of policy measures aimed at fostering the use of the renminbi in international trade and financial transactions

Date	Content
January 2003	Qualified Foreign Institutional Investor (QFII) scheme for foreign investment in listed mainland China bonds and equities
February 2004	Hong Kong banks permitted to offer RMB personal accounts to residents
February 2005	Eligible international development organisations allowed to issue RMB-denominated ("panda") bonds in mainland China
April 2006	Qualified Domestic Institutional Investor (QDII) programme allowing domestic institutions to convert RMB into foreign currency and invest in overseas equities and bonds
January 2007	Mainland China financial institutions allowed to issue RMB-denominated ("dim-sum") bonds in Hong Kong
February 2010	Foreign firms authorised to issue RMB-denominated bonds in Hong Kong
August 2010	Foreign central banks, offshore RMB clearing banks and participating banks allowed to invest RMB raised offshore in mainland China interbank bond market
January 2011	Mainland China firms allowed to apply to take RMB offshore for overseas direct investment in foreign firms
October 2011	Rules formalised to allow approved foreigners to invest RMB raised offshore directly in mainland China firms, including through the provision of RMB cross-border loans
December 2011	RMB Qualified Foreign Institutional Investor (RQGFII) scheme allowing RMB raised offshore to be invested in mainland China bonds and equities
May 2012	Rules formalised for onshore non-financial corporations to issue RMB-denominated bonds offshore
March 2013	RQFII quota applying to offshore RMB that can be re-invested in mainland China financial markets increased; group of eligible investors as well as range of assets broadened significantly

Note: See also Cockerell and Shoory (2012) and Prasad and Ye (2012).

43 In December 2012 the People's Bank of China and the Bank of Korea agreed to use their swap line more actively as a trade financing facility.
44 The agreement also involved measures to facilitate trade settlement in renminbi and yen.

In 2011 the People's Bank of China published a three-stage roadmap which proposes to liberalise remaining unconvertible items according to the general sequencing principle of "inflow first and outflow later; long-term first and short-term later; direct investment first and portfolio later; institutional investors first and individuals later". More recently, in May 2013 the Chinese State Council announced that a detailed plan on renminbi capital account liberalisation, including further measures on currency and interest rate reform, would be put forward in due course. The plan is expected to stipulate mechanisms through which capital could move more freely in and out of China.

Some observers have described the gradual, integrated approach to financial market development and capital account liberalisation pursued by the Chinese authorities as "crossing the river by feeling the stones" (see Yu, 2012; Prasad and Ye, 2012). It has also been argued that the Chinese authorities have been pursuing capital account liberalisation gradually so as not to expose shallow domestic financial markets to volatile capital inflows. At the same time, they have liberalised selected financial account transactions to allow foreign participation in domestic financial markets and import technology and know-how. This careful sequencing of the liberalisation of international transactions and domestic financial reforms is broadly in line with recent recommendations by the IMF and empirical studies, which find that the benefits of full capital account openness can only be reaped if a threshold level of domestic financial and institutional development has been reached.[45]

4 CHALLENGES RELATED TO THE INTERNATIONALISATION OF THE RENMINBI

Challenges remain as regards further developments in the internationalisation of the renminbi.

First, China still lacks to a large extent sufficiently deep, liquid and broad domestic financial markets, which are instrumental in fostering a currency's international role, as suggested, for example, by the experience of the period between the First and the Second World War.[46] Financial market regulations and controls, such as deposit rate ceilings, lending rate floors and directed credit, remain pervasive in China and restrict competition as well as the diversity of financial products (see IMF, 2011b; Ito, 2011; Eichengreen, 2012). The liquidity of international financial assets denominated in renminbi remains low. For instance, daily turnover in renminbi foreign exchange markets accounts for less than 1% of total transactions, according to the latest Triennial Central Bank Survey, conducted by the BIS in 2010. Markets for renminbi-denominated international debt securities remain shallow compared with those in US dollars or euro, accounting for less than 0.3% of total international debt securities. The liquidity of the Chinese government bond market is particularly low (see Table 7). The turnover ratio of Chinese government bonds is in the order of 100%, i.e. 14 times lower than that of US government bonds; the turnover of government bonds in India is about twice that in China, although the absolute size of India's market is smaller (see Prasad and Ye, 2012).

Second, China's financial markets remain largely closed. Foreign investment in mainland China remains subject to quotas and tight regulations to a large extent (Vallée, 2012). It has been argued that international demand for renminbi-denominated financial assets is likely to remain constrained as long as investors do not have greater freedom regarding investment types and amounts undertaken in China (Ito, 2011). The limited convertibility of China's capital account hampers its international financial integration, especially by comparison with other major international currency issuers,

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45 See IMF (2012) and, for example, Kose et al. (2009) and Dell'Ariccia et al. (2008).
46 Financial development appears to have been a decisive factor in helping the US dollar overtake the pound sterling as the leading international currency (see e.g. Eichengreen, 2013).

in terms of both de jure and de facto integration measures (see Chart 29).

Considering the use of the renminbi specifically as a trade settlement currency, it is not certain that China will manage to gradually switch from local or vehicle currency pricing to producer currency pricing in export settlement.[47] This will depend, among other factors, on the strength of network effects (which favour the use of the US dollar or the euro in many of China's export markets), on the degree of competition in the export markets concerned, and hence on the market and bargaining power of China's exporters.[48] Japan's experience in the 1980s suggests that supportive policies can be temporarily successful, as indicated by the rising use of the yen as an invoicing currency in Japan's international trade transactions (see ECB, 2012). Nevertheless, Japan's experience also suggests that international currency status has to be continuously underpinned by strong economic

Chart 29 Measures of international financial integration of selected economies

(percentages; percentage of GDP)

- gross external liabilities (left-hand scale)
- gross external assets (left-hand scale)
- ▲ Chinn-Ito index (right-hand scale)

Sources: Chinn and Ito (2003) and IMF.

and financial fundamentals, given the significant decline in the yen's share in global foreign exchange reserves following the bursting of an asset price bubble in the 1990s and the subsequent period of subdued economic growth.

A final question is whether China will manage to maintain rapid and sustainable growth in the medium to longer term. Recent empirical studies have pointed to the existence of a "middle-income trap", i.e. a slowdown in fast-growing emerging market economies once they reach middle-income status (see Eichengreen et al. 2012, 2013; World Bank, 2012). Sustaining rapid growth in China will require further structural reforms to ensure a smooth transition to a growth model based more on domestic consumption and the development of services industries than on investment, exports and manufacturing. In turn, this is likely to require developing China's domestic financial system, liberalising the capital account and increasing exchange rate flexibility.

5 IMPLICATIONS OF THE RISE OF THE RENMINBI FOR THE INTERNATIONAL MONETARY SYSTEM

The rise of the renminbi to international currency status has stimulated discussions about the implications for the future of the international monetary system (see, for example, Angeloni et al., 2011, for a review of the debate). On the one hand, it has been argued that a move towards a more multipolar international monetary system could increase its stability. According to this line of argument, the existence of alternative reserve currencies would impose discipline on the national economic policies of reserve currency issuers, alleviating the so-called "Triffin dilemma". In particular, the existence of alternative reserve currencies in a multipolar world would enable investors to rebalance their international portfolios more easily should macroeconomic policies
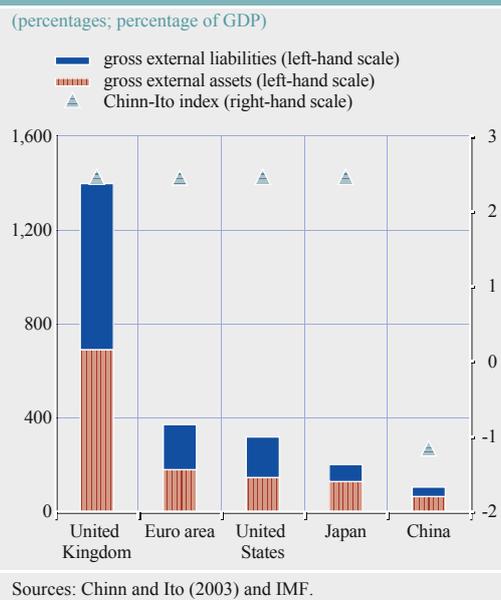
47 For a review of the determinants of currency choice in international trade invoicing, see e.g. Goldberg and Tille (2011).
48 According to Cui et al. (2009), only around 20-30% of China's exports could eventually be settled in renminbi.

pursued by one reserve currency-issuing economy become unsustainable (see Farhi et al., 2011).[49] Moreover, it has been argued that the move to a multipolar system involving the renminbi would mitigate exchange rate volatility by allowing investors to respond to shocks by adjusting their renminbi as well as their US dollar or euro positions (see Bénassy-Quéré and Forouheshfar, 2013). It has also been argued that, to the extent that the move towards a multipolar international monetary system would involve an increase in the flexibility of the renminbi exchange rate, the accumulation of reserves by China would be reduced, contributing to a global rebalancing and a more efficient allocation of capital (see Bénassy-Quéré and Pisany-Ferry, 2011).[50]

On the other hand, it has been postulated that a move towards a multipolar international monetary system could make the international monetary system less stable. This could be the case insofar as a more frequent rebalancing of global investment portfolios in response to changes in perceptions about the sustainability of economic policies in reserve-issuing countries would amplify exchange rate volatility (see United Nations, 2009). In the presence of alternative reserve currencies, rebalancing and precipitous capital flows could be triggered even by minor changes in fundamentals due to asymmetric information and herding behaviour among investors (see Farhi et al., 2011).

It is therefore essential that any transition towards a multipolar international monetary system occurs in an orderly manner so that disruptions and excessive volatility can be avoided (see Bini Smaghi, 2011, and Constâncio, 2011).

6   CONCLUSION

China's increasing weight in global output and trade as well as efforts by the Chinese authorities aimed at facilitating the international use of the renminbi have led to an increasing use of the Chinese currency in international trade and, to a lesser extent, international bond markets. At the same time, the lack of deep and liquid domestic financial markets, tight financial market and capital account restrictions, and limited exchange rate flexibility continue to hamper the development of the international use of the renminbi in several respects, most notably as a reserve currency. A further challenge relates to the question of whether China will manage to sustain rapid and sustainable growth in the medium to longer term, insofar as international currency status is crucially underpinned by economic dynamism, albeit only in tandem with price and financial stability.

There is potential for the renminbi to play a still more prominent international role in the medium term, provided that the Chinese authorities continue to gradually introduce financial sector reforms, liberalise China's capital account and strengthen exchange rate flexibility. Historical experience suggests that a gradual shift to a multipolar international monetary system is not inconceivable and that network externalities, which favour the incumbent currency, are not insurmountable. The evidence of the US dollar overtaking the pound as the leading international currency as early as the period following the First World War, although the British currency still retained a significant role, provides a case in point.[51]

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49 An additional stabilising effect of the rise of the renminbi to international currency status would stem from the increase in the global supply of reserve assets that could satisfy more easily the growing demand from emerging market economies that converge to middle and high-income status. The existence of renminbi-denominated reserve assets would also mitigate the tensions in the international monetary system stemming from a possible reduction in the supply of reserve assets due to the limits to fiscal capacity of the United States (see Farhi et al., 2011).

50 Similarly, a liberalised renminbi exchange rate would reduce the potential for persistent misalignments that could distort the allocation of capital.

51 See ECB (2012) and Chiţu, Eichengreen and Mehl (2012).

REFERENCES

Angeloni, I, A. Bénassy-Quéré, B. Carton, Z. Darvas, C. Destais, L. Gauvin, J. Pisani-Ferry, A. Sapir and S. Vallée (2011), *Reforming the international monetary system: options and implications*, joint Bruegel-CEPII report, April 2011.

Bank of International Settlements (2011), "Currency internationalisation: lessons from the global financial crisis and prospects for the future in Asia and the Pacific", proceedings of a joint conference organised by the BIS and the Bank of Korea in Seoul on 19–20 March 2009, BIS Paper No 61, December.

Bénassy-Quéré, A. and J. Pisani-Ferry (2011), "What International Monetary System for a Fast-Changing World Economy?", *Bruegel Working Paper* 2011/06.

Bénassy-Quéré, A. and Y. Forouheshfar (2013), "The Impact of Yuan Internationalization on the Euro-Dollar Exchange Rate", *CESifo Working Paper* 4149.

Bini Smaghi, L. (2011), "The Reform of the International Monetary System", speech held at the Conference in Memory of Tommaso Padoa-Schippa, 16 December, 2011, Rome.

Constâncio, V. (2011), "The Future of the International Monetary System", speech held at the Golden Series Lecture at the Official Monetary and Financial Institutions Forum, 23 November, London.

Cui, L., C. Shu and J. Chang (2009), "Exchange rate pass-through and currency invoicing in China's exports", *China Economic Issues*, Hong Kong Monetary Authority, July 2009.

Chinn (2012), "A note on reserve currencies with special reference to the G-20 countries", mimeo, University of Wisconsin.

Chinn, M. and J. Frankel (2007), "Will the euro eventually surpass the dollar as leading international currency?" in G7 *Current account imbalances and adjustment*, University of Chicago Press, Chicago.

Chinn, M. and J. Frankel (2008), "The euro may over the next 15 years surpass the USD as leading international currency", *NBER Working Paper*, No 13909.

Chițu, L., B. Eichengreen and A. Mehl (2012), "When did the dollar overtake sterling as the leading international currency? Evidence from the bond markets", *NBER Working Paper*, No 18097.

Cockerell, L. and M. Shoory (2012), "Internationalising the Renminbi", Bulletin, Reserve Bank of Australia, June Quarter 2012.

Dell'Ariccia, G., J. Di Giovanni, A. Faria, A. Kose, P. Mauro, J. Ostry, M. Schindler, and M. Terrones (2008), "Reaping the Benefits of Financial Globalization", *IMF Occasional Paper* No 264.

ECB (2011), *The international role of the euro*, July 2011, Frankfurt am Main.

ECB (2012), *The international role of the euro*, July 2012, Frankfurt am Main.

Eichengreen, B. (2012), "Number one country? Number one currency?", *World Economy Lecture*, CEPII-GEP-IFO Conference on China and the World Economy, 6-7 September 2012, Munich.

Eichengreen, B. (2013), *Renminbi internationalization: Tempest in a teapot?*, Asian Development Bank Distinguished Lecture, Manila, 11 January 2013.

Eichengreen, B., D. Park and K. Shin (2012), "When fast-growing economies slow down: international evidence and implications for China", *Asian Economic Papers*, MIT Press, vol. 11(1), pp. 42-87.

Eichengreen, B., D. Park and K. Shin (2013), "Growth slowdowns redux: new evidence on the middle-income trap", *NBER Working Paper*, No 18673.

Farhi, E., P.-O. Gourinchas and H. Rey (2011), *Reforming the International Monetary System*, CEPR.

Goldberg, L. and C. Tille (2011), *Micro, macro, and strategic forces in international trade Invoicing*, New York Fed mimeo, September 2011.

International Monetary Fund (2011a), *Criteria for Broadening the SDR Currency Basket*, September.

International Monetary Fund (2011b), "People's Republic of China: Financial System Stability Assessment", IMF Country Report No 11/321, November.

International Monetary Fund (2012), *The Liberalization and Management of Capital Flows: An Institutional View*, November.

Ito (2011), "The internationalisation of the RMB: Opportunities and pitfalls", *Council on Foreign Relations*, Washington DC.

Kose, M.A., E.S. Prasad, K. Rogoff and S.J. Wei, 2009, "Financial Globalization: A Reappraisal", *Staff Papers*, International Monetary Fund, Vol. 56, No 1, pp.8–62.

Prasad and Ye (2012), *The renminbi's role in the global monetary system*, Brookings, Washington DC.

Subramanian, A. (2011), "Renminbi rules: the conditional imminence of the reserve currency transition", Peterson Institute for International Economics Working Paper 11-14.

United Nations (2009), *Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System*.

Vallée (2012), "The internationalisation path of the renminbi", *Bruegel Working Paper*, 2012/05, Brussels.

World Bank (2012), *China 2030: Building a Modern, Harmonious, and Creative Society*, Washington DC.

Yu, Y. (2012), "Revisiting the internationalisation of the yuan", *ADBI Working Paper*, No 366, July 2012.

C   HISTORY, GRAVITY AND INTERNATIONAL FINANCE[52]

It is sometimes argued in policy discussions on the future of the international monetary system that an evolution towards multipolarity is unlikely owing to strong persistence effects which benefit the incumbent currency, i.e. the US dollar. How strong these effects are remains subject to debate, however.

This special feature quantifies persistence effects in international financial investment patterns. Using unique data on foreign bond holdings of US investors in the early 1940s, and comparing them with investment patterns in 2010, the special feature documents a "history effect" in which the pattern of holdings seven decades ago continues to influence holdings today, which plausibly reflects fixed costs of market entry and exit, together with endogenous learning. It shows that up to 15% of the cross-country variation in US investors' foreign bond holdings today is explained by holdings 70 years ago. This effect is twice as large for bonds held by US investors that are denominated in currencies other than the dollar.

These findings help quantify the extent to which the role of the dollar as a global investment currency today is partly a legacy of this earlier era when it dethroned sterling as the leading international currency. They also complement the results presented in the 2012 edition of this report on the existence of significant inertia effects in international currency use which, however, were shown not to be insurmountable. The present special feature aims to deepen these earlier results by looking more closely at potential sources of inertia. In so doing it points to fixed costs and endogenous learning as two potential sources of inertia in the use of international currencies, alongside well-known network externality effects.

I   INTRODUCTION

It is sometimes argued in policy discussions on the future of the international monetary system that an evolution towards multipolarity is unlikely owing to strong persistence effects which benefit the incumbent currency, i.e. the US dollar. The proximate source of these effects as well as how strong they are remains subject to debate, however. How large, for instance, are persistence effects in international financial investment patterns?

One particularly relevant development in this context is growing interest in the geography of international finance. The direction and determinants of cross-border financial stocks and flows have been intensely studied in recent years using so-called "gravity models" (e.g. Aviat and Coeurdacier, 2007). In this approach, bilateral trade in assets is posited to increase with country size and to decline with transaction costs and information asymmetries, as captured by geographic distance and related variables.[53] Attention so far has focused on recent decades, which usefully highlights the recent progress of financial globalisation, but says nothing about longer-term historical forces that may also influence patterns of international investment.

This special feature aims to address this shortcoming and quantifies the role played by history in shaping the patterns of international financial investment. In so doing, it also aims to shed light on one manifestation of persistence effects in the international monetary and financial system

52 Prepared by Livia Chiţu and Arnaud Mehl.
53 See e.g. Portes and Rey (2005); Ahearne, Griever and Warnock (2004); Eichengreen and Luengnaruemitchai (2006); Lane and Milesi-Ferretti (2008a) and (2008b); Coeurdacier and Martin (2009); Forbes (2010); Okawa and van Wincoop (2012).

as well as on their potential sources. It presents estimates from a gravity model of international investment based on data on US investors' holdings of foreign bonds in 88 countries seven decades ago. It documents a "history effect" in which the pattern of holdings seven decades ago continues to influence holdings today. 10% to 15% of the cross-country variation in US investors' foreign bond holdings is explained by holdings 70 years ago. This plausibly reflects fixed costs of market entry and exit together with endogenous learning, namely the propensity of international investors to continue to invest disproportionally in assets in which they have already invested in and are accustomed to. This history effect is shown to be twice as large for bonds denominated in currencies other than the dollar, suggesting the existence of even higher fixed costs of initiating US foreign investment in such currencies. Overall the findings presented in this special feature point to fixed costs and endogenous learning as two potential sources of inertia in the use of international currencies, alongside well-known network externality effects.

This special feature reviews the theoretical motivations in Section 3.2, presents the empirical results in Section 3.3 and provides some concluding remarks in Section 3.4.

2 THEORETICAL MOTIVATIONS

Why might past investment influence current investment? One answer is fixed costs. The theoretical and empirical literature on so-called beachhead and hysteresis effects (Baldwin, 1988; Dixit, 1989; Baldwin and Krugman, 1989) has shown that transitory shocks resulting in market penetration can permanently impact patterns of trade if firms incur fixed costs when entering new markets but cannot easily recoup them when they exit.[54] When coupled with endogenous learning, as described in the study by Van Nieuwerburg and Veldkamp (2009), the cumulative impact of passing shocks can be more powerful still. A shock that leads a firm to penetrate a market can then give it the incentive and ability to learn more about the market in question, amplifying the initial informational advantage.

Intuition suggests that what is true of international trade is also true of international investment. Financial firms face fixed costs when investing in the ability to assess the creditworthiness of foreign bonds. They face set-up costs when seeking to market the foreign bonds of a country or countries to domestic investors. This was plausibly true of US banks at the middle of the 20th century, the case analysed in this special feature.

Commercial banks had been prohibited from establishing foreign branches under the provisions of the National Banking Act.[55] When the ban on foreign branching was then lifted by the Federal Reserve Act of 1913, US banks had to sink the costs of setting up foreign branches in order to gather intelligence on foreign markets and underwrite the bond issues of foreign borrowers. They had to sink the costs of setting up store-front brokerages and other marketing tools to sell those bonds to investors (Eichengreen, 1989). The foreign market penetration of US banks was uneven,

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54 For instance, it is observed that Japanese firms that entered US markets in the early 1980s, when the dollar had significantly appreciated, did not abandon their sunk investments when the dollar fell in the wake of the Plaza agreement of 1985. Once firms had invested in marketing, R&D, reputation, distribution networks, etc., they found it profitable to remain in US markets even at a lower exchange rate (Dixit, 1989). Stricto sensu, hysteresis is when a transitory shock has permanent effects. In our case, however, what is necessary is only that a transitory shock has highly persistent effects that are still perceptible after decades. With limited data, the two cases are, of course, difficult to distinguish.

55 Unlike federally chartered banks, trust companies could branch abroad, and those which set up foreign offices did so mainly in order to gather information on foreign bonds, which were attractive assets to add to their portfolios since these matched the maturity of their liabilities to their trustees. Some state charters also allowed state banks to branch abroad, although few, if any, ever did. See Eichengreen and Flandreau (2010).

however. US banks focused disproportionately on Latin America and western Europe, leaving the British Commonwealth and Empire, along with parts of Scandinavia and eastern Europe, to their UK rivals. That structure was then essentially frozen by the Second World War, post-war capital controls and new restrictions on foreign branching imposed by the destination countries during the Bretton Woods period. It is thus plausible that the geography of international investment carved out in the interwar period could have had an unusually long-lived legacy.[56]

Fixed costs need not be large to have persistent effects on the geography of bilateral asset holdings; they only need to be *different* across countries. This is the implication of asymmetric information in the literature on endogenous learning. In the model of Van Nieuwerburg and Veldkamp mentioned above, even a small informational advantage associated with domestic assets can cause significant home bias. The informational advantage reduces the perceived riskiness of domestic assets, which encourages investors to hold more of them. This in turn induces investors to learn even more about such assets, making them still more attractive. Endogenous learning thus amplifies the initially small information advantage. Analogously, lower initial fixed costs of investing in some countries may significant tilt investment towards those countries over time; moreover, this pattern may persist and be amplified over time by endogenous learning.

This idea might also extend to currency choice. When deciding to invest in bonds denominated in foreign currencies, domestic investors will have to learn not just about the creditworthiness of the foreign issuer but also about the characteristics of its currency; additional frictions may also come into play, such as the absence of liquid markets to hedge currency risk.

Ideally, one would have direct measures of these fixed costs, including differences in brokers' fees between domestic and foreign investments, differences in tax treatment, and policy-related costs (e.g. those associated with limits to foreign investment and capital controls). Unfortunately, no study has been able to provide a comprehensive measure of direct costs in investing in foreign assets, not even for the contemporary period, much less for earlier historical eras (Coeurdacier and Rey, 2011). It is thus necessary to make inferences about their importance from indirect evidence.

3 EMPIRICAL ESTIMATES

To indirectly estimate the importance of fixed costs and endogenous learning effects, Chiţu, Eichengreen and Mehl (2013) estimate a standard gravity model akin to the specification proposed in, for example, Coeurdacier and Martin (2009) and Okawa and van Wincoop (2012). They use past holdings of a country's bonds as an indicator that investors have sunk the costs of acquiring information about this particular class of investment. They estimate a gravity model of international investment using unique data on US investors' holdings of foreign bonds in 88 countries seven decades ago, a period for which uniquely detailed information exists. These data stem from a detailed survey of US foreign investments conducted by the US Treasury during the Second World War for the purpose of gleaning information that might prove useful in subsequent peace negotiations and help US residents to obtain compensation for foreign assets confiscated or destroyed during wartime (see US Treasury, 1947). For about half of the countries in the sample,

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56 There is also the counterargument that subsequent events overwhelmed the influence of earlier investment patterns. An example is Cuba, a country with close economic links to the United States until 1959 and with which US investors had developed significant economic interests and held relatively large numbers of bonds. After the Cuban revolution, however, the new government expropriated foreign investors. This explains why US investors today hold negligible amounts of Cuban bonds, although they used to hold large ones in the past. Which argument is of more general applicability is, of course, an empirical question.

information was also available as to whether foreign bonds were denominated in dollars or other currencies.

The results are strongly supportive of a "history effect". Chart 30 juxtaposes the logarithm of US foreign bond holdings surveyed in 1943 against the logarithm of 2010 holdings. The correlation between current and lagged holdings is striking. This is confirmed when gravity estimates for US foreign bonds holdings in 2010 are considered (see Table 9). Indeed, even after controlling for the arguments of the standard gravity model (distance and size), bilateral trade (a traditional complement to bilateral financial investment) and informational frictions (proxied by common language, legal origin, and past colonial status), this correlation is statistically significant, robust and economically important. Not only do 1943 holdings help to predict 2010 holdings, but their effect is large. In the OLS estimates, a 1% increase in US holdings in a country 70 years ago is associated with higher holdings of about 1% in the same country today. The adjusted-$R2$ jumps from roughly 35% to 50% when the 1943 holdings are added (compare the

Chart 30 US foreign security holdings: 1943 versus 2010

x-axis: log of US foreign bond holdings in 1943
y-axis: log of US foreign bond holdings in 2010

● investment destination
····· OLS line

Sources: Chiţu, Eichengreen and Mehl (2013).
Notes: The chart plots the logarithm of US foreign bond holdings in 1943 against the logarithm of the corresponding holdings in 2010 in the respective investment destination country. The data for US foreign bond holdings in 1943 are from US Treasury (1947). The data for US foreign bond holdings in 2010 are from US Treasury et al. (2011).

estimates reported in columns 1 and 2 with those in columns 3 and 5 respectively). In other words, the pattern of 1943 holdings explains about 15 percentage points of the allocation by US investors of their current foreign bond holdings. The result is unchanged when excluding offshore centres and including common language, colony and legal system dummies (columns 4 to 10). It remains essentially unchanged in significance and economic magnitude if one controls for omitted variables (as in columns 7 and 8) and outliers (as in columns 9 and 10). These findings also extend to other securities besides bonds.[57]

The causal interpretation of the effect is buttressed by the observation that it continues to hold after instrumenting lagged holdings with dummies that aim to capture the effects of the disintegration of the gold standard and of the sovereign defaults of the 1930s, which contributed to the growing segmentation of global financial markets during the Great Depression. The same result is found for capital flows in the other direction; in other words, the history effect holds for foreign investments in US securities as well as for US investments abroad.[58]

To what extent does the history effect matter for international currency choice? As mentioned above, one might expect sunk costs and therefore the history effect to be even larger for bonds issued in currencies other than the dollar. US investors will have to learn not just about the creditworthiness of the foreign issuer but also about the characteristics of its currency; additional frictions may also come into play, such as the absence of liquid markets to hedge currency risk.

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57 Detailed results are not reported here for reasons of space but are available in Chiţu, Eichengreen and Mehl (2013).
58 The same results are obtained when the dependant variable is substituted with a measure of foreign investment bias like that proposed by Bekaert, Siegel and Wang (2012).

Table 9 Testing for a "history effect" – baseline empirical estimates

	(1) Full sample	(2) Full sample	(3) Full sample	(4) Excl. offshore centres	(5) Full sample	(6) Excl. offshore centres	(7) Full sample	(8) Excl. offshore centres	(9) Full sample	(10) Excl. offshore centres
Log (distance from US)	1.125**	1.400	1.510***	1.931***	1.531***	1.375**	-0.338	-3.901**	-1.369	-2.119
	(0.553)	(1.991)	(0.559)	(0.686)	(0.475)	(0.566)	(1.897)	(1.894)	(1.251)	(1.416)
GDP size	0.064	0.155	-0.037	-0.003	-0.057	0.014	-0.073	0.000	-0.094	-0.065
	(0.175)	(0.169)	(0.097)	(0.108)	(0.093)	(0.105)	(0.111)	(0.136)	(0.116)	(0.113)
Log (trade with US)	1.592***	1.889***	1.331***	1.121***	1.329***	0.964***	1.229***	0.567*	1.052***	0.760**
	(0.263)	(0.363)	(0.262)	(0.280)	(0.265)	(0.274)	(0.329)	(0.296)	(0.281)	(0.301)
1943 bond holdings			0.845***	1.012***	0.948***	1.090***	1.232***	1.471***	1.063***	1.069***
			(0.185)	(0.185)	(0.178)	(0.186)	(0.282)	(0.266)	(0.207)	(0.207)
Common language dummy		0.225			0.694	-1.051	1.080	-1.370	1.352*	0.930
		(1.208)			(1.171)	(1.808)	(1.205)	(1.559)	(0.745)	(1.005)
Cuba-Philippines dummy		-0.730			-4.190***	-6.334***	-4.977**	-9.246***	-3.971**	-11.742***
		(1.803)			(1.459)	(0.835)	(2.124)	(1.253)	(1.565)	(2.809)
Common legal origin dummy		-0.023			-0.880	0.902	-0.628	1.798	-0.474	0.304
		(1.244)			(1.179)	(1.742)	(1.232)	(1.516)	(0.895)	(1.112)
Regional effects	NO	YES	NO	NO	NO	NO	YES	YES	YES	YES
Constant	-15.801***	-20.454	-17.848***	-20.049***	-18.029***	-14.018**	-1.114	35.114**	9.362	18.196
	(5.571)	(18.305)	(5.510)	(6.765)	(4.817)	(5.490)	(17.375)	(16.865)	(11.846)	(13.472)
Observations	74	74	73	61	73	61	73	61	73	59
Adjusted R^2	0.355	0.352	0.483	0.513	0.508	0.551	0.511	0.605	0.609	0.658
log likelihood	-170.5	-165.0	-159.8	-133.8	-156.3	-129.7	-152.0	-121.4	.	.

Sources: Chițu, Eichengreen and Mehl (2013).
Notes: The table reports gravity estimates for US foreign bond holdings in 2010 (columns 1 and 2) augmented with the lag of these holdings in 1943 (columns 3-10). The estimates for the full sample and excluding offshore financial centres are obtained using simple OLS (columns 1, 3-6), OLS and regional effects (columns 2, 7 and 8) as well as robust-to-outlier (columns 9 and 10) estimation. The regional effects aim to capture unobserved investment destination effects, as suggested in Okawa and van Wincoop (2012). The eight regions (Asia, Central America, Europe, North America, South America, Oceania; West Indies; Africa is the base region) follow the classification of US Treasury (1947). Bilateral trade with the US is instrumented with transport costs, its square as well as the number of landlocked countries in the country pair as in Aviat and Coeurdacier (2007). Robust-to-heteroskedasticity standard errors are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

This hypothesis is explicitly tested in Table 10, which provides estimates of the history effect separately for dollar and non-dollar bond holdings (columns 2 to 5 and columns 7 to 10 respectively). These equations are estimated on a subset of 41 countries for which data on the currency of denomination of foreign bond holdings is available in both 1943 and 2010. Columns 1 and 6 report pro memoria simple gravity model estimates as benchmarks against which to gauge the new results. The history effect is prominent for both dollar and non-dollar bonds, but it is more important for non-dollar bonds, as the preceding arguments suggest. The estimated elasticity of today's holdings relative to lagged holdings is 0.8-1.1 for dollar bonds but close to 1.6 for non-dollar bonds. Moreover, the adjusted R^2 increases by roughly 30 percentage points for non-dollar bonds, as opposed to 15 percentage points for dollar bonds. On balance, therefore, the history effect is about twice as large for non-dollar bonds, indicative of larger sunk costs giving rise to stronger persistence, in line with theoretical priors.

4 CONCLUDING REMARKS

This special feature has shown that history plays a role in the geography of international finance. Using unique data on US investors' holdings in 1943, it has documented a "history effect" in which US bilateral holdings 70 years ago help to explain the allocation of US holdings around the world today. This effect is statistically significant, robust and economically important even after controlling for the arguments of the standard gravity model. It is interpreted in terms of the path dependence effects arising from sunk costs of market entry and exit coupled with endogenous learning. The estimates suggest that a 1% increase in US holdings in a country 70 years ago is associated with holdings of some 1% higher in the same country today. They suggest that 10 to 15% of the cross-sectional variance of today's holdings is attributable to the effect of the holdings 70 years ago. These findings are robust to an array of sensitivity checks.

Earlier studies had shown that the geographical component of cross-border financial flows and holdings is substantial – that international financial markets are not frictionless but segmented by market size, informational asymmetries and familiarity effects. More recent studies have established the importance of complementarities between trade in goods and trade in assets. This special feature has shown that history also matters and that historical patterns persistently weigh on the geography of bilateral asset holdings.

Table 10 Testing for a "history effect" – dollar versus non-dollar bonds

	US dollar bonds					non-US dollar bonds				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log (distance from US)	0.349	0.602	0.476	-0.218	-1.884	2.923***	3.185***	3.463***	-0.192	-1.353
	(0.682)	(0.571)	(0.741)	(2.017)	(1.435)	(0.944)	(0.766)	(0.770)	(2.597)	(0.873)
GDP size	-0.035	-0.019	0.011	0.215	0.160	-0.046	-0.141	-0.184**	-0.189	-0.314***
	(0.121)	(0.081)	(0.095)	(0.146)	(0.156)	(0.232)	(0.084)	(0.078)	(0.167)	(0.100)
Log (trade with US)	1.511***	1.213***	1.108**	1.347*	0.231	1.689***	1.053***	1.184***	1.243**	2.517***
	(0.375)	(0.364)	(0.427)	(0.733)	(0.302)	(0.441)	(0.383)	(0.421)	(0.444)	(0.177)
1943 bond holdings		0.813***	0.783**	1.128**	1.155***		1.551***	1.571***	1.649***	0.753***
		(0.272)	(0.308)	(0.412)	(0.237)		(0.319)	(0.356)	(0.452)	(0.143)
Common language dummy			2.420**	1.171***	1.267			-0.599	-0.776***	8.310***
			(0.886)	(0.262)	(1.671)			(0.636)	(0.211)	(1.622)
Cuba-Philippines dummy			-3.148***	0.970	0.086			-1.113	-0.061	-9.787***
			(0.990)	(1.482)	(2.678)			(0.685)	(1.676)	(2.087)
Common legal origin dummy			-1.058	1.859*	2.261			-0.030	0.317	-9.048***
			(1.536)	(0.971)	(1.924)			(1.737)	(2.248)	(1.637)
Regional effects	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Constant	-8.516	-9.377	-7.592	-2.303	20.100	-32.547***	-31.181***	-34.471***	-3.049	-11.218
	(7.218)	(5.995)	(7.862)	(21.364)	(13.589)	(9.148)	(6.446)	(6.288)	(23.562)	(7.528)
Observations	38	37	37	37	36	38	37	37	37	35
Adjusted R^2	0.317	0.475	0.466	0.537	0.681	0.391	0.718	0.698	0.718	0.956
log likelihood	-85.78	-78.52	-77.02	-69.26	.	-88.85	-72.17	-71.61	-65.20	.

Sources: Chiţu, Eichengreen and Mehl (2013).
Note: The table reports gravity estimates for US foreign dollar and non-dollar holdings in 2010 augmented with the lag of these holdings in 1943. The estimates for the full sample are obtained using simple OLS (columns 1 to 3 and 6 to 8), OLS and regional effects (columns 4 and 9) as well as robust-to-outlier (columns 5 and 10) estimation. The regional effects are as in Table 1 and bilateral trade is instrumented as explained in the notes to that table. Robust-to-heteroskedasticity standard errors are reported in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Importantly, it has also shown that the history effect is twice as large for non-dollar bonds, which is interpreted as reflecting larger sunk costs and endogenous learning effects for US financial investments in currencies other than the dollar. These findings shed light on one manifestation of persistence effects in the international monetary and financial system as well as on their potential sources. They underscore how the role of the dollar as a global investment currency today is partly a legacy of this earlier era when it dethroned sterling as the leading international currency. They also point to fixed costs and endogenous learning as two potential sources of inertia in the use of international currencies, alongside well-known network externality effects.

REFERENCES

Ahearne, A., W. Griever and F. Warnock (2004), "Information Costs and Home Bias: an Analysis of US Holdings of Foreign Equities", *Journal of International Economics*, 62, pp. 313-336.

Aviat, A and N Coeurdacier (2007), "The Geography of Trade in Goods and Asset Holdings", *Journal of International Economics*, 71, pp. 22-51.

Baldwin, R (1988), "Hysteresis in Import Prices: The Beachhead Effect", *American Economic Review*, 74, pp. 773-785.

Baldwin, R and P Krugman (1989), "Persistent Trade Effects of Exchange Rate Shocks", *Quarterly Journal of Economics*, 104, pp. 635-654.

Bekaert, G., S. Siegel and X. Wan (2012), *Home Bias Revisited*, Columbia Business School, mimeo.

Chiţu, L., B. Eichengreen and A. Mehl (2013), "History, Gravity and International Finance", *NBER Working Paper*, No 18697, January 2013.

Coeurdacier, N. and P. Martin (2009), "The Geography of Asset Trade and the Euro: Insiders and Outsiders", *Journal of the Japanese and International Economies*, 23, pp. 90-113.

Coeurdacier, N. and H. Rey (2011), "Home Bias in Open Economy Financial Macroeconomics", *Journal of Economic Literature*, forthcoming.

Dixit, A. (1989), "Hysteresis, Import Penetration and Exchange Rate Pass-through", *Quarterly Journal of Economics*, 104, pp. 205-228.

Eichengreen, B. (1989), "The U.S. Capital Market and Foreign Lending, 1920-1955", in J. Sachs (ed.), *Developing Country Debt and Economic Performance*, Volume 1, The International Financial System, Chicago: University of Chicago Press, pp. 107-158.

Eichengreen, B. and M. Flandreau (2010), "The Federal Reserve, the Bank of England, and the Rise of the Dollar as an International Currency", *BIS Working Paper* No 328, November.

Eichengreen, B. and P. Luengnaruemitchai (2006), "Bond Markets as Conduits for Capital Flows: How does Asia Compare?", in T. Ito and A. Rose (eds.), *International Financial Issues in the Pacific Rim: Global Imbalances, Financial Liberalization, and Exchange Rate Policy*, pp. 267-313.

Forbes, K. (2010), "Why do Foreigners Invest in the US?", *Journal of International Economics*, 80, pp. 3-21.

Lane, P. and G.-M. Milesi-Ferretti (2008a), "The Drivers of Financial Globalization", *American Economic Review: Papers and Proceedings*, 98(2), pp. 327-332.

Lane, P. and G.-M. Milesi-Ferretti (2008b), "International Investment Patterns", *Review of Economics and Statistics*, 90(3), pp. 538-549.

Okawa, Y. and E. van Wincoop (2012), "Gravity in International Finance", *Journal of International Economics*, 87, pp. 205-215.

Portes, R. and H. Rey (2005), "The Determinants of Cross-Border Equity Flows", *Journal of International Economics*, 65, pp. 269-296.

US Treasury (1947), *Census of American-owned Assets in Foreign Countries*, US Treasury Department, Office of the Secretary, Washington DC.

US Treasury, Federal Reserve Bank of New York, Board of Governors of the Federal Reserve System (2011), *Report on U.S. Portfolio Holdings of Foreign Securities* (as of December 31, 2010).

Van Nieuwerburgh S and L Veldkamp (2009), "Information Immobility and the Home Bias Puzzle", *Journal of Finance*, 64(3), pp. 1187-1215.

STATISTICAL ANNEX

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

Table A1 Global holdings of foreign exchange reserves

		All countries					Advanced economies	
	Total holdings of foreign reserves [1]	EUR	USD	JPY	GBP	Other [2]	Total holdings of foreign reserves [1]	EUR
Outstanding amounts (in USD billions, at current exchange rates)								
1999	1,782	247	980	88	40	22	1,122	183
2000	1,936	278	1,080	92	42	23	1,217	204
2001	2,049	301	1,122	79	42	20	1,246	213
2002	2,408	427	1,205	78	51	28	1,443	297
2003	3,025	559	1,466	88	62	44	1,767	359
2004	3,748	659	1,751	102	89	50	2,071	417
2005	4,320	684	1,903	102	102	49	2,078	387
2006	5,253	832	2,171	102	145	60	2,253	440
2007	6,704	1,082	2,642	120	193	76	2,432	522
2008	7,346	1,112	2,699	132	169	93	2,491	511
2009	8,164	1,270	2,848	133	195	140	2,779	616
2010	9,265	1,342	3,192	189	203	229	3,092	647
2011	10,202	1,394	3,518	204	217	307	3,399	672
2012 Q1	10,437	1,401	3,556	215	228	304	3,438	677
Q2	10,526	1,446	3,631	225	223	314	3,542	752
Q3	10,783	1,435	3,733	248	246	342	3,649	754
Q4	10,936	1,455	3,764	240	243	372	3,691	778
Currency shares in foreign exchange reserves with disclosed currency composition (at constant exchange rates)								
1999	-	22.0	66.4	7.1	2.7	1.5	-	22.2
2000	-	23.6	64.6	7.3	2.7	1.4	-	23.6
2001	-	25.5	63.5	6.8	2.7	1.1	-	25.1
2002	-	27.7	62.1	5.5	2.6	1.4	-	27.0
2003	-	25.8	64.7	4.8	2.5	1.9	-	23.6
2004	-	24.2	66.3	4.6	2.8	1.9	-	22.2
2005	-	25.9	64.3	4.7	3.2	1.7	-	22.8
2006	-	25.0	65.1	4.2	3.6	1.8	-	22.0
2007	-	24.2	65.9	3.9	3.9	1.9	-	22.1
2008	-	25.2	64.6	3.3	4.5	2.2	-	22.2
2009	-	25.9	63.4	3.2	4.3	3.1	-	23.7
2010	-	25.8	62.1	3.5	4.1	4.5	-	23.7
2011	-	25.1	62.2	3.2	4.0	5.4	-	22.7
2012 Q1	-	24.3	62.6	3.6	4.1	5.4	-	22.1
Q2	-	25.7	61.5	3.5	3.9	5.3	-	24.8
Q3	-	24.3	62.0	3.7	4.1	5.7	-	23.7
Q4	-	23.9	61.9	3.9	4.0	6.1	-	23.7
Currency shares in foreign exchange reserves with disclosed currency composition (at current exchange rates)								
1999	-	17.9	71.0	6.4	2.9	1.6	-	18.1
2000	-	18.3	71.1	6.1	2.8	1.5	-	18.4
2001	-	19.2	71.5	5.0	2.7	1.3	-	19.0
2002	-	23.8	67.1	4.4	2.8	1.6	-	23.3
2003	-	25.2	65.9	3.9	2.8	2.0	-	23.1
2004	-	24.8	65.9	3.8	3.4	1.9	-	22.9
2005	-	24.1	66.9	3.6	3.6	1.7	-	21.2
2006	-	25.1	65.5	3.1	4.4	1.8	-	22.2
2007	-	26.3	64.1	2.9	4.7	1.8	-	24.2
2008	-	26.4	64.1	3.1	4.0	2.2	-	23.3
2009	-	27.7	62.0	2.9	4.2	3.1	-	25.4
2010	-	26.0	61.8	3.7	3.9	4.4	-	23.9
2011	-	24.7	62.3	3.6	3.8	5.4	-	22.3
2012 Q1	-	24.5	62.3	3.8	4.0	5.3	-	22.3
Q2	-	24.7	62.1	3.8	3.8	5.4	-	23.9
Q3	-	23.9	62.1	4.1	4.1	5.7	-	23.2
Q4	-	23.9	61.9	3.9	4.0	6.1	-	23.7

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

Advanced economies					Emerging and developing economies				
USD	JPY	GBP	Other [2]	Total holdings of foreign reserves [1]	EUR	USD	JPY	GBP	Other [2]
Outstanding amounts (in USD billions, at current exchange rates)									
706	73	30	17	660	64	274	15	9	5
772	81	31	17	719	74	307	11	11	6
792	68	30	15	803	88	330	11	12	5
850	69	36	20	964	130	355	9	14	8
1,045	81	36	32	1,258	200	421	7	25	12
1,228	91	48	38	1,678	241	523	11	41	12
1,261	86	50	34	2,241	297	641	16	52	15
1,350	84	65	38	3,000	392	821	18	80	22
1,423	85	76	46	4,272	560	1,218	35	117	30
1,476	94	59	54	4,855	601	1,223	38	110	39
1,582	95	68	64	5,386	653	1,266	38	127	76
1,762	121	68	106	6,172	696	1,430	68	135	123
2,004	132	77	124	6,803	721	1,514	72	140	183
2,005	136	84	135	7,000	723	1,550	78	144	169
2,029	145	78	141	6,984	694	1,601	79	145	173
2,074	160	97	161	7,133	681	1,659	89	149	182
2,082	156	98	165	7,245	677	1,682	84	145	208
Currency shares in foreign exchange reserves with disclosed currency composition (at constant exchange rates)									
65.2	8.1	2.8	1.6	-	21.4	69.7	4.4	2.4	1.3
63.0	8.8	2.7	1.3	-	23.4	68.8	3.4	2.6	1.4
62.3	8.2	2.6	1.2	-	26.3	66.3	3.3	2.8	0.9
61.3	6.9	2.6	1.4	-	29.5	64.1	2.2	2.6	1.4
65.7	6.3	2.1	2.0	-	31.0	62.4	1.3	3.4	1.8
67.4	5.9	2.2	2.1	-	28.6	64.0	1.6	4.2	1.4
66.5	6.2	2.5	1.8	-	31.3	60.5	2.0	4.6	1.4
67.3	5.8	2.7	1.9	-	29.6	61.8	1.9	5.0	1.6
67.3	5.2	2.9	2.2	-	26.5	64.4	2.4	5.0	1.6
67.6	4.5	3.0	2.5	-	28.6	61.3	2.0	6.1	1.9
66.3	4.3	2.8	2.7	-	28.4	60.0	1.9	6.0	3.6
65.3	4.2	2.6	3.9	-	28.1	58.4	2.6	5.7	5.0
66.5	3.9	2.7	4.1	-	27.8	57.2	2.4	5.5	6.9
66.3	4.3	2.8	4.5	-	26.9	58.3	2.8	5.5	6.4
63.9	4.2	2.6	4.4	-	26.7	58.7	2.7	5.5	6.3
63.9	4.4	3.0	4.9	-	25.1	59.9	2.9	5.4	6.6
63.5	4.7	3.0	5.0	-	24.2	60.1	3.0	5.2	7.4
Currency shares in foreign exchange reserves with disclosed currency composition (at current exchange rates)									
69.8	7.3	3.0	1.7	-	17.3	74.3	3.9	2.5	1.4
69.7	7.3	2.8	1.5	-	18.0	74.9	2.8	2.6	1.5
70.5	6.1	2.7	1.4	-	19.6	73.9	2.4	2.8	1.0
66.4	5.4	2.8	1.6	-	25.1	68.7	1.7	2.8	1.5
67.1	5.2	2.3	2.1	-	30.1	63.2	1.1	3.8	1.8
67.3	5.0	2.7	2.1	-	29.1	63.1	1.3	4.9	1.4
69.2	4.7	2.7	1.9	-	29.0	62.8	1.5	5.1	1.5
68.1	4.2	3.3	1.9	-	29.4	61.6	1.3	6.0	1.6
66.0	4.0	3.5	2.1	-	28.5	62.1	1.8	5.9	1.5
67.1	4.3	2.7	2.5	-	29.9	60.8	1.9	5.5	1.9
65.1	3.9	2.8	2.6	-	30.2	58.6	1.8	5.9	3.5
65.0	4.5	2.5	3.9	-	28.4	58.3	2.8	5.5	5.0
66.5	4.4	2.5	4.1	-	27.4	57.5	2.7	5.3	6.9
66.0	4.5	2.8	4.4	-	27.1	58.1	2.9	5.4	6.3
64.5	4.6	2.5	4.5	-	25.8	59.4	2.9	5.4	6.4
63.9	4.9	3.0	4.9	-	24.6	60.0	3.2	5.4	6.6
63.5	4.7	3.0	5.0	-	24.2	60.1	3.0	5.2	7.4

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)

	2007	2008	2009	2010	2011	2012
Non-euro area EU Member States	68.6	61.3	63.7	61.1	60.9	58.0
Bulgaria	99.1	99.1	99.1	99.6	99.9	99.9
Czech Republic	54.0	62.6	61.3	57.4	60.1	58.7
Latvia	38.8	60.5	63.1	58.3	57.0	51.4
Lithuania	96.1	97.3	96.9	98.9	94.9	83.4
Poland	36.3	33.7	36.7	35.0	30.4	30.9
Romania	67.8	63.2	65.2	67.2	77.8	73.0
Sweden	46.9	48.5	48.1	50.0	37.0	37.1
United Kingdom	68.4	41.4	65.5	59.0	59.1	60.4
Candidate and potential candidate countries						
Croatia	84.1	76.6	71.7	73.7	75.9	n.a.
Turkey	55.2	46.0	44.6	46.5	40.3	27.3
Other industrial countries						
Canada	47.5	40.4	41.9	40.0	37.0	34.9
Norway	44.0	48.3	47.2	36.4	36.1	35.9
Russia	38.8	40.0	33.2	43.1	42.1	40.4
Switzerland	40.2	47.9	55.6	54.9	57.0	50.1
United States	37.9	53.7	54.0	54.2	53.5	57.0
Latin American countries						
Chile	34.8	37.3	34.8	35.2	35.5	20.3
Peru	11.9	14.9	17.4	16.8	38.0	30.0

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

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

(as at end-May 2013)

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

Denmark: Participates in ERM II with a +/-2.25% fluctuation band.
Latvia: Participates in ERM II with a +/-15% fluctuation band. Latvia continues with a fluctuation band of +/-1% as a unilateral commitment.
Lithuania: Participates in ERM II with a +/-15% fluctuation band. Lithuania continues with its currency board arrangement as a unilateral commitment.
Bulgaria: Maintains a peg to the Euro within the framework of a currency board arrangement.
European microstates: Republic of San Marino, Vatican City, Principality of Monaco and Andorra. The other countries and jurisdictions are entitled to use the euro as their official currency. Liechtenstein uses the Swiss franc as its official currency.
Saint Barthelémy, Saint Martin and Saint-Pierre and Miquelon are French overseas collectivities but use the euro as their official currency.
CFA franc zone: WAEMU (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo) and CEMAC (Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea and Gabon).
CFP franc zone: New Caledonia and the French overseas collectivities of French Polynesia and Wallis and Futuna.
Switzerland: On 6 September 2011 the Swiss National Bank issued a statement establishing a minimum exchange rate for the euro of CHF 1.20 per euro. As stated in the Swiss National Bank's annual report for 2011, the Swiss National Bank would "enforce this minimum rate with the utmost determination and was prepared to buy foreign currency in unlimited quantities."
Algeria: Managed floating regime with no preannounced path for the exchange rate.
Belarus: The currency was pegged to a basket comprising the euro, the US dollar and the Russian rouble at the beginning of 2009, with a fluctuation margin of 10%. In April 2011 the Belarussian rouble lost more than a third of its value against the US dollar after the central bank introduced a free floating exchange rate for trade between banks.
Botswana: Weighted basket of currencies comprising the SDR and the South African rand (crawling peg since 2005).
Fiji: The currency was pegged to a basket of international currencies in May 2007.
Iran: Maintains de jure a managed floating arrangement against a basket of currencies including the euro, the US dollar and the Japanese yen.Kuwait: The currency was pegged to a basket of international currencies in May 2007.
Libya: The rate of exchange is established using a basket of SDR currencies with a fluctuation margin of 25%.
Morocco: Bi-currency basket comprising the euro (80%) and the US dollar (20%).
Russian Federation: Trade-weighted currency basket for monitoring and setting ceilings for real appreciation (combined share of euro and euro-linked currencies of around 60%); since February 2005 US dollar-euro basket for daily exchange rate management (since February 2007 the euro's share has been 45%). The Bank of Russia does not target a specific exchange rate level against the currency basket.
Samoa: The central bank maintains an exchange rate peg based on a basket comprising the currencies of Samoa's six main trading partners and countries that represent primary sources of tourism revenue, namely New Zealand, Australia, the United States and the euro area. The exchange rate can fluctuate within +/- 2% band.
Singapore: Since 1981 a managed floating regime against an undisclosed basket of currencies maintained within an undisclosed target band.
Syria: In August 2007, the authorities changed the de facto exchange rate regime from a peg to the US dollar to an SDR basket within a relatively wide fluctuation margin.
Tunisia: The de facto exchange rate regime is a conventional peg to an undisclosed basket of currencies.
Vanuatu: Weighted basket comprising (undisclosed) currencies of Vanuatu's major trading partners.

2 THE EURO IN INTERNATIONAL DEBT MARKETS

Table A4 Outstanding international debt securities by currency

		Narrow measure					Broad measure				Memo item: BIS broad measure	
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other	Total	EUR
Outstanding amounts (in USD billions, at current exchange rates, end of period)												
1999	3,019	622	1,477	484	436	4,309	974	2,083	530	722	4,622	1,327
2000	3,371	721	1,691	471	488	4,994	1,184	2,517	505	787	5,434	1,624
2001	3,543	817	1,788	425	512	5,766	1,430	3,045	456	836	6,337	2,001
2002	4,040	1,100	1,888	410	641	6,841	1,983	3,353	453	1,052	7,669	2,811
2003	4,929	1,551	2,116	438	823	8,465	2,926	3,672	500	1,368	9,670	4,131
2004	5,810	1,957	2,373	454	1,026	9,979	3,748	3,965	538	1,729	11,469	5,237
2005	6,131	1,913	2,694	397	1,126	10,486	3,850	4,253	474	1,909	11,901	5,264
2006	7,793	2,441	3,438	410	1,505	13,172	5,188	4,960	492	2,532	15,034	7,050
2007	9,618	3,105	4,160	506	1,847	15,997	5,661	5,661	602	3,093	18,397	9,041
2008	9,559	3,098	4,255	646	1,559	16,401	6,884	5,734	768	3,014	18,879	9,363
2009	10,291	3,262	4,693	591	1,746	18,303	7,852	6,198	699	3,553	20,893	10,443
2010	10,521	2,920	5,103	656	1,842	18,493	7,475	6,584	770	3,665	20,899	9,881
2011	10,885	2,804	5,528	664	1,889	18,671	7,321	6,901	762	3,687	21,020	9,670
2012 Q1	11,446	3,095	5,730	624	1,997	19,430	7,736	7,095	713	3,886	21,912	10,218
Q2	11,290	2,893	5,845	638	1,914	18,781	7,155	7,180	727	3,718	21,146	9,520
Q3	11,623	2,974	5,990	642	2,017	19,145	7,213	7,317	733	3,881	21,629	9,697
Q4	11,839	3,025	6,199	581	2,035	19,374	7,299	7,523	663	3,888	21,979	9,904
Percentages of outstanding amounts (at constant exchange rates, end of period)												
1999	100.0	24.0	43.3	16.9	15.8	100.0	26.5	43.2	13.1	17.1	100.0	33.0
2000	100.0	25.8	42.8	15.9	15.5	100.0	28.9	43.4	11.6	16.1	100.0	35.8
2001	100.0	28.4	41.5	15.0	15.1	100.0	31.1	44.2	10.1	14.6	100.0	38.7
2002	100.0	30.3	41.4	12.4	15.9	100.0	32.8	44.1	8.2	15.0	100.0	40.9
2003	100.0	31.6	41.2	10.6	16.7	100.0	35.1	42.2	7.1	15.6	100.0	43.3
2004	100.0	32.6	40.9	9.3	17.2	100.0	36.9	40.3	6.5	16.3	100.0	44.9
2005	100.0	32.6	41.0	8.3	18.1	100.0	38.6	38.2	5.8	17.4	100.0	46.3
2006	100.0	30.9	43.5	7.2	18.4	100.0	39.4	37.6	5.2	17.8	100.0	46.9
2007	100.0	29.8	44.5	7.0	18.7	100.0	39.2	37.2	5.2	18.5	100.0	46.7
2008	100.0	30.7	44.5	7.1	17.6	100.0	40.0	35.1	4.9	20.0	100.0	47.5
2009	100.0	29.6	46.4	6.3	17.7	100.0	40.6	35.0	4.2	20.3	100.0	47.6
2010	100.0	27.5	48.7	5.9	17.9	100.0	40.0	35.7	3.9	20.4	100.0	46.8
2011	100.0	26.2	50.6	5.5	17.7	100.0	39.6	36.6	3.6	20.1	100.0	46.4
2012 Q1	100.0	26.9	50.4	5.2	17.6	100.0	39.6	36.7	3.5	20.2	100.0	46.4
Q2	100.0	26.5	51.2	5.2	17.1	100.0	39.1	37.5	3.5	19.9	100.0	46.1
Q3	100.0	26.1	51.5	5.0	17.4	100.0	38.3	38.1	3.4	20.2	100.0	45.5
Q4	100.0	25.5	52.4	4.9	17.2	100.0	37.7	38.8	3.4	20.1	100.0	45.1
Percentages of outstanding amounts (at current exchange rates, end of period)												
1999	100.0	20.6	48.9	16.0	14.4	100.0	22.6	48.3	12.3	16.8	100.0	28.5
2000	100.0	21.4	50.2	14.0	14.5	100.0	23.7	50.4	10.1	15.8	100.0	29.9
2001	100.0	23.1	50.5	12.0	14.5	100.0	24.8	52.8	7.9	14.5	100.0	31.6
2002	100.0	27.2	46.7	10.2	15.9	100.0	29.0	49.0	6.6	15.4	100.0	36.7
2003	100.0	31.5	42.9	8.9	16.7	100.0	34.6	43.4	5.9	16.2	100.0	42.7
2004	100.0	33.7	40.8	7.8	17.7	100.0	37.6	39.7	5.4	17.3	100.0	45.7
2005	100.0	31.2	43.9	6.5	18.4	100.0	36.7	40.6	4.5	18.2	100.0	44.2
2006	100.0	31.3	44.1	5.3	19.3	100.0	39.4	37.7	3.7	19.2	100.0	46.9
2007	100.0	32.3	43.3	5.3	19.2	100.0	41.5	35.4	3.8	19.3	100.0	49.1
2008	100.0	32.4	44.5	6.8	16.3	100.0	42.0	35.0	4.7	18.4	100.0	49.6
2009	100.0	31.7	45.6	5.7	17.0	100.0	42.9	33.9	3.8	19.4	100.0	50.0
2010	100.0	27.8	48.5	6.2	17.5	100.0	40.4	35.6	4.2	19.8	100.0	47.3
2011	100.0	25.8	50.8	6.1	17.4	100.0	39.2	37.0	4.1	19.7	100.0	46.0
2012 Q1	100.0	27.0	50.1	5.4	17.4	100.0	39.8	36.5	3.7	20.0	100.0	46.6
Q2	100.0	25.6	51.8	5.7	17.0	100.0	38.1	38.2	3.9	19.8	100.0	45.0
Q3	100.0	25.6	51.5	5.5	17.4	100.0	37.7	38.2	3.8	20.3	100.0	44.8
Q4	100.0	25.5	52.4	4.9	17.2	100.0	37.7	38.8	3.4	20.1	100.0	45.1

Sources: BIS and ECB calculations.

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

| | | EUR | | | | USD | |
	Sovereigns	Other public entities	Financial institutions	International organisations	Sovereigns	Other public entities
(Outstanding amounts in USD billions, end of period)							
1999		101	21	332	128	412	83
2000		102	19	421	112	449	78
2001		99	18	514	101	454	79
2002		117	21	734	122	475	85
2003		149	26	1,093	150	486	96
2004		166	33	1,438	170	516	116
2005		156	28	1,445	149	519	143
2006		179	31	1,891	168	517	160
2007		198	32	2,458	190	516	186
2008		188	28	2,469	184	532	297
2009		217	24	2,534	243	618	399
2010		205	22	2,393	249	649	415
2011		226	20	2,349	299	707	458
2012	Q1	208	19	2,153	500	771	527
	Q2	195	17	1,986	494	813	557
	Q3	201	18	1,993	544	822	389
	Q4	213	18	1,992	575	858	418
(Percentages of outstanding amounts, end of period)							
1999		17.3	3.6	57.0	22.0	32.9	6.6
2000		15.6	3.0	64.3	17.1	31.6	5.5
2001		13.5	2.5	70.2	13.8	30.1	5.3
2002		11.8	2.1	73.9	12.2	29.4	5.2
2003		10.5	1.8	77.1	10.6	26.6	5.3
2004		9.2	1.8	79.6	9.4	24.9	5.6
2005		8.8	1.6	81.3	8.4	21.7	6.0
2006		7.9	1.4	83.4	7.4	16.7	5.2
2007		6.9	1.1	85.4	6.6	13.7	4.9
2008		6.6	1.0	86.0	6.4	11.6	4.6
2009		7.2	0.8	84.0	8.1	12.1	5.5
2010		7.2	0.8	83.4	8.7	12.3	5.7
2011		7.8	0.7	81.2	10.3	12.2	5.5
2012	Q1	7.2	0.6	74.8	17.4	12.2	5.7
	Q2	7.2	0.6	73.8	18.4	12.5	5.8
	Q3	7.3	0.6	72.3	19.7	15.6	7.4
	Q4	7.6	0.6	71.2	20.5	15.8	7.7

Source: BIS.

USD				JPY	
Financial institutions	International organisations	Sovereigns	Other public entities	Financial institutions	International organisations
(Outstanding amounts in USD billions, end of period)					
640	117	100	24	300	40
762	134	86	20	291	32
821	154	69	14	276	27
891	168	68	15	267	30
1,065	179	69	17	295	35
1,258	184	62	16	322	35
1,536	188	45	14	290	32
2,233	186	39	14	311	31
2,875	197	36	18	400	35
2,881	228	42	31	511	45
3,044	280	38	37	455	44
3,115	282	36	34	444	43
3,351	339	46	41	486	48
3,552	382	45	37	474	49
3,584	392	47	38	484	50
3,670	392	46	34	485	50
3,764	397	42	31	440	44
(Percentages of outstanding amounts, end of period)					
51.1	9.4	21.5	5.1	64.7	8.7
53.6	9.4	20.1	4.7	67.7	7.5
54.4	10.2	17.9	3.6	71.5	7.0
55.0	10.4	18.0	3.9	70.2	7.9
58.3	9.8	16.7	4.0	7.9	8.4
60.7	8.9	14.2	3.7	74.0	8.1
64.4	7.9	11.8	3.7	76.0	8.4
72.1	6.0	9.9	3.5	78.7	7.8
76.2	5.2	7.3	3.6	81.9	7.2
62.8	5.0	5.9	3.6	72.1	6.4
59.5	5.5	5.8	4.6	70.2	6.8
59.3	5.4	5.7	4.3	70.6	6.9
57.8	5.8	6.6	5.0	69.3	6.8
56.1	6.0	6.6	4.7	69.7	7.2
55.3	6.0	6.7	4.6	69.6	7.2
69.6	7.4	7.5	5.5	78.9	8.1
69.2	7.3	7.6	5.5	79.0	7.9

(percentages; end-2012, narrow measure; USD billions and as a percentage of the total amount outstanding)

	Total amounts outstanding (USD billion)	of which denominated in:			
		US dollar	Euro	Japanese yen	Other currencies
Africa	50	66.9	20.9	2.9	9.2
Asia and Pacific	1,092	62.9	11.2	5.2	20.7
of which:					
Japan	99	79.7	9.3	...	11.0
Europe	5,704	48.2	26.6	5.0	20.2
of which:					
Euro area	2,444	58.5	...	5.9	35.6
Denmark, Sweden, United Kingdom	2,643	39.6	48.8	3.9	7.7
Other non-euro EU Member States	191	24.5	66.9	3.0	5.6
EU27	5,281	47.8	26.5	4.8	20.9
Non-EU developed Europe [1]	287	36.6	37.7	11.6	14.1
Non-EU developing Europe	151	82.3	12.4	0.0	5.3
International organisations	1,321	29.9	40.9	3.3	25.9
Latin America	528	82.9	7.5	1.3	8.3
Middle East	210	83.2	8.4	2.1	6.3
North America	1,401	30.7	32.0	4.8	32.5
of which:					
Canada	711	60.6	4.3	1.0	34.1
United States	690	...	60.4	8.6	31.0
Offshore centres	1,690	75.5	8.5	6.7	9.3
Total	**11,996**	**51.5**	**23.7**	**4.8**	**20.0**

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

Table A7 International dimensions of euro-denominated debt securities

(EUR billions; percentages)

	Held by residents	Held by non-residents	Total
a) As at end-June 2012			
Issued by residents	11,912	2,973	14,884
	69%	*17%*	*87%*
Issued by non-residents	1,494	806	2,300
	9%	*5%*	*13%*
Total	13,406	3,779	17,184
	78%	*22%*	*100%*
b) As at end-June 2011			
Issued by residents	11,505	2,922	14,427
	69%	*18%*	*87%*
Issued by non-residents	1,432	766	2,198
	9%	*5%*	*13%*
Total	12,937	3,689	16,625
	78%	*22%*	*100%*

Source: ECB.

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

(percentages of total outstanding amounts; as at end-2011)

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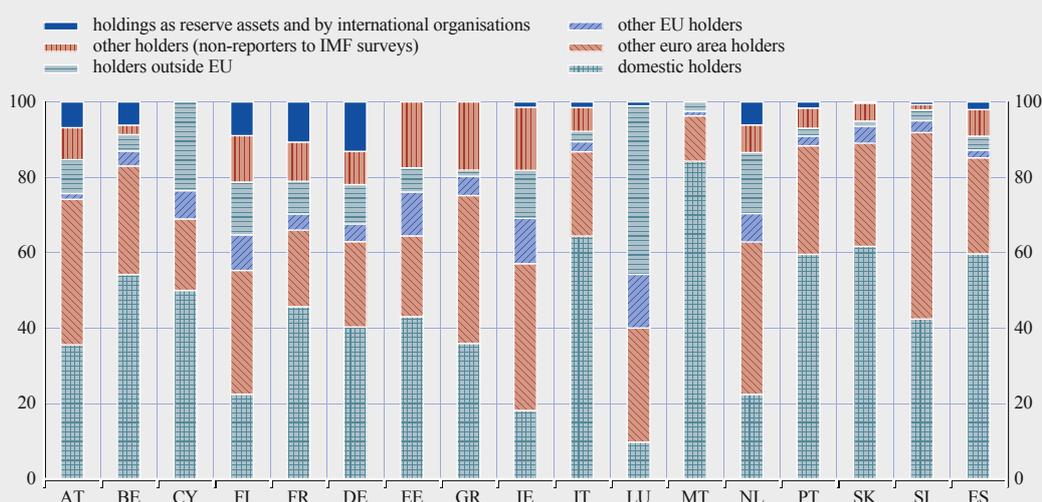
Sources: ECB calculations, IMF (CPIS, SEFER and SSIO surveys) and national sources (national accounts and i.i.p. data).
Notes: i.i.p. figures for Cyprus and the Netherlands include "special financial institutions". Reserve assets and holdings by international organisations cannot be allocated to reporting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

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

(as a percentage of total debt securities held as portfolio investment assets; as at end-2011)

AT	LU	FI	PT	EE	ES
IT	CY	NL	DE	SI	IE
BE	MT	FR	SK	GR	
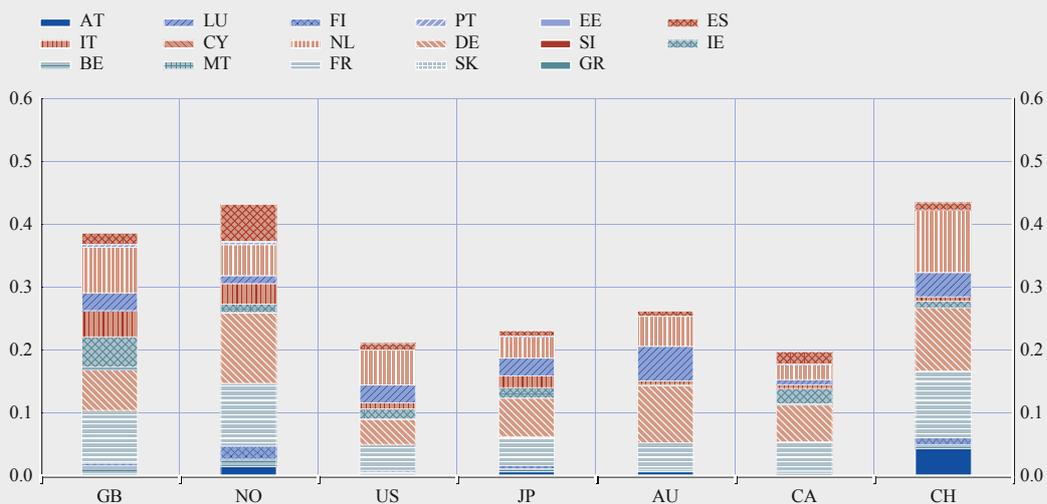
Sources: ECB and IMF.

Table A8 Net issuance of international debt securities

(narrow measure, i.e. excluding home currency issuance USD billions; at current exchange rates)

	Annual					Quarterly 2012			
	2008	2009	2010	2011	2012	Q1	Q2	Q3	Q4
Euro	185.2	50.0	-102.0	-23.2	165.2	197.0	-24.7	3.0	-10.2
US dollar	95.5	437.2	409.9	425.6	670.8	202.2	114.8	144.5	209.2
Japanese yen	7.9	-45.2	-10.3	-15.7	-20.2	-4.5	-7.8	-10.3	2.4
Total (including other currencies)	1,636.1	1,294.8	656.4	474.1	707.9	489.1	-88.8	85.4	222.2

Sources: ECB and BIS calculations.

Table A9 The top 20 non-euro area issuers of euro-denominated bonds and non-US issuers of US dollar-denominated bonds

(total amount issued in 2012; EUR millions)

Top 20 non-Euro Area Issuers of euro-denominated bonds		Top 20 non-US Issuers of US dollar-denominated bonds	
Abbey National Treasury Services plc	11,201	Kreditanstalt für Wiederaufbau	26,366
Lloyds TSB Bank plc	11,055	European Investment Bank (EIB)	21,778
Barclays Bank plc	8,461	Republic of the Philippines	16,769
Danske Bank A/S	8,031	Bank of Nova Scotia	14,939
DnB Boligkreditt AS	6,880	Barclays Bank PLC	13,637
Nordea Bank AB	5,628	London Branch CORP	11,990
Poland, Republic of (Government)	5,500	Caisse D'amortissement de la Dette Sociale	10,520
Swedbank AB	4,875	Kingdom of the Netherlands	10,423
Commonwealth Bank of Australia	4,850	Kommunalbanken AS	10,313
Svenska Handelsbanken AB	4,806	International Bank for Reconstruction and Development (IBRD)/World Bank	10,266
Credit Agricole S.A. – London Branch	4,057	Dutch State Treasury Agency	10,000
BHP Billiton Finance Ltd	4,000	ING Bank N.V.	9,915
Nationwide Building Society	3,663	Australia and New Zealand Banking Group Ltd	9,323
Banco Espirito Santo SA	3,658	Nv Bank Nederlandse Gemeenten BNG	9,203
UBS AG (London Branch)	3,638	Ukraine (Government)	8,710
National Australia Bank Ltd	3,565	Coöperatieve Centrale Raiffeisen-Boerenleenbank B.A.	8,549
Ministry of Finance of the Czech Republic	3,500	Volkswagen International Finance NV	8,524
Standard Chartered PLC	3,500	Commonwealth Bank of Australia	8,098
DLR Kredit A/S	3,319	SB Capital SA	7,731
Holmes Master Issuer PLC	3,050	Lyondellbasell Industries NV	7,693
Memo Items:			
European Stability Mechanism (ESM)	30,500		
European Investment Bank (EIB)	23,900		
European Union	15,800		

Source: DCM Analytics.

3   THE EURO IN INTERNATIONAL LOAN AND DEPOSIT MARKETS

Table A10 Outstanding international loans, by currency

	All cross-border loans [1]				Loans by banks outside 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)										
1999	1,856	-	-	-	-	481	-	-	-	-
2000	1,852	266	999	81	506	413	23	181	-	-
2001	2,024	304	1,174	84	463	377	44	201	46	85
2002	2,233	379	1,241	105	507	364	64	189	44	67
2003	2,678	521	1,469	116	572	399	92	237	38	33
2004	3,082	668	1,615	152	647	430	136	236	37	22
2005	3,421	640	1,889	118	774	527	107	296	50	73
2006	4,505	832	2,545	121	1,006	693	135	412	44	102
2007	5,650	1,255	3,129	181	1,085	1,066	306	689	65	6
2008	5,415	1,199	3,060	168	989	1,105	239	771	68	28
2009	5,123	1,058	2,960	110	995	1,131	223	796	41	71
2010	5,504	1,107	3,214	125	1,058	1,240	258	875	42	62
2011	5,856	1,214	3,329	192	1,121	1,385	243	919	54	169
2012 Q1	5,952	1,257	3,358	190	1,147	1,418	237	969	59	153
Q2	5,954	2,086	2,486	182	1,200	1,436	232	988	61	155
Q3	6,059	1,227	3,426	168	1,238	1,452	229	1,007	56	160
Percentages of outstanding amounts (at constant exchange rates, end of period)										
1999	100.0	-	-	-	-	-	-	-	-	-
2000	100.0	18.2	49.1	5.9	26.8	-	-	-	-	-
2001	100.0	19.7	51.8	6.2	22.3	100.0	15.2	46.9	18.2	19.7
2002	100.0	19.5	51.7	6.7	22.1	100.0	19.6	47.1	16.6	16.7
2003	100.0	19.5	53.6	5.9	21.1	100.0	22.5	56.6	12.6	8.3
2004	100.0	20.6	52.4	6.5	20.5	100.0	29.5	53.9	11.1	5.5
2005	100.0	19.7	53.1	5.0	22.2	100.0	20.8	52.4	13.5	13.3
2006	100.0	18.0	56.2	4.1	21.7	100.0	18.5	57.4	9.4	14.8
2007	100.0	20.0	56.6	4.7	18.7	100.0	25.4	65.3	8.9	0.4
2008	100.0	20.6	56.6	3.6	19.2	100.0	20.1	69.9	7.2	2.7
2009	100.0	18.8	58.7	2.6	19.9	100.0	17.9	71.3	4.4	6.4
2010	100.0	19.5	58.6	2.4	19.5	100.0	20.3	71.1	3.6	5.1
2011	100.0	20.7	56.7	3.3	19.4	100.0	17.5	66.3	3.9	12.3
2012 Q1	100.0	20.5	56.7	3.4	19.4	100.0	16.2	68.5	4.4	10.8
Q2	100.0	35.6	41.3	3.1	20.0	100.0	16.5	68.4	4.3	10.7
Q3	100.0	20.3	56.5	2.8	20.4	100.0	15.8	69.4	3.9	11.0
Percentages of outstanding amounts (at current exchange rates, end of period)										
1999	100.0	-	-	-	-	100.0	-	-	-	-
2000	100.0	14.4	53.9	4.4	27.3	100.0	5.6	43.9	-	-
2001	100.0	15.0	58.0	4.1	22.9	100.0	11.8	53.4	12.3	22.5
2002	100.0	17.0	55.6	4.7	22.7	100.0	17.5	52.1	12.0	18.4
2003	100.0	19.4	54.9	4.3	21.4	100.0	23.0	59.2	9.6	8.2
2004	100.0	21.7	52.4	4.9	21.0	100.0	31.6	54.7	8.5	5.1
2005	100.0	18.7	55.2	3.4	22.6	100.0	20.4	56.2	9.5	13.9
2006	100.0	18.5	56.5	2.7	22.3	100.0	19.5	59.5	6.3	14.7
2007	100.0	22.2	55.4	3.2	19.2	100.0	28.7	64.6	6.1	0.6
2008	100.0	22.1	56.5	3.1	18.3	100.0	21.6	69.8	6.2	2.5
2009	100.0	20.7	57.8	2.1	19.4	100.0	19.7	70.4	3.6	6.3
2010	100.0	20.1	58.4	2.3	19.2	100.0	20.8	70.6	3.4	5.0
2011	100.0	20.7	56.8	3.3	19.1	100.0	17.5	66.3	3.9	12.2
2012 Q1	100.0	21.1	56.4	3.2	19.3	100.0	16.7	68.3	4.2	10.8
Q2	100.0	35.0	41.8	3.1	20.2	100.0	16.2	68.8	4.2	10.8
Q3	100.0	20.3	56.5	2.8	20.4	100.0	15.8	69.4	3.9	11.0

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 A11 Outstanding international deposits, by currency

	All cross-border loans [1]				Deposits by depositors outside 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)

	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
1999	1,930	-	-	89	-	535	-	-	40	-
2000	2,102	391	1,303	85	323	-	77	464	29	-
2001	2,419	465	1,435	84	435	689	103	507	35	44
2002	2,789	598	1,542	93	555	712	135	449	38	90
2003	3,472	819	1,899	84	670	852	192	523	40	97
2004	4,075	992	2,201	112	770	906	239	530	34	103
2005	4,244	921	2,362	116	844	1,048	237	629	55	128
2006	5,383	1,099	3,063	135	1,086	1,306	289	805	46	166
2007	6,727	1,406	3,949	146	1,226	1,688	441	1,121	48	79
2008	6,344	1,334	3,817	127	1,067	1,581	408	1,012	58	105
2009	5,949	1,274	3,474	94	1,107	1,635	414	964	41	216
2010	6,356	1,341	3,855	81	1,079	1,714	396	1,077	34	207
2011	6,297	1,307	3,794	118	1,079	1,788	375	1,139	46	228
2012 Q1	6,485	1,336	3,866	116	1,167	1,838	385	1,160	49	243
Q2	6,277	1,208	3,086	110	1,873	1,805	368	1,175	47	215
Q3	6,390	1,214	3,838	113	1,224	1,823	385	1,181	45	239

Percentages of outstanding amounts (at constant exchange rates, end of period)

	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
1999	100.0	-	-	-	-	-	-	-	-	-
2000	100.0	24.0	55.1	5.4	15.5	-	-	-	-	-
2001	100.0	24.8	52.1	5.1	18.0	100.0	19.6	66.0	7.7	6.8
2002	100.0	24.6	51.3	4.7	19.4	100.0	21.7	58.6	7.5	12.1
2003	100.0	23.8	54.0	3.3	18.9	100.0	22.6	60.1	6.3	11.0
2004	100.0	23.4	54.7	3.7	18.2	100.0	25.2	59.0	5.0	10.8
2005	100.0	22.9	53.7	4.0	19.4	100.0	23.7	57.2	7.5	11.7
2006	100.0	20.0	56.9	3.9	19.2	100.0	21.5	61.0	5.4	12.1
2007	100.0	18.9	60.5	3.2	17.4	100.0	23.6	68.2	4.2	4.0
2008	100.0	19.6	60.3	2.3	17.8	100.0	24.1	64.4	4.3	7.2
2009	100.0	19.6	59.4	1.9	19.1	100.0	23.2	60.2	3.0	13.6
2010	100.0	20.5	60.9	1.3	17.3	100.0	22.5	63.2	2.1	12.3
2011	100.0	20.7	60.1	1.9	17.4	100.0	21.0	63.6	2.6	12.8
2012 Q1	100.0	20.1	59.9	1.9	18.1	100.0	20.4	63.5	2.8	13.3
Q2	100.0	19.7	48.9	1.8	29.7	100.0	20.8	64.7	2.7	11.8
Q3	100.0	19.0	60.1	1.8	19.2	100.0	19.6	64.8	2.5	13.1

Percentages of outstanding amounts (at current exchange rates, end of period)

	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
1999	100.0	-	-	4.6	-	100.0	-	-	-	-
2000	100.0	18.6	62.0	4.1	15.3	-	-	-	-	-
2001	100.0	19.2	59.3	3.5	18.0	100.0	14.9	73.6	5.1	6.4
2002	100.0	21.5	55.3	3.3	19.9	100.0	19.0	63.1	5.3	12.7
2003	100.0	23.6	54.7	2.4	19.3	100.0	22.5	61.4	4.7	11.4
2004	100.0	24.3	54.0	2.8	18.9	100.0	26.4	58.5	3.7	11.4
2005	100.0	21.7	55.7	2.7	19.9	100.0	22.6	60.0	5.2	12.2
2006	100.0	20.4	56.9	2.5	20.2	100.0	22.1	61.6	3.5	12.7
2007	100.0	20.9	58.7	2.2	18.2	100.0	26.1	66.4	2.8	4.7
2008	100.0	21.0	60.2	2.0	16.8	100.0	25.8	64.0	3.7	6.6
2009	100.0	21.4	58.4	1.6	18.6	100.0	25.3	59.0	2.5	13.2
2010	100.0	21.1	60.7	1.3	17.0	100.0	23.1	62.9	2.0	12.1
2011	100.0	20.7	60.7	1.9	17.1	100.0	21.0	63.7	2.6	12.7
2012 Q1	100.0	20.6	59.6	1.8	18.0	100.0	20.9	63.1	2.7	13.2
Q2	100.0	19.2	49.2	1.8	29.8	100.0	20.4	65.1	2.6	11.9
Q3	100.0	19.0	60.1	1.8	19.2	100.0	19.6	64.8	2.5	13.1

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

4 THE EURO IN INTERNATIONAL TRADE IN GOODS AND SERVICES

Table A12 The euro's share as a invoicing/settlement currency in extra-euro area transactions of euro area countries

(as a percentage of the total)

1. Exports and imports of goods

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports										
Euro area	-	-	-	59.5	59.6	63.6	64.1	63.6	64.9	62.5
of which										
Belgium	56.6	57.7	54.8	58.5	52.8	56.2	57.4	52.3	55.3	56.6
France	49.0	49.2	49.8	50.8	51.5	49.3	52..3	51.8	51.9	48.8
Italy	58.2	59.0	58.3	59.4	64.3	68.7	69.2	67.4	-	-
Greece	45.1	41.8	35.1	34.1	35.5	32.6	36.3	33.7	35.5	32.3
Spain	61.7	62.4	62.1	61.6	65.2	60.6	62.8	59.2	54.7	56.4
Cyprus	-	-	-	-	2.8	21.2	24.3	25.9	49.1	-
Luxembourg	51.5	61.8	61.4	57.7	59.2	51.9	50.3	63.2	55.3	-
Portugal	50.6	55.5	56.5	55.8	61.4	63.1	64.2	63.4	62.1	59.3
Slovenia	-	-	-	74.2	79.0	79.4	84.7	82.7	83.5	81.6
Slovakia	-	-	-	-	-	96.5	94.8	94.4	94.1	96.6
Estonia	-	-	-	-	-	-	52.4	48.2	69.7	71.5
Imports										
Euro area	-	-	-	48.8	47.9	47.5	45.2	49.5	49.8	49.0
of which										
Belgium	57.8	55.7	51.2	58.3	56.1	56.4	57.7	53.0	55.7	57.3
France	44.1	45.7	46.3	44.7	44.8	44.2	44.3	44.4	47.3	46.3
Italy	44.5	41.2	39.4	43.0	44.3	47.8	49.7	46.9	-	-
Greece	39.2	39.6	32.6	32.3	33.6	37.3	37.9	30.8	32.9	23.6
Spain	61.1	61.3	56.0	54.8	56.7	58.8	61.7	58.9	53.1	52.7
Cyprus	-	-	-	-	1.7	9.8	12.7	11.6	41.1	-
Luxembourg	41.9	50.0	43.8	38.8	37.9	38.8	55.3	55.0	48.7	-
Portugal	58.1	58.0	54.4	52.6	51.8	53.7	56.6	51.4	45.9	39.9
Slovenia	-	-	-	64.0	73.1	75.0	69.9	61.9	64.2	54.1
Slovakia	-	-	-	-	-	82.1	77.8	76.5	76.6	73.2
Estonia	-	-	-	-	-	-	47.1	45.1	60.9	66.0

Sources: National central banks and ECB calculations.
1) Data for Estonia (services), Greece, Cyprus, Slovenia, Spain, Italy (goods until 2010), Portugal and Luxembourg refer to the currency of settlement. In the case of Luxembourg, a new survey for measuring international trade in services was introduced in 2012. It does not include information on the invoicing currency.
2) Services data for Greece, Cyprus, Spain, Italy (after 2008) exclude travel item.
3) Data for Italy for 2012 refer to the first quarter only.

2. Exports and imports of services

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports										
	-	-	-	51.1	54.5	55.5	53.4	52.6	54.2	52.1
	70.6	72.2	73.0	73.7	74.2	73.9	75.9	74.8	75.1	71.4
	42.4	42.4	43.6	47.2	49.0	39.9	35.5	31.4	33.7	24.5
	47.0	48.9	56.5	53.9	59.3	80.4	75.7	77.1	74.5	76.5
	15.4	13.0	14.1	12.8	13.3	15.5	19.0	19.2	25.2	27.8
	64.1	64.3	67.5	67.2	71.8	71.2	70.0	71.4	73.7	63.2
	-	-	-	-	40.0	39.9	37.7	38.9	45.0	51.1
	41.6	41.9	42.4	47.7	48.4	46.6	47.2	45.7	48.3	-
	54.0	56.2	58.2	60.8	59.9	65.8	68.1	62.1	62.1	60.1
	-	-	-	80.1	80.8	83.2	82.7	80.1	85.4	85.8
	-	-	-	-	-	-	43.5	44.4	57.1	61.4
Imports										
	-	-	-	53.8	55.7	57.7	56.1	56.8	58.8	58.4
	65.8	68.3	71.2	73.9	72.4	74.0	71.1	72.2	70.2	67.6
	46.6	49.2	50.3	54.6	54.8	54.9	49.4	49.8	56.5	49.1
	54.4	52.3	55.5	56.0	59.1	65.6	62.7	64.4	65.3	66.6
	19.6	21.3	22.5	24.5	27.5	28.9	34.4	28.5	31.7	33.7
	54.3	57.0	60.2	60.3	60.7	61.5	61.8	61.5	61.9	64.0
	-	-	-	-	27.9	13.3	50.9	51.2	45.7	59.4
	34.3	30.2	31.2	29.8	34.0	38.4	41.2	48.0	45.8	-
	68.9	70.8	72.5	74.5	72.6	73.3	72.7	71.3	66.7	62.1
	-	-	-	53.1	57.2	58.1	64.8	67.1	69.2	66.4
	-	-	-	-	-	-	43.0	43.9	53.3	57.8

Table A13 The euro's share in the exports and imports of selected non-euro area countries

(as a percentage of the total)

1. Exports and imports of goods

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports										
Bulgaria	60.7	62.2	60.4	57.7	60.5	61.5	68.6	62.2	62.7	62.5
Czech Republic	70.3	73.4	71.9	68.8	72.0	73.6	76.0	76.4	77.0	77.2
Latvia	41.6	47.9	53.3	54.8	59.5	66.9	66.4	64.1	62.0	61.4
Lithuania	46.8	49.7	51.3	56.2	56.5	55.7	60.5	59.7	58.1	59.5
Poland	64.9	69.3	70.1	69.9	69.8	68.2	66.1	-	-	-
Romania	63.8	66.3	64.3	67.6	67.7	68.5	75.9	71.3	67.1	71.3
Sweden	-	-	-	-	-	-	-	22.0	21.6	23.4
Imports										
Bulgaria	62.7	63.6	60.4	58.9	60.2	62.7	70.9	62.6	61.8	58.9
Czech Republic	67.6	71.3	70.6	67.8	68.0	68.3	68.9	68.5	68.0	68.0
Latvia	49.6	52.8	59.2	61.2	67.2	67.4	66.1	62.1	62.9	63.3
Lithuania	53.0	55.0	51.3	53.8	55.4	55.6	57.2	55.8	55.7	55.4
Poland	60.2	61.7	60.5	58.6	59.1	56.4	54.8	-	-	-
Romania	67.9	70.8	71.1	73.4	71.5	70.9	73.2	66.8	64.2	60.4
Sweden	-	-	-	-	-	-	-	18.8	18.5	17.3

2. Exports and imports of services

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports										
Bulgaria	-	-	-	73.1	76.3	77.9	79.0	65.1	67.2	66.7
Czech Republic	67.9	68.3	64.6	70.3	67.2	72.3	76.0	76.9	78.5	76.3
Latvia	20.7	26.4	33.2	37.9	42.5	51.5	54.1	52.5	51.0	53.2
Lithuania	42.8	49.4	51.1	51.9	53.9	54.7	59.8	56.9	54.2	56.5
Poland	64.9	69.3	70.1	69.9	69.8	68.2	66.1	-	-	-
Romania	-	-	71.0	72.0	71.2	75.2	73.8	62.2	67.0	64.4
Imports										
Bulgaria	-	-	-	69.9	77.1	77.1	80.8	73.8	73.2	75.4
Czech Republic	59.0	64.8	61.1	61.4	61.3	69.3	78.4	75.6	75.3	71.2
Latvia	25.4	29.0	33.3	36.8	39.3	42.7	43.0	44.3	35.9	34.9
Lithuania	43.0	47.0	47.8	54.1	53.5	51.0	52.4	50.5	50.8	51.0
Poland	52.1	53.0	54.8	54.3	54.0	54.0	58.9	-	-	-
Romania	-	-	64.0	69.0	74.6	74.5	78.6	69.4	69.5	63.6

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

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

Table A14 Outstanding euro-denominated bank loans in selected countries

	Outstanding amounts (in EUR millions)		As a percentage of total loans		As a percentage of foreign currency loans		Absolute amounts of foreign loans (in EUR millions)	
	2011	2012	2011	2012	2011	2012	2011	2012
Non-euro area EU Member States								
Bulgaria	16,741	17,250	61.5	61.5	96.7	96.9	17,321	17,811
Croatia	21,443	20,898	61.7	61.4	82.6	84.1	25,975	24,837
Czech Republic	6,453	6,354	8.1	7.5	92.5	92.4	6,974	6,878
Hungary	14,444	13,049	25.6	24.8	40.5	43.9	35,669	29,700
Latvia	13,943	11,866	85.8	81.4	95.9	94.2	14,546	12,593
Lithuania	11,414	11,425	71.3	70.8	95.9	96.3	11,897	11,869
Poland	19,671	20,567	10.7	10.0	31.2	33.2	63,024	61,888
Romania	28,471	27,941	55.1	54.9	87.0	87.9	32,726	31,791
EU candidate and potential candidate countries								
Albania	2,261	2,222	58.9	57.1	88.9	88.9	2,542	2,500
Bosnia and Herzegovina*	121	92	1.7	1.3	90.0	88.7	135	104
FYR Macedonia	1,876	1,834	57.1	53.2	96.6	95.9	1,943	1,913
Serbia	9,540	9,995	58.2	60.1	82.2	83.7	11,612	11,946
Turkey	24,927	25,020	9.3	8.0	32.6	31.5	76,549	79,420

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. Where available, foreign exchange-indexed deposits are included. Figures for Turkey include foreign branches of Turkish banks.

Table A15 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		Absolute amounts of foreign deposits (in EUR millions)	
	2011	2012	2011	2012	2011	2012	2011	2012
Non-euro area EU Member States								
Bulgaria	9,731	9,393	39.2	35.2	83.9	82.6	11,594	11,366
Croatia	18,590	19,686	60.2	60.6	89.4	89.2		
Czech Republic	6,516	7,030	6.4	6.5	79.2	78.3	8,222	8,981
Hungary	6,790	7,233	15.8	15.7	78.7	78.7	8,624	9,197
Latvia	3,364	3,450	43.2	42.3	83.5	80.7	4,029	4,273
Lithuania	2,641	2,673	22.5	21.3	81.9	77.5	3,226	3,450
Poland	9,840	12,172	5.8	6.2	61.1	66.0	16,106	18,448
Romania	12,643	13,794	29.2	31.0	87.0	85.3	14,527	16,180
					71.6	70.9		
EU candidate and potential candidate countries								
Albania	2,043	2,310	30.5	32.6	61.4	64.2	3,330	3,601
Bosnia and Herzegovina	2,786	2,793	42.1	41.7	90.2	89.8	3,090	3,108
FYR Macedonia	1,745	1,646	45.8	42.4	87.0	86.9	2,006	1,893
Serbia	10,080	10,111	68.5	70.6	90.2	91.1	11,173	11,099
Turkey	35,010	38,683	12.7	12.5	39.2	39.8	89,205	97,257
					73.6	74.4		

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. Where available, foreign exchange-indexed deposits are included. Figures for Turkey include foreign branches of Turkish banks.